

## **How to Evaluate Warehouse Performance**

### **Introduction**

Supply chain management is an approach to managing logistics networks that encompasses all of the companies and organizations involved in ensuring that the final customer receives the right product at the right time, within the agreed budget and in the correct quantities. The ultimate objective is to improve our customer's competitive advantage and to maintain this in spite of competitive forces and changing customer needs.

Warehouses, and good warehouse management, are integral to this approach. In fact, the warehouse has taken on a strategic role of attaining the goals of reducing product cycle times, lowering inventories, reducing costs, and improving customer service levels.

In order to help attain these goals, we need to evaluate warehouse performance from time to time (and on a regular basis) as a first step towards developing a plan to improve performance. This document will provide you with the basis for evaluating warehouse performance. The information presented will help you to identify areas for improvement; with a view to developing a performance improvement plan to reduce costs and increase profitability.

By reading this, you will discover how to:

- Identify what to look for in the warehouse when assessing performance.
- Create a framework through which to assess the value of warehouse performance and help warehouse staff focus on performance improvement activity.
- Use a comprehensive checklist of areas for improvement so that you can then develop a performance improvement plan.

### **Main Area**

The following are the key areas to be examined when evaluating the warehouse for potential performance improvement.

- Use of space
- Labor utilization
- Distances traveled/materials handling
- Handling equipment utilization
- Customer service levels
- Inventory Management Effectiveness and Stock Control Systems
- Damages
- Safety record
- Costs

Each of these areas is presented below in terms of:

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1. What we are trying to achieve/aims,
2. Key performance measures and
3. “Quick and dirty” measures. The “quick and dirty” measures are based on my own experience and are intended to provide “first glance” indicators that potential problems exist where improvements can take place. As you walk through a warehouse apply the “quick and dirty” measures to begin to identify areas for potential performance improvement.

### **Areas for Performance Improvement**

The key areas for performance improvement are outlined below.

#### *Use of Space*

**Aims:** Always use the available space in the best way so that space is not wasted. This includes use of square footage and use of the cube, to include appropriate space allocation between the key activities in the warehouse/store i.e., receiving, storage, dispatch, labeling areas have space allocated to each function appropriately.

**Key measures:** This includes amount of square and cubic space available for storage vs. utilized, amount of cubic space available vs. utilized, etc.

**“Quick and Dirty” measures:** Look for “honeycombing” - many empty spaces in and amongst storage areas, racks not configured to suite goods stored, empty space above storage racks, empty space in plan i.e., square footage not well used, congestion in some areas with proportionately large empty spaces in other areas, gangways (aisles) wide enough/too wide, disproportionately large areas allocated for some functions (e.g., receiving) compared to others (e.g., storage).

#### *Labor Utilization*

**Aims:** Here the aim is to use your staff – both management and direct reports - in the most productive way.

**Key measures:** Key measures would include efficiency (picking rates, etc.), absenteeism/time keeping, overtime levels, etc.

**“Quick and Dirty” measures:** Establish the number of direct staff that are meant to be working in the warehouse/store and look for how many are actually present on site. Carry out rough activity sampling on those who are present (approx. 10-15 people each study). Every half-minute for ten minutes observe which staff are actively working and which staff are idle and record the results. Do this a few times over the day then use the results to determine the percentage of idle time and broad potential for labor saving. Observe the general efficiency levels (i.e., *rate* of work when working). Ask if there is overtime is being worked on a regular basis and if so reasons for overtime.

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### *Distances Traveled/Materials Handling*

Aims: The aim is to travel the shortest distances possible and following the most direct routes (as opposed to backtracking, etc.) and to handle the product as few times as possible.

Key measures: These include distances traveled, numbers of times a product is handled, etc.

“Quick and Dirty” measures: Look for backtracking and cross flow of people and handling equipment, excessive distances traveled in locating and retrieving stock, double handling, products stacked on the floor where they could have been placed directly into storage racks, materials not placed or located at working height.

### *Handling Equipment Utilization*

Aims: Here the aim is to use the handling equipment in the most efficient and effective way. This would include optimizing distances traveled by equipment, movement rates (speed of operation), lift heights and loads carried.

Key measures: Includes speed of movement and operation vs. potential, actual lift heights vs. equipment potential (under safe operating procedures), load carrying capability vs. actual loads carried, ergonomic considerations, etc.

“Quick and Dirty” measures: Look for handling equipment carrying much smaller loads than they are capable of carrying, excessively long distances traveled (e.g., forklift trucks are designed to handle goods in the vertical plane and not for excessive travel in the horizontal plane), handling equipment used to lift loads to heights much below capability on a regular basis, handling equipment used as “storage media” i.e. handling equipment stationary holding load while operative manually picks cartons/items from load.

### *Customer Service Levels*

Aims: Here the aim is minimum turnaround time on customer’s orders from the time an order is received into the warehouse/store until the order is dispatched.

Key measures: The time it takes to supply customer’s orders, i.e., time of receipt of order until dispatch vs. planned lead time, average number of orders received daily vs. orders filled, orders dispatched vs. plan, on time dispatch of orders, backorder situation by customer/product and length of time on backorder, etc.

“Quick and Dirty” measures: Ask management what the promised and actual lead times are on orders and whether these are being achieved – look for uncertainty and ambiguity in answers. Look for delayed, or partially filled, orders and establish how long they have been delayed and the reasons for delay. Track a “typical” order through the process from time of receipt of the order until the time of dispatch – look for delays, double handling and other non-value added work – compare to lead times quoted by management. Ask if deadlines are being missed and to what extent this is taking place. Ask if there are

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customer complaints and the extent and typical nature of these complaints. Ask if there are delays in shipping orders and typical reasons and extent of delays.

### *Inventory Management Effectiveness and Stock Control Systems*

**Aims:** Here the aim is to carry the appropriate amount of inventory – in the various categories (ABC) – to meet given service levels at the lowest cost – and to have the appropriate control systems in place that would provide this management control. It would include managing inventory levels to ensure that they are kept at target levels and are not “ballooning” in aggregate. Also would include re-examining max/min and safety stock levels on an ongoing basis to determine if they can be adjusted downwards and ongoing review of inventory to determine if the service levels can be maintained or improved with the same or less inventory.

**Key measures:** Includes stock levels – actual maximum quantities vs. standard, stock outs – number and extent, ABC analysis used for inventory management purposes, stockholding – total value of stock held vs. target levels for the various categories of stock (ABC), stock turns vs. target stock turns, obsolescent stockholding levels and values – systems for identifying and reducing obsolescent stock, etc.

**“Quick and Dirty” measures:** Use the “touch test” to see if excessive dust has settled on products – may indicate excessively slow moving or obsolescent stock. Ask management if any form of ABC analysis has been carried out – and if this is being used as a basis for inventory management/reduction and if so, how. Ask what the current value of stockholding is, what the target is and for which products target levels are being exceeded and look for possible reasons – max/min safety stocks not appropriately set/measured, lack of management control, etc. Determine the products that are not turning over at the target rates. Ask if management has determined what stock is obsolescent and ask if there is a policy in place for obsolescent stock reduction.

### *“Damages”*

**Aims:** The aim is to always keep damages to a minimum in the warehouse.

**Key measures:** Tracking the total numbers and values of stock damaged and related causes, trends in damages, etc.

**“Quick and Dirty” measures:** Look around the warehouse/store for damaged stock and establish if damages are prevalent throughout and if there appears to be a problem with excessive damages. Establish if there are certain areas in the warehouse/store where damages are more prevalent than in others – could be related to excessive congestion in certain parts of the warehouse/store – excessive handling in parts of the warehouse/store – poor training of operators in parts of the warehouse/store. Look for stock damages at or near floor level – if stock is damaged at, or near floor level, it could indicate carelessness on behalf of the forklift truck drivers when reversing. Look for aisles too narrow not allowing enough turning room for handling equipment to place and remove stock. Look for rows too close together – could lead to damages when placing and removing stock.

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### Safety Record

Aims: The aim is to always ensure safe working practices and have the appropriate safety equipment in place, located appropriately in the warehouse/store and in good working order.

Key measures: Location and quantity of safety equipment vs. requirements (in rack sprinklers, fire hoses, etc.), location and number of fire exits vs. requirements, number and severity of safety incidences, etc.

“Quick and Dirty” measures: Look for unsafe working practices, e.g., forklift trucks reversing without using warning bells. Look for safety equipment to be in place and ask management when it was last tested. Ask if there have been accidents or safety incidents in the recent past and the nature and severity of these-ask if the nature and severity of safety incidents is increasing.

### Costs

Aims: The aim is to contain costs and to reduce and manage costs throughout.

Key measures: Include comparison of actual vs. projected costs, services costs, labor costs, administration costs, etc.

“Quick and Dirty”: Ask management where the greatest costs are and where costs are exceeding budget and why. Look at these costs to see where costs are mushrooming, e.g., rapidly expanding administrative costs. Ask management how often costs are reviewed and what the review process is. Use the following as a rough guideline for comparing cost proportions:

Typical Warehouse/Store Cost Breakdown:

|                |        |
|----------------|--------|
| Buildings      | 40%    |
| Labor          | 35/40% |
| Equipment      | 10%    |
| Administration | 10%    |

This may indicate where certain costs are disproportionately high, e.g., labor costs are 60% -- would indicate possibility of excess staff in the warehouse for methods improvement, etc.

## **Conclusion**

Enhanced warehouse performance is integral to enhanced supply chain performance. The information in this document will help you evaluate your warehouse for areas for potential performance improvement. Bear in mind, however, that the guidelines given above are simply that – guidelines - and not intended to be prescriptive or exhaustive in nature. They are intended to provide a useful framework through which to assess warehouse performance and to provide areas of focus for that assessment.

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Once you establish potential areas for performance improvement you will need to undertake further work to verify that significant performance issues do exist and to what extent these exist. Based on your findings you can then begin to develop a plan for performance improvement in key areas.

Use the attached checklist for warehouse performance evaluation to get you started.

**Checklist -Areas for Performance Improvement in the Warehouse**

| Situation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Yes | No |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| <p><b>Use of Space</b></p> <ol style="list-style-type: none"> <li>1. "Honeycombing"</li> <li>2. Racks not configured to suit stock held</li> <li>3. Empty/unused space above racks</li> <li>4. Empty/unused space in plan</li> <li>5. Square footage not well used-congestion is some areas and waste space in others</li> <li>6. Aisles/gangways too wide</li> <li>7. Disproportionate allocation of space</li> </ol> <p><b>Labor Utilization</b></p> <ol style="list-style-type: none"> <li>1. Actual number of warehouse operatives on site less than prescribed number</li> <li>2. Warehouse operatives underutilized.</li> <li>3. Rate of work low</li> <li>4. Overtime being worked on a regular basis.</li> </ol> <p><b>Distances Traveled/Materials Handling</b></p> <ol style="list-style-type: none"> <li>1. Complicated materials flow paths</li> <li>2. Backtracking in flow path</li> <li>3. Long operator walking distances</li> <li>4. Excess manual handling</li> <li>5. Double handling/re-handling (excessive picking up, putting down)</li> <li>6. Products stacked on the floor where they could have been placed directly into storage</li> <li>7. Materials placed or located at working height</li> </ol> <p><b>Handling Equipment Utilization</b></p> <ol style="list-style-type: none"> <li>1. Handling equipment carrying much smaller loads than capable of carrying</li> <li>2. Excess use of lift trucks for transportation vs. stacking, retrieving</li> <li>3. Handling equipment used to lift loads to heights much below capability on a regular basis</li> <li>4. Handling equipment used as "storage media"</li> </ol> |     |    |

| Situation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Yes | No |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| <p><b>Customer Service Levels</b></p> <ol style="list-style-type: none"> <li>1. Promised lead times on orders being achieved</li> <li>2. Delayed, or partially filled, orders in warehouse</li> <li>3. Delays, double handling and other non-value added work in order completion process</li> <li>4. Missed deadlines</li> <li>5. Excess customer complaints</li> <li>6. Delays in shipping orders</li> </ol> <p><b>Inventory Management Effectiveness and Stock Control Systems</b></p> <ol style="list-style-type: none"> <li>1. Stock outs</li> <li>2. Slow moving/obsolete stock</li> <li>3. Plan for dealing with obsolete or slow moving stock in place</li> <li>4 ABC analysis has been carried out and used for inventory management purposes</li> <li>5. Target value of stockholding being exceeded</li> <li>6. Max/min safety stocks not appropriately set/measured</li> <li>7. Products that are not turning over at the target rates</li> </ol> <p><b>Damages</b></p> <ol style="list-style-type: none"> <li>1. Damaged stock</li> <li>2 Damages prevalent throughout</li> <li>3. Areas in the warehouse/store where damages are more prevalent than in others</li> <li>4. Stock damages at or near floor level.</li> <li>5. Aisles too narrow not allowing enough turning room for handling equipment</li> <li>6. Rows too close together</li> </ol> <p><b>Safety Record</b></p> <ol style="list-style-type: none"> <li>1. Unsafe working practices</li> <li>2. Safety equipment in place</li> <li>3. Safety equipment tested on a regular basis</li> <li>4. Safety incidents in the recent past</li> <li>5. Rate of safety incidents increasing</li> </ol> <p><b>Costs</b></p> <ol style="list-style-type: none"> <li>1. Costs are exceeding budget</li> <li>2. Costs are mushrooming in particular areas</li> <li>3. Costs are reviewed on a regular basis</li> </ol> |     |    |

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