

Time for technology

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 annual 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 15th annual study.

Top 12 most commonly used metrics, 2018

Metric (in 2018 rank order)	2017 rank	2016 rank
1. Average warehouse capacity used	1	2
2. Order picking accuracy (% by order)	2	3
3. Peak warehouse capacity used	4	7
4. Contract employees to total work force	7	48
5. On-time shipments	3	1
6. Overtime hours to total hours	6	45
7. Part-time work force to total work force	5	46
8. Cross-trained percentage	12	49
9. Annual work-force turnover	25	20
10. Inventory count accuracy by location	10	19
11. % of supplier orders received damage-free	11	6
12. On-time ready to ship	8	12

"On-time shipments" will likely always be a crucial yardstick for measuring warehouse efficiency, but for the second straight year, that classic metric slipped in the rankings. This year it came in fifth, behind "average warehouse capacity used," "order picking accuracy," "peak warehouse capacity used," and "contract employees to total work force." Interestingly, labor-focused metrics accounted for five of the top 12 measures in the latest study.

Study respondents by industry



Life sciences – Pharmaceuticals 2.7%
 Life sciences – Medical devices 1.4%
 Utilities/Government 1.4%
 Other 2.1%

Companies in the manufacturing sector made up the largest percentage of respondents to this year's survey, followed closely by retailers and third-party warehouses. Together, those three industries accounted for more than three-quarters of the respondents.

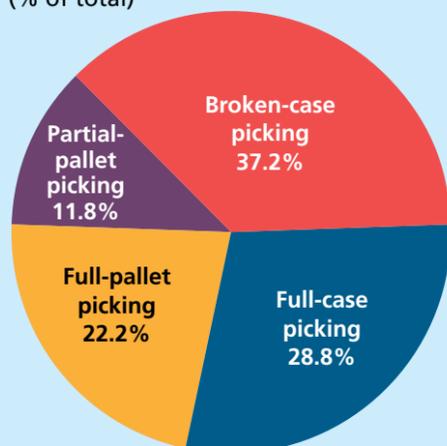
Who is your customer?



In all of our previous studies, the majority of respondents worked for companies at or near the end of the supply chain. That held true again this year, with the largest share reporting that their customers were the end consumers. In a departure from last year, however, distributors/wholesalers edged out retailers as the second most common type of customer.

How are orders picked in your DC?

(% of total)



In total, about two-thirds of respondents (66 percent) said that orders were picked by the case (either full or broken) in their DCs, while 34 percent said they picked orders by the pallet (either partial or full). Those figures were consistent with last year's results, when the split was 68 percent (case) and 32 percent (pallet).

SOURCE:
 The annual DC metrics study is produced through a partnership between the Warehousing Education and Research Council (WERC) and *DC VELOCITY*. This year's survey was conducted by Joe Tillman, a WERC researcher and founder of TSquared Logistics, and Drs. Donnie Williams and Karl Manrodt of Georgia College & State University. To see the full results of the survey, including performance and benchmarking data, go to www.werc.org.

What technologies have you implemented for warehousing and distribution?

(% of respondents 2018 vs. 2008)

Technology implementation	2018	2008
TMS (transportation management system)	30.2%	24.4%
WMS (warehouse management system)	65.1%	50.0%
LMS (labor management system)	16.4%	10.9%
Automated storage/retrieval system (AS/RS)	11.1%	10.3%
Conveyor	37.0%	38.9%
Carousel (vertical and horizontal)	12.6%	15.0%
Sortation system	18.9%	16.4%
Cart-based picking	40.2%	30.1%
Slotting system (outside of WMS)	18.4%	7.6%
Advance shipping notification system (EDI/ASN)	51.6%	52.8%
RF scanners/Bar coding	76.0%	69.0%
Voice-directed picking	25.8%	5.7%
Pick to light	12.0%	11.0%
RFID	18.3%	13.8%

To put the survey results into context, we compared the 2018 results with responses from the 2008 study. The numbers showed that adoption of many traditional technologies and tools from the first wave of industrial digitalization has expanded over the past decade. Nonetheless, even the most widely used of those tools—like WMS software and RF scanners—have not yet penetrated every DC.

What digital technologies have you implemented for warehousing and distribution?

Digital technology	Use today	Plan to use in 1–2 years	In 3–5 years	In 5–10 years
Social media	64.0%	11.2%	6.4%	3.2%
Mobile technology	50.4%	33.1%	7.9%	4.7%
Cloud-based services (e.g. SAAS)	40.3%	21.8%	15.3%	5.6%
Real-time big data and analytics	27.4%	42.7%	16.1%	5.6%
Sensors (e.g., RFID)	25.0%	17.7%	14.5%	11.3%
Robotics and automation	18.3%	18.3%	19.8%	13.5%
Internet of Things (IoT)	17.7%	26.6%	16.1%	8.1%
Simulation software	14.3%	15.9%	15.1%	9.5%
3-D printing	6.3%	4.7%	6.3%	7.9%
Blockchain	3.3%	11.7%	16.7%	13.3%
Drones and driverless vehicles	1.6%	10.3%	14.3%	13.5%

Note: Percentages for each technology type added up to 100%; the remainder fell under "Not likely to incorporate."

Technology has helped to narrow the performance gap between the top- and bottom-tier performers, but now both groups have effectively plateaued, the researchers found. At this point, it appears that many businesses are searching for a convincing business case to invest in digital supply chain technologies, such as robotics, the IoT, or blockchain software.