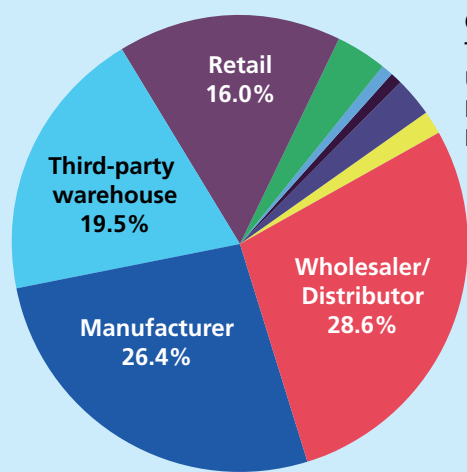# Which DC metrics matter most in the age of e-commerce?

You can't manage—or improve—what you don't measure. That has long been the premise of our annual warehouse and DC metrics study. The survey, conducted among *DC Velocity* readers and members of the Warehousing Education and Research Council (WERC), asks respondents what metrics they use, how their operations are performing against those yardsticks, and what tools and technologies they use—or plan to use—in their DCs. Here are some highlights of the 16th annual study.

Top 12 most commonly used metrics, 2019

Metric (in 2019 rank order)	2018 rank	2017 rank
1. Order picking accuracy (% by order)	2	2
2. Average warehouse capacity used	1	1
3. Peak warehouse capacity used	3	4
4. On-time shipments	5	3
5. Inventory-count accuracy by location	10	10
6. % of supplier orders received damage-free	11	11
7. Order fill rate	14	12
8. % of supplier orders received with correct documents	13	14
9. Dock-to-stock cycle time, in hours	16	13
10. On-time ready to ship	12	8
11. Part-time work force to total work force	7	5
12. % of cross-trained workers	8	9

"Order picking accuracy" rose to the top of the list of most commonly used warehouse performance metrics this year, while a related measure, "inventory count accuracy by location," jumped from #10 to #5. That focus is a reaction to the small size and high frequency of orders in e-commerce fulfillment, said survey author Joe Tillman, who explained that picking mistakes take on great importance when an order may consist of a single item.
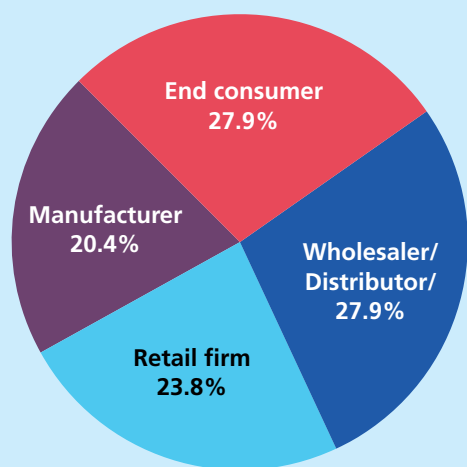
Survey respondents by industry

Other 3.5%
Transportation service provider 0.9%
Utilities/Government 0.9%
Life sciences – Medical devices 2.6%
Life sciences – Pharmaceuticals 1.6%

Retail 16.0%
Third-party warehouse 19.5%
Manufacturer 26.4%
Wholesaler/Distributor 28.6%

Companies in the wholesale and distribution sector made up the largest percentage of respondents to this year's survey, followed closely by manufacturers and third-party warehouses. Together, those three industry sectors accounted for nearly three-quarters of the respondents.

Who is your customer?

End consumer 27.9%
Manufacturer 20.4%
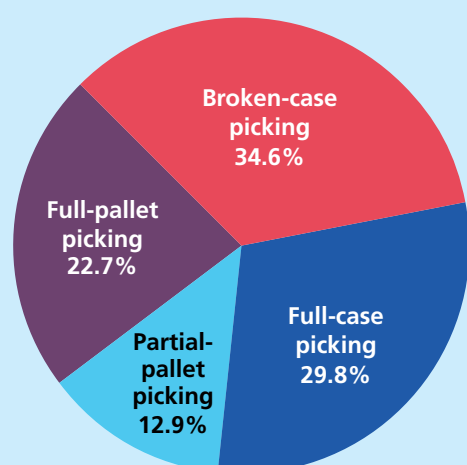Wholesaler/Distributor/ 27.9%
Retail firm 23.8%

More than half of the survey respondents worked for companies that either serve the end consumer or supply a wholesaler/distributor.

What type of software do you use to manage your warehouse operations?

WMS (warehouse management system)	39.4%
ERP (enterprise resource planning system)	20.2%
Legacy software — homegrown/developed over time	15.4%
Excel/Data file	14.4%
Do not use software	4.3%
Cloud-based WMS	3.7%
MRP (material requirements planning or manufacturing resource planning) software	2.6%

Predictably enough, when survey-takers were asked about the software used to run their operations, warehouse management systems (WMS) emerged as the most common response. But the results also showed that ERP systems were used in a significant share of operations. That may be because many facilities are trying to integrate their data among different silos and platforms, which is made easier by using an umbrella ERP platform that includes a WMS alongside other modules.

How are orders picked in your DC?

Broken-case picking 34.6%
Full-pallet picking 22.7%
Partial-pallet picking 12.9%
Full-case picking 29.8%

In total, about two-thirds of respondents (64.4 percent) said that orders were picked by the case (either full or broken) in their DCs, while 35.6 percent said they picked orders by the pallet (either partial or full). Those figures are consistent with last year's survey sample.

What technologies do you use or plan to use to move materials within your DC?

Technology	Use today	Planned or implementing	Not planned
Conveyors	53.3%	24.9%	21.8%
Cart-based picking	38.2%	15.2%	46.7%
Driverless vehicles	23.6%	16.5%	60.0%
Automated storage and retrieval systems (AS/RS)	22.7%	25.8%	51.5%
Slotting systems (outside of WMS)	14.3%	15.6%	70.1%
Carousels	12.9%	28.5%	58.7%
Sortation systems	12.4%	11.1%	76.4%
Robotics	12.1%	16.1%	71.9%

Note: Percentages may add up to more than 100 because of rounding.

As warehouses pursue ever-greater accuracy, material handling technology plays a growing role. We asked respondents what technologies they used to move goods within the four walls of their DC and found that the trusty conveyor still rules in terms of installed systems. However, many respondents told us they plan to buy—or are already implementing—technologies ranging from AS/RS (25.8 percent) to carousels (28.5 percent) and even robots (16.1 percent).