



TOP ORDER FULFILLMENT

Key Performance Indicators

CONVEYCO

Today's order fulfillment operation professionals aggressively evaluate performance to ensure optimized service levels expected by the modern consumer.

To properly benchmark these performance standards and identify the organization's strengths and weaknesses, the continual monitoring of **KEY PERFORMANCE INDICATORS** (KPIs) is imperative.

**YOU CAN'T IMPROVE
WHAT YOU DON'T MEASURE.**

TABLE OF CONTENTS

Customer Metrics	2
Inbound Metrics	7
Outbound Metrics	10
Financial Metrics	14
Benchmarks	18

Customer Metrics

Commerce is moving at the speed of light. Customers are increasing the expectations they place on suppliers to customize their experience. Orders are now expected to be processed in hours or minutes, no longer days or weeks.

On top of increasing the order velocity through a supply chain, the processing of items must be accurate.

Measuring the velocity at which orders flow through an operation, the productivity of each operator, and the overall order quality achieved will increase performance.



On-time Shipping

The percentage of orders shipped on time.

On time delivery, whether it is meeting the date requested by the customer or a date given by the supplier, is a key component in client satisfaction.

Customer loyalty and confidence is built on meeting delivery expectations. Failing to meet these expectations can result in costly incentives in order to retain a customer's future business.



69% of respondents are **less likely** to shop with a retailer in the future if a purchase is not delivered within 2 days of the date promised.^[1]

CALCULATION

$$\frac{\text{Number of Orders Shipped on Time}}{\text{Number of Orders Shipped}}$$

Total Order Cycle Time

The average processing time from the point a customer places their order to the point it is shipped.

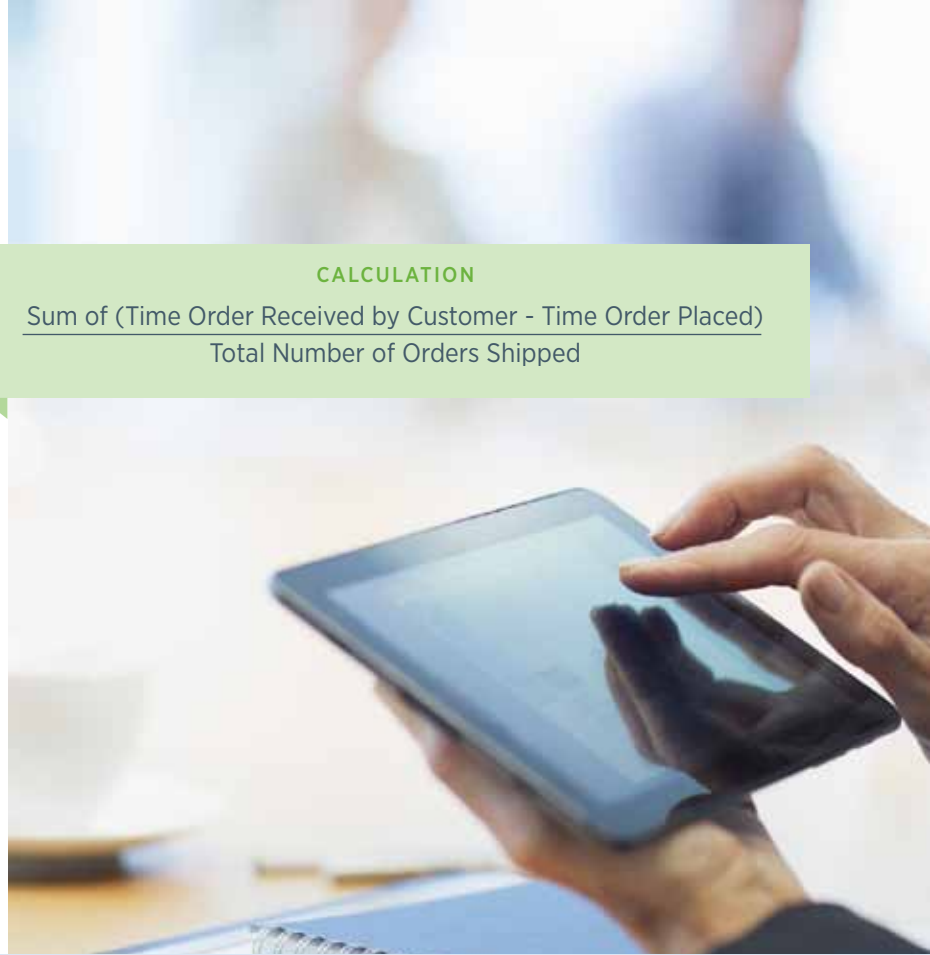
The velocity and efficiency at which orders move through the order fulfillment and shipping process impacts profitability and customer service.

Reducing order cycle time improves the customer experience while expanding profits by:

- Optimizing omnichannel fulfillment through pairing regularly scheduled retail shipments with customer pickup orders
- Allowing for later order cutoff times
- Decreasing the amount of inventory on hand, which helps with asset to cash conversion

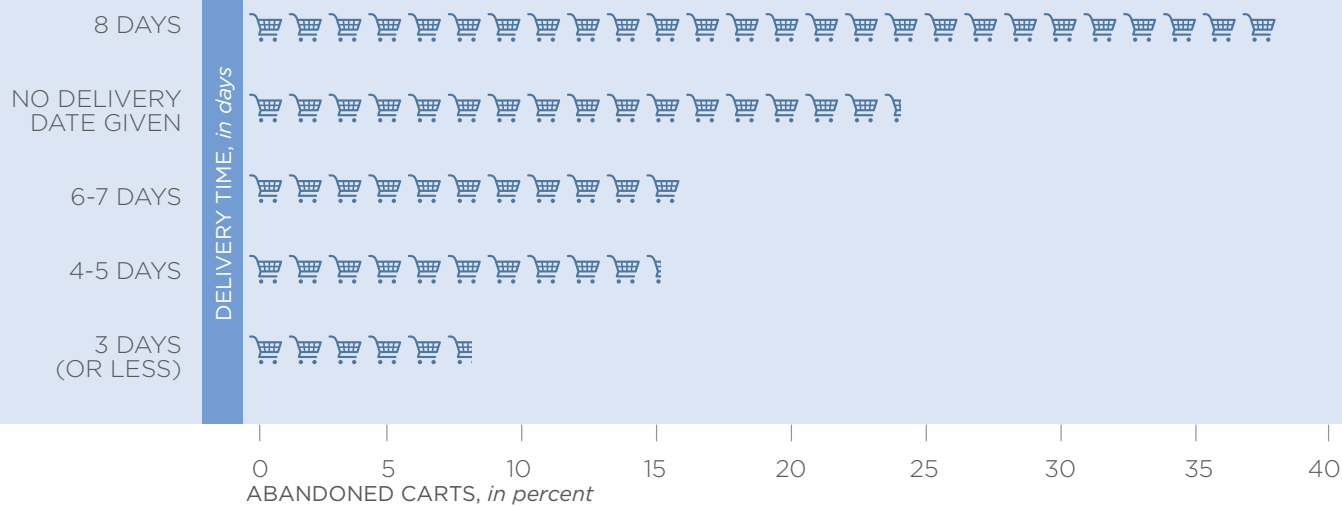
CALCULATION

$$\frac{\text{Sum of (Time Order Received by Customer - Time Order Placed)}}{\text{Total Number of Orders Shipped}}$$



Percentage of Abandoned Carts

BASED ON ESTIMATED DELIVERY TIME^[2]





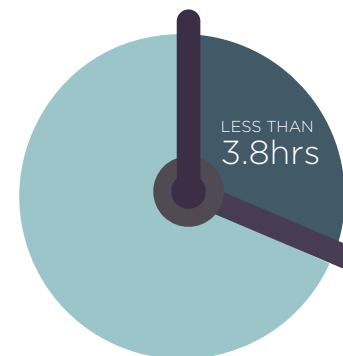
Internal Order Cycle Time

The average internal processing time from the point a customer order is released into the warehouse for processing and when the supplier ships the order.

One of the single largest areas of improvement that an operation has control over is how long it takes a customer order to move through the distribution center. The people, processes, and inventory drive the ability to meet and keep the promise that has been made.

Top 5 ways to reduce order cycle time

- > Ensure inventory is allocated to a given order, in the correct quantity and condition, at the proper location
- > Make available appropriate quantity and quality of labor to perform the functions in the operation
- > Implement efficient systems that balance capital expenditure with ongoing operational expenses
- > Integrate flexible software that can adapt to changes in the order pool, such as quantity, size, and complexity
- > Discover errors in post selection that need to be corrected prior to shipment



Best in Class
ORDER CYCLE TIME^[3]

CALCULATION

$$\frac{\text{Sum of (Time Order Shipped - Time Order Received)}}{\text{Number of Orders Shipped}}$$

Perfect Order Percentage

On Time Deliveries, Complete Shipments, Damage Free Shipments, Correct Documents.

Achieving the perfect order is no easy task. Customer expectations have become increasingly more difficult to meet. It's not just enough to have the product in stock, but the supplier

must ship the entire order to the customer, on time, with no damage, and with accurate documentation. When all these items are met, the desired perfect order is achieved.



CALCULATION

% Orders on time X % Orders Shipped Complete X % Orders Shipped No Damage X % Orders with Correct Documentation

Inbound Metrics

A frequently overlooked area of most operations' performance is products coming into the warehouse. More specifically, the time required to receive, reconcile, and make products available to the fulfillment operation.

Cycle time and the efficiency of turning purchase orders or advanced ship notices for goods arriving at the dock are crucial to supply chain effectiveness. These metrics are often unmeasured or neglected. Focusing on receiving products and making them available to customers directly relates to profit.

Dock-to-Stock Cycle Time

IN HOURS

The amount of time required to put away goods. This time begins when products enter the warehouse and ends when inventory is put away and available for sale within the Warehouse Management System (WMS).

Inventory that is unloaded from a truck but isn't available for fulfillment is not ideal for the operation. The speed at which inventory is processed, resolved, and replenished is key to a successful operation.

Many suppliers invoice their customers once the product is shipped or received at the warehouse. The time it takes from when the inventory hits the dock door to when it is entered into the WMS is critical. Doing this efficiently will impact how quickly products turn into cash.



7-25%
will continue shopping but won't buy a substitute

Faced with a Stock-Out^[5]



21-43%
will go to another store to buy the desired item



CALCULATION

$$\frac{\text{Sum of the Cycle Time in Hours for all Supplier Receipts}}{\text{Total Number of Supplier Receipts}}$$

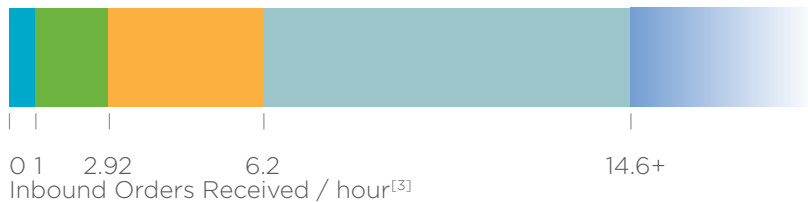
Inbound Orders Received

Inbound orders processed per person in an hour at receiving.

Today's inbound logistics utilize technology to the fullest extent possible to help increase the velocity at which product can be received and put away.

Advanced Ship Notices (ASNs) and Purchase Orders (POs) are used extensively to help suppliers reconcile inbound orders when they arrive on their receiving docks.

ASNs' main purpose is to provide detailed information about an order when it ships. This allows receiving to process the order more quickly on the dock. The ASNs provide additional information not available when simply reconciling orders against POs.

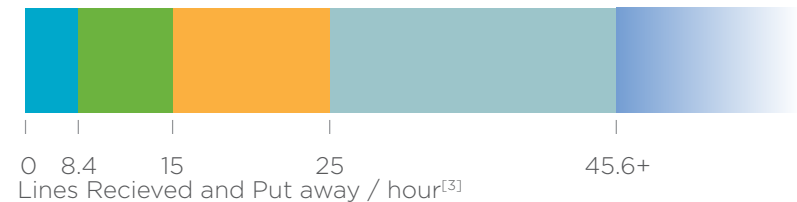


Lines Received and Put away

Inbound lines processed per person in an hour at receiving.

Modern inbound operations are being stressed to process many unique orders of varying sizes. The critical KPI to monitor overall throughput is the number of lines processed per labor hours in receiving.

To aid the inbound process, technologies such as unit sortation, print and apply, and goods to person are often used. These technologies increase velocity of lines that can be processed in each labor hour.



- LEVEL 1 Needs Improvement
- LEVEL 2 Competitive Disadvantage
- LEVEL 3 Typical Performance
- LEVEL 4 Competitive Advantage
- LEVEL 5 Best in Class

CALCULATION

$$\frac{\text{Total Orders Processed in Receiving}}{\text{Total Person Hours Worked in the Receiving Operation}}$$

CALCULATION

$$\frac{\text{Total Lines Received and Put away}}{\text{Total Person Hours Worked in the Receiving Operation}}$$

Outbound Metrics

Within the outbound process, it is key to look at not only the velocity at which operators are processing orders but their completeness.

Individual performance by function in the warehouse can have a huge impact on the overall labor hours required to process a set number of orders or lines. When we look at the specific rates in order fulfillment, where most of those hours are consumed in many operations, we can identify areas for improvement.



Fill Rate - Orders

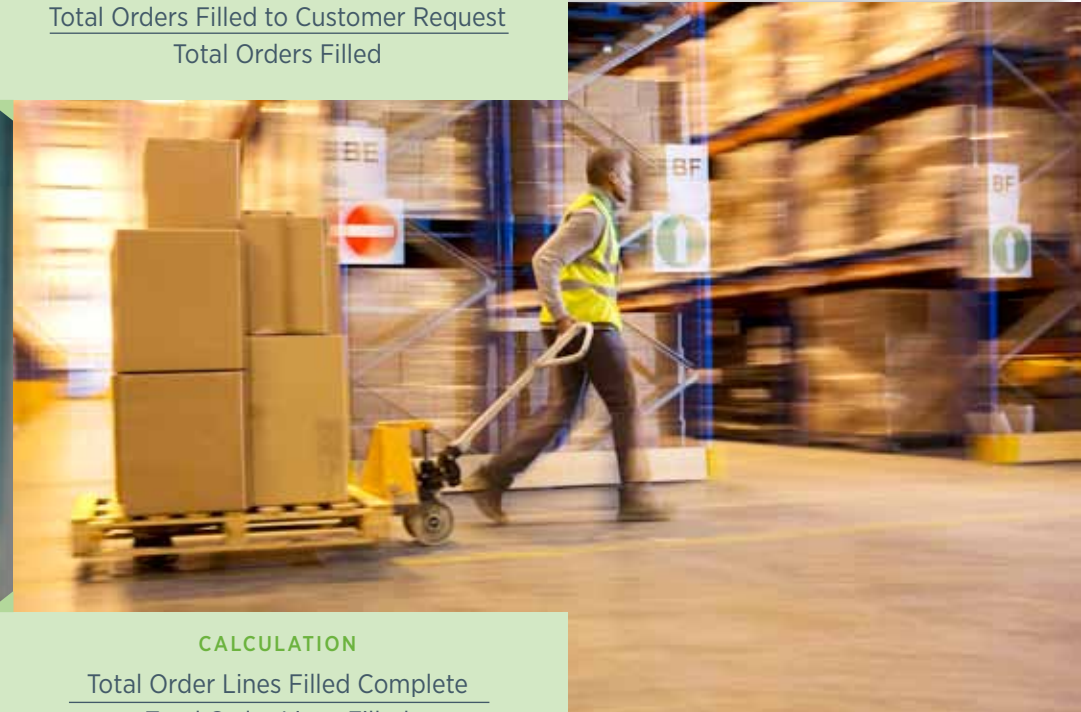
A percentage of orders filled 100% complete to the total number of orders filled.

Today's modern customer wants the perfect order. Having a portion of the order backordered results in lower customer satisfaction.



CALCULATION

$$\frac{\text{Total Orders Filled to Customer Request}}{\text{Total Orders Filled}}$$



CALCULATION

$$\frac{\text{Total Order Lines Filled Complete}}{\text{Total Order Lines Filled}}$$

Fill Rate - Line Items

A ratio of order lines filled 100% to the total number of order lines.

By calculating the fill rate, we identify room for improvement in inventory accuracy and performance.

Orders Picked per Hour

Measures order fulfillment and shipping productivity in lines per hour per person.

Some of the previous KPIs focus on a magnified portion of the order process. Orders per hour provide a more bottom line benchmark to compare against the industry.

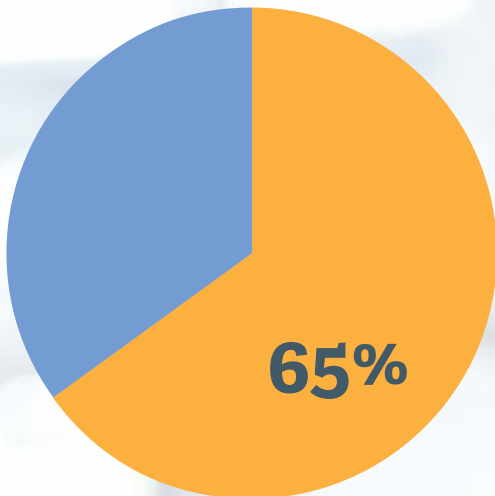
Orders per hour is calculated by including all functions within the distribution operation and the total hours worked across the order fulfillment and shipping shifts.

CALCULATION

$$\frac{\text{Total Orders Picked and Successfully Shipped}}{\text{Total Hours Worked in Picking and Shipping}}$$

The cost of labor

constitutes about 65% of most facilities' operating budgets.^[6]



Lines Picked and Shipped per Hour

The productivity of picking and shipping in lines per person per hour.

By considering the total lines produced across all labor functions, a true representation of operational efficiency can be measured. For example, an advanced piece of technology may be highly efficient in picking but deficient in replenishment. Are these hours considered?

A more realistic view of the facility's performance can be determined by examining the total lines processed throughout the operation.

More than 50%
of warehouse labor resources
are typically involved in
picking, packing & shipping
outbound orders.^[7]

CALCULATION

$$\frac{\text{Total Order Lines Picked and Successfully Shipped}}{\text{Total Hours Worked in Picking and Shipping}}$$



Financial Metrics

Efficiency and accuracy are the most important staples of any business model for almost every industry, but at the end of the day, it comes down to the bottom line.

The most important KPIs, to measure the financial proficiency of an operation, center around two crucial themes: distribution costs and inventory. Uncontrolled distribution costs can easily eat away at margin and make even the most innovative products and services virtually unprofitable. Inventory management is also a critical pillar in any firm's financial standing. Ensuring proper inventory levels is paramount to success.

Tracking a few simple metrics can help any business regain balance.



Distribution Cost

AS A PERCENTAGE OF SALES

Cost to run distributions relative to total sales.

The health of the organization can be measured by tracking distribution costs as a percent of sales. As revenues accelerate, any change in quality or a sudden increase in the distribution cost can indicate the need to take corrective action.



In today's competitive marketplace, **any reduction in the cost of goods** can positively impact **profit margins**.



CALCULATION

$$\frac{\text{Total of Distribution Costs}}{\text{Total Sales}}$$

Distribution Cost

PER UNIT SHIPPED

Cost to run distribution operations relative to the total units shipped through the operation.

Suppliers have focused more on the fulfillment process, providing a strong benchmark indicating potential opportunities for cost reduction through automation and other initiatives.

To create a solution that will drive costs down, a more focused approach can be taken when calculating distribution cost per unit shipped. This can be accomplished by concentrating on specific areas within your distribution center.

CALCULATION

$$\frac{\text{Total Distribution Costs}}{\text{Total Units Shipped}}$$

Inventory Days of Supply

Finished goods inventory on hand to cover a number of days of projected usage.

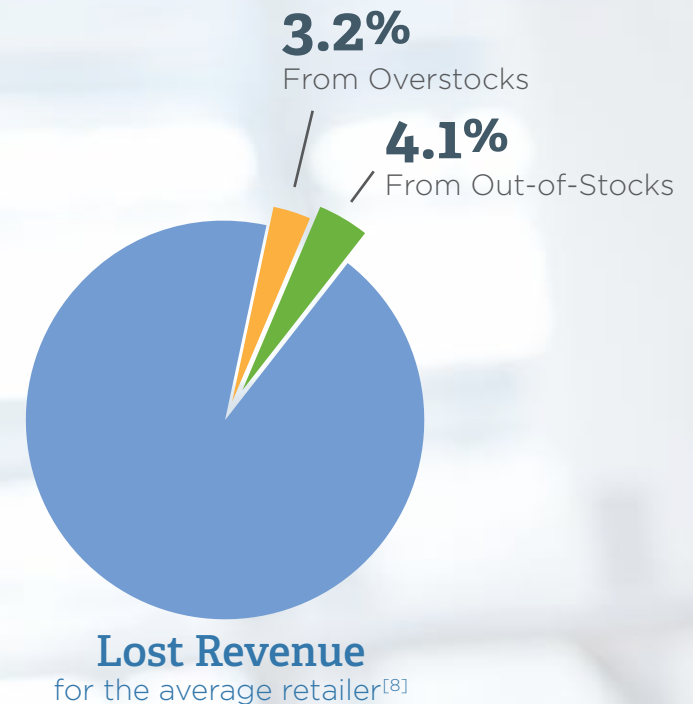
A critical measure of inventory performance is Inventory Days of Supply (IDS). Generally, a lower IDS is favored, but should only be measured within the context of the operation. It tends to vary greatly between industries and can be affected by many factors including product type, business model, warehousing strategy, etc.

Companies that sell products like groceries are going to generally have lower IDS than companies that are outside of the industry because the perishable nature of many items forces a quick turnaround.



CALCULATION

$$\frac{\text{On-hand Finished Goods Inventory Value}}{(\text{Total Annual COGS}/365)}$$



How to Improve KPI Performance

You can't improve what you don't measure.

Each industry may measure different KPIs. It is important to maintain consistent measurements on a daily basis to get the most accurate information. If many points of performance are measured, a trend will appear. Is there an increase or a decrease in productivity and efficiency?

If the data trend shows significant room for improvement, you may want to turn to a Material Handling Solutions Integrator. The solutions provider can analyze the above KPIs with your

internal team along with any other measurements that have been taken. With a thorough analysis, an integrator can help find a solution that will improve your current operations.

Plus, when you measure KPIs regularly and record this information, you can utilize the data for future analysis. This can help you assess how to improve your operations and ultimately choose what type of equipment would provide the best Return on Investment.



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KPI and Benchmarks

	Level 1 Major Opportunity For Improvement	Level 2 Competitive Disadvantage	Level 3 Typical Performance Level	Level 4 Competitive Advantage	Level 5 Best in Class Performance
CUSTOMER METRICS					
On Time Shipments	Less than 95.1%	>= 95.1 and < 98.2%	>= 98.2 and < 99.4%	>= 99.4 and < 99.875 %	>= 99.875%
Total Order Cycle Time	Greater than 72 hrs.	>= 34.96 and < 72 hrs.	>= 24 and < 34.96 hrs.	>= 7 and 24 hrs.	< 7 hrs.
Internal Order Cycle Time	Greater than 31.2 hrs.	>= 18.8 and < 31.2 hrs.	>= 8 and < 18.8 hrs.	>= 3.8 and 8 hrs.	< 3.8 hrs.
Perfect Order Percentage	Less than 85.7%	>= 85.7% and < 95.1%	>= 95.1% and < 98%	>= 98% and < 99.13%	>= 99.13%
INBOUND METRICS					
Dock - to - Stock cycle time	Greater than 24 hrs.	>= 8 and < 24 hrs.	>= 4.5 and < 8 hrs.	>= 2 and < 4.5 hrs.	< 2 hrs.
Inbound Orders Received/Hr.	Less than 1/hr.	>= 1 and < 2.92/hr.	>= 2.92 and < 6.2/hr.	>= 6.2 and < 14.6 /hr.	>= 14.6/hr.
Lines Received & Put Away/Hr.	Less than 8.4/hr.	>= 8.4 and < 15 /hr.	>= 15 and < 25/hr.	>= 25 and < 45.6 /hr.	>= 45.6/hr.
OUTBOUND METRICS					
Fill Rate - Line Items	Less than 90.6%	>=90.6 and <97%	>= 97 and < 98.66%	>= 98.66 and < 99.7%	>= 99.7%
Fill Rate - Orders	Less than 92%	>= 92 and < 97%	>= 97% and < 99%	>= 98.66 and < 99.71%	>= 99.71%
Orders Picked/Hr.	Less than 2.49 orders/hr..	>= 2.49 and < 5 orders/hr.	> 5 and < 8.2 orders/hr.	>= 8.2 and < 24 orders/hr.	>= 24 orders/hr.
Lines Picked & Shipped/Hr.	Less than 14.36 lines/hr.	>= 14.36 and < 25 lines/hr.	>= 25 and < 44.48 lines/hr.	>= 44.48 and < 70.6 lines/hr.	>= 70.6 lines/hr.
FINANCIAL METRICS					
Distribution Cost as a Percent of Sales	Greater than 11.2 %	>= 6.6 and < 11.2%	>= 3.68 and < 6.6%	>= 2.4 and <3.68%	< 2.4%
Distribution Cost Per Unit Shipped	Greater than \$5.00	>= \$1.41 and < \$5.00	>= \$0.72 and > \$1.41	>= \$0.30 and <\$0.72	< \$0.30
Inventory Days of Supply	Greater than 90 days	>= 55.8 and < 90 days	>= 30 and < 55.8 days	>= 17 and < 30 days	< 17 days

Source: Tillman, Joseph, Karl Manrodt, and Donnie Williams. 2015. DC Measures 2015. Ebook. WERC.

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