



## Warehouse and Distribution Centres: 2018 Best Practice

**Discover the latest industry trends and find out how to improve your key metrics**

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Read this whitepaper to discover:

- » The latest trends and challenges within warehouse and distribution centres
- » The top 10 metrics keeping warehouse managers up at night
- » Industry benchmarking – how your performance compares to other DCs
- » How to improve your key performance metrics (including order picking accuracy, contract employees to total workforce, and on-time shipments)
- » The latest innovations within the warehouse and DC industry
- » How to combat the trade-off between effectiveness and efficiency

**Avery Weigh-Tronix**

# Introduction

Warehouses and distribution centres (DCs) play a key part in the supply chain. However, in such a fast-paced environment it can be challenging for warehouse managers to continually deliver successful performance figures against key metrics.

This whitepaper delves into the common metrics used within warehouses and DCs, and offers advice and guidance on how these metrics can be improved.

The whitepaper references data from the 'DC Measures 2018 Trends and Challenges' report, written by the Warehousing Education and Research Council (WERC). The purpose of the WERC report is to provide an annual snapshot which shows how warehouse and DC practices are changing. The report surveyed warehouse and DC professionals to determine their performance levels and common trends and challenges within the industry.

## Warehouse and distribution centres: 2018 trends and challenges

Each year brings the industry a new set of trends and challenges, and 2018 was no different. The four major trends identified by the WERC report in 2018 were performance gaps, lack of consistency, technology opportunities and people development.

### Performance gaps

The biggest trend identified was the **closure of performance gaps** between 'best-in-class' performers (respondents with performance in the highest quintile) and 'major opportunity' performers (respondents with performance in the lowest quintile).\*

Best-in-class performers have reached their plateau of productivity, and it will now cost more, take more resource and require more risk taking to continue to improve.

Whereas major opportunity performers found it easier to improve their practices and make themselves more competitive in the market.

### Lack of consistency

Many respondents have **struggled to consistently maintain performance** on most of the measures within the survey (best-in-class respondents saw a 50% performance decline from 2017).

Reasons for such a decline include a lack of basic technologies, issues with speed and accuracy, and the lack of capital resources to invest in critically needed infrastructure.

Consistency is key, and to drive it warehouses and DCs need to focus on continuous improvement processes to maintain their performance levels. Failure to do so can lead to a 'see-saw' effect, where management's struggle between time and resource can see performance statistics improve in one area while dropping in another.

### Technology opportunities

Technology within the supply chain is becoming increasingly important. Many companies are starting to focus more on digital transformation, with respondents planning to implement social media, mobile technologies, cloud-based services and big data practices.

However, there is still a way to go to improve on technology as the study found 35% of distribution centres don't use a warehouse management system (WMS) and 25% don't use barcode scanners!

### People development

People continue to be the driving force behind the supply chain and not surprisingly, strong performance results came from the companies who invested in and focussed on their people first.

A further trend was found within UK warehouses where managers were concerned over the poor availability of labour as a direct result of Brexit.



\*For more information on quintile performance, see page 4



# The top 10 metrics keeping warehouse managers up at night

Unsurprisingly, different warehouses and distribution centres each employ a different set of metrics to monitor their performance. The respondents in the WERC report listed a total of 34 metrics used to measure their performance levels.

Table 1 displays the top 10 metrics being managed in warehouses and distribution centres and how these have changed since the 2016 study. The top three metrics - *average warehouse capacity used*, *order picking accuracy* and *peak warehouse capacity* - indicate that capacity and quality are currently taking priority for warehouse managers.

Interestingly, *contract employees to total workforce* jumped from the 48<sup>th</sup> place in 2016 to the 4<sup>th</sup> top metric in 2018, perhaps unsurprising given the current shifting demographics within the UK workforce and the effects of Brexit impacting on the availability of labour.

Top 10 metrics	2018	2017	2016
1. Average Warehouse Capacity Used	1	1	2
2. Order Picking Accuracy (percent by order)	2	2	3
3. Peak Warehouse Capacity Used	3	4	7
4. Contract Employees to Total Workforce	4	7	48*
5. On-time Shipments	5	3	1
6. Overtime Hours to Total Hours	6	6	45*
7. Part Time Workforce to Total Workforce	7	5	46*
8. Cross Trained Percentage	8	12	49*
9. Annual Workforce Turnover	9	25	20
10. Inventory Count Accuracy by Location	10	10	19

\*In 2016, the total number of metrics in the study totalled 55

Table 1



## Benchmark your performance

Do you know how your performance compares to other warehouses or distribution centres?

Table 2 displays industry benchmarking data from the results of the WERC report. The data is reported using a 'quintile' format which presents the results on a five-point maturity scale; from 'major opportunity', through 'disadvantage', 'typical', 'advantage', and finishing on 'best-in-class'. The position on the maturity scale reflects where the respondents are situated in their journey towards best practice.

### How to use the data

Use the data in table 2 to benchmark your company performance against other warehouses and DCs – all you need to know is your performance figures for each metric.

For example, if your *on-time shipment* performance is below 94% then this falls in the bottom quintile (20%) of the results and would indicate there is a major opportunity for improvement.

However, if *on-time shipments* are above 99.8% then this would fall within the top quintile of the results and can be considered best-in-class.

The median performance for *on-time shipment* data is 98.20%.

Quintile performance classification for metrics						
Customer Metrics	Major Opportunity	Disadvantage	Typical	Advantage	Best-in-class	Median
On-time Shipments	Less than 94%	>= 94 and < 97.56%	>= 97.56 and < 99%	>= 99 and < 99.8%	>= 99.8%	98.20%
Total Order Cycle Time	Greater than 48 hours	>=24 and < 48	>= 9.8 and < 24	>= 3.76 and < 9.8	< 3.76 hours	16
Internal Order Cycle Time	Greater than 35.2 hours	>= 18 and < 35.2	>= 5.88 and < 18	>= 2 and < 5.88	< 2 hours	8
Outbound Metrics	Major Opportunity	Disadvantage	Typical	Advantage	Best-in-class	Median
Lines Picked and Shipped per Hour	Less than 12 per hour	>= 12 and < 26	>= 26 and < 47.6	>= 47.6 and < 92.8	>= 92.8 per hour	35
Orders Picked and Shipped per Hour	Less than 2.76 per hour	>= 2.76 and < 6.08	>= 6.08 and < 15	>= 15 and < 35	>= 35 per hour	10
On-Time Ready to Ship	Less than 94%	>= 94 and < 98%	>= 98 and < 99%	>= 99 and < 99.8%	>= 99.8%	99%
Capacity/Quality Metrics	Major Opportunity	Disadvantage	Typical	Advantage	Best-in-class	Median
Inventory Count Accuracy by Location	Less than 90%	>= 90 and < 97%	>= 97 and < 99%	>= 99 and < 99.888%	>= 99.888%	98.40%
Order Picking Accuracy (Percent by Order)	Less than 98%	>= 98 and < 99%	>= 99 and < 99.5%	>= 99.5 and < 99.9%	>= 99.9%	99.30%
Employee Metrics	Major Opportunity	Disadvantage	Typical	Advantage	Best-in-class	Median
Overtime Hours to Total Hours	Greater than 14.98%	>= 8.76 and < 14.98%	>= 5 and < 8.76%	>= 2 and < 5%	< 2%	6.75%
Part-time Workforce to Total Workforce	Greater than 20%	>= 4 and < 20%	>= 0 and < 4%	>= 0 and < 0%	< 0%	1.00%
Contract Employees to Total Workforce	Greater than 30%	>= 10 and < 30%	>= 0.52 and < 10%	>= 0 and < 0.52%	< 0%	5.00%
Perfect Order Index Metrics	Major Opportunity	Disadvantage	Typical	Advantage	Best-in-class	Median
Percent of Orders with On-time Delivery	Less than 89.7%	>= 89.7 and < 94%	>= 94 and < 97.3%	>= 97.3 and < 99%	>= 99%	95.20%
Percent of Orders Shipped Complete	Less than 90.2%	>= 90.2 and < 96.5%	>= 96.5 and < 98.64%	>= 98.64 and < 99.5%	>= 99.5%	97.70%

Table 2

## Improve your performance

How did your performance figures compare to the industry? Did you identify areas for improvement within your operations?

Of course, it's easy to identify the areas for improvement, but a different story implementing processes and practices to improve performance levels.

The following section of the whitepaper gives advice and guidance on how to improve the following metrics;

- » Order picking accuracy
- » Inventory count accuracy by location
- » On-time shipments
- » Employee metrics (contract employees to total workforce, overtime hours to total hours, part-time workforce to total workforce)

## Order picking accuracy

Order picking accuracy has appeared in the top 3 metrics since 2016, and for good reason.

Picking the wrong item or miscounting quantities can cost business **hundreds of thousands of pounds a year in correction costs or contract penalties** as well as the negative impact on customer service metrics.

After the picking stage, dispatching the wrong order can have an impact on reputation or result in loss of repeat business, while dealing with return shipping and the resulting customer complaints takes time and money.

These issues have a huge impact on the bottom line of a business and are usually a result of human error.

***“It costs ten times as much to bring an incorrect order back as just to send.”***  
**Contract Logistics Solutions Director**



### How can order picking accuracy be improved?

- » **Voice-to-pick systems** give instructions to the pick operator through a headset. Pick operators are directed to a location within the warehouse, where they verify the item's code before the item is picked.
- » **Pick-to-light systems** work in a similar way to voice-to-pick systems; instead of verbal instructions, they use a light over the correct bin in the racking system to alert the pick operator's attention. Both systems get the pick operator to the correct location quickly. However, they do not account for human error and cannot verify the operator picked the correct quantity from the correct bin.
- » **Slowing down the pick process** to give pick operators more time to spend verifying correct parts and quantities is an option, as speed is a key factor influencing accuracy. However, this approach has cost implications as businesses then need to increase labour to cope with the reduced number of picks which is not usually a viable option. There is a fine balance between accuracy and speed.
- » **Automation** such as robots and carousel systems can reduce human error and increase efficiency, but automation will not complete the full picking process and requires huge amounts of capital expenditure to implement.

***“There is a danger with automation... it is inflexible.”***

**Contract Logistics Solutions Director**

- » **There are emerging technologies that combine pick accuracy improvements without compromising on speed.** The [Mobile Picking Solution](#) has recently been launched by Avery Weigh-Tronix, it brings technology to the point of pick, to eliminate manual counting and verify pick accuracy. It also integrates seamlessly with other pick management systems (such as voice-to-pick and pick-to-light) to make them even more accurate and efficient.

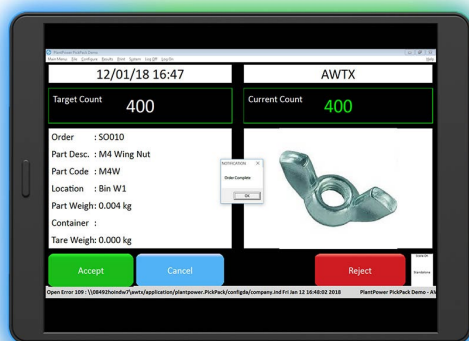


## Inventory count accuracy by location

Managing inventory levels can be a thankless and labour-intensive task, but it is extremely important for warehouse managers to keep aware of stock levels.

### How can inventory count accuracy by location be improved?

- » **Holding inventory audits during scheduled shut downs** is a common way to keep track of stock levels. However, this method incurs revenue loss during the closed period and can mean paying overtime rates to employees.
- » A similar option involves **employing IPS or audit teams** who are dedicated to stock checking, although this requires an investment in people.
- » Some distribution centres implement procedures to **verify stock levels as they arrive at goods-in**, but these procedures don't count stock once it's made it to the racking. They also don't solve the problem of miscounts by pick operators.
- » The [Mobile Picking Solution](#) is an innovative solution for managing inventory and replenishment. It carries the technology and tools required to allow pick operators to verify inventory in real time and compare the results with stock levels within the warehouse management system (WMS), **alleviating the need to have a dedicated audit process or take time out for wall-to-wall stock checks.**



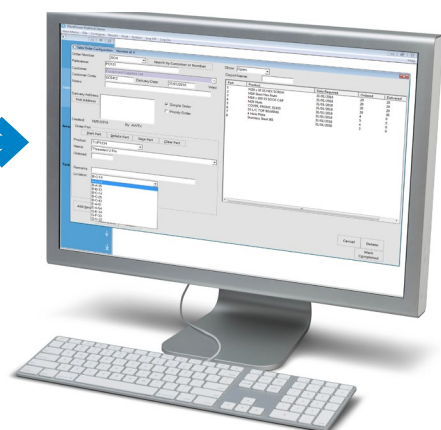
## On-time shipments

Recent years have seen a shift in consumer behaviour as more people switch to buying online. As order deadline times get later and later but retailers still guarantee next day delivery, the **impact is felt at the distribution centre** where warehouse managers are tasked to reduce order to dispatch times while maintaining accuracy.

***“One of the challenges for us is to try and improve our pick rate, but at the same time improve our pick rate without causing service inaccuracy issues, which end up in credits, which cost us money.”***  
**Operations and Commercial Manager**

### How can on-time shipments be improved?

- » **Increase pick operator numbers.** An increased workforce means more picks – or does it? With all the HR factors involved with hiring new employees, together with expected labour shortages, it's not always the easy or cost-effective option to add to headcount.
- » **Open regional warehouses.** Locally based warehouses can bring businesses closer to their customer base and make delivery times shorter, which eases the pressure on the distribution centre. However, investments in property require huge amounts of planning and capital expenditure.
- » The [Mobile Picking Solution](#) improves on-time shipments by reducing mistakes at the point of pick. The system delivers a **minimum achievable accuracy of 99.75%** while **increasing average picks per hour by 10%.**



## Employee metrics

Three of the top 10 metrics in the WERC report were employee related: *contract employees to total workforce*, *overtime hours to total hours*, and *part time workforce to total workforce*.

These statistics are unsurprising given the current shifting demographics within the UK workforce, including a shortage of workers and an aging population. Brexit has also had a huge impact on warehouses and DCs as the availability of overseas workforce has decreased dramatically.

Despite these issues, people are the critical link that keep the supply chain running with **71% of respondents ranking their employees as their primary importance**.

***“That’s still probably the biggest labour challenge in a warehouse operation - it’s the picking. And equally, that’s the area where you could get it wrong.”***

**Head of Warehouse and Distribution**

### How can employee metrics be improved?

- » Overtime hours to total hours can be reduced by simply **removing overtime as an option**, however in practice this is likely to have a negative effect on morale and could also have a negative impact on the output of the operation.
- » Another way to improve employee metrics is to **stagger shift start and end times** to provide a compliment of normal hours workforce across more hours in the day. This does command an investment in management time to optimise schedules so be prepared to devote your time to make the shift pattern change happen.
- » The [Mobile Picking Solution](#) makes pick operations more efficient by increasing the average number of picks per cycle, meaning less pick operators are needed to deliver the same result. This reduces the need for overtime hours, and the need to employ agency or part-time staff who tend to be more expensive and not as efficient as contracted employees.

However, if agency or part-time staff are required, the Mobile Picking Solution can ensure pick accuracy, with features including displaying a picture of the picked item and showing red/green signals which indicate when a correct pick count has been achieved.



# Improve your performance with the Mobile Picking Solution

The [Mobile Picking Solution \(MPS\)](#) workstation from Avery Weigh-Tronix is a mobile system that brings technology to the point of pick, to eliminate manual counting and verify pick accuracy.

The Mobile Picking Solution development was driven by market research and specifically designed to **solve the common pain points found in warehouses and distribution centres.**

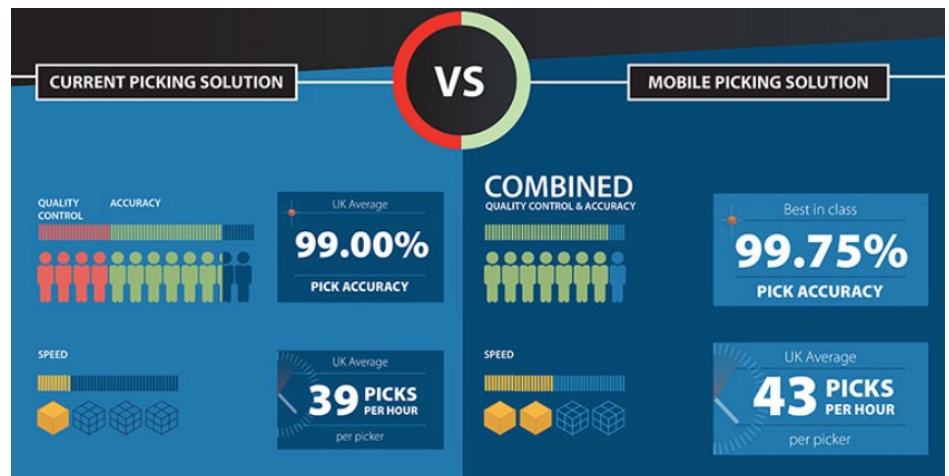
The system comes equipped with a high-resolution Avery Weigh-Tronix ZK840 advanced counting scale, barcode scanner, battery power supply and printer.

This combination means that verifying pick accuracy (part and quantity) is as simple as scanning and placing parts on the scale.



## Accuracy or speed?

The MPS workstation combats the dreaded trade-off between accuracy and speed as it promises improvements to both; **delivering a minimum achievable accuracy of 99.75% while increasing average picks per hour by 10%.**



## Fast payback

Small changes in accuracy can generate large savings which impact on a business's bottom line. Where payback on options like automation is calculated in years, payback on the MPS is calculated in months thanks to immediate cost savings via **reduced errors** and **increased pick operator speed.**

## Guaranteed uptime

In a world where everything is time critical and efficiency is key, you need to guarantee your equipment will be working as and when you need it!

With many warehouse operations running 24/7 to meet the expectations of consumers, it is imperative that your equipment doesn't let you down. When the worst happens, [Uptime Select™](#) service plans from Avery Weigh-Tronix maximise uptime and minimise disruption to keep your business running.

## What's next?

The Mobile Picking Solution guarantees a minimum achievable accuracy of 99.75%, while increasing average picks per hour by 10%.

Speak to our experts about how to improve your picking accuracy without compromising on speed.

To arrange a free demonstration, email [info@awtxglobal.com](mailto:info@awtxglobal.com) or call us on 0845 307 0314

### References

Tillman, J., Manrodt, K., and Williams, D. (2018), *WERC DC Measures: 2018 Trends and Challenges*, Warehousing Education and Research Council, USA