

Warehouse Operational Efficiency and Inventory Health

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Abstract

Warehouse operations are measured by service levels, volume of transactions handled quality of transactions and most importantly inventory health maintained. By Inventory health in a warehouse, this article referring to Physical Inventory Accuracy, the way inventory is physically kept in locations and discipline maintained in transactions, inventory maintained in the system. Inventory Health, in turn, is dependent upon System setup, floor layout and infrastructure coupled with defined process, compliance, and regular inventory checking, audit and training. The key to good warehouse operations is reflected in availability of documented process covering all above mentioned functions and documented proof of day to day compliance of above tasks. All warehouse processes are documented in Standard Operating Procedure, which is the guiding bible. These processes are further broken down to Work Instructions for each job function and task or activity.

Keywords: *Warehouse Operational, Inventory Efficiency and Inventory Health*

1.0 INTRODUCTION

Global business models are rapidly changing. Shorter life cycles of products and new business need exert pressure on Supply Chain managers to keep pace with the new scenarios. They are often faced with the target to reduce logistical costs and establish new supply networks. It has now become a common practice to outsource all logistical activities to third party vendors both in procurement side of logistics as well as finished goods, spare parts and reverse logistics areas too. Today the 3PL service providers market is filled with players of all sizes and competencies, from single owner driven local service provider to multinational companies. Most of the companies have traditionally been transporters or freight forwarders and over the years have acquired warehousing and contract management capabilities keeping in line with the growing needs. Selecting a 3PL service provider to provide warehousing services needs careful considerations on the part of the SCM manager responsible for the decision. The right partner selection is important because you are handing over the company's assets to someone else's custody and secondly any performance hindrance can seriously affect the sales and revenues of the company in case of FG Supply chain or effect the plant production in case of Raw Material supplies.

1.1 Size of Company, Structure & Responsiveness

The business volumes and size of the project will determine the selection of the Service Provider. Most of the Multi-National Companies can offer integrated logistics services to manage the entire supply chain including freight, transportation and warehousing; you will also find companies at regional or local levels that offer warehousing as a core competency area. The size of the company is important as a key parameter as one would not want to deal with a small company that does not have the capability to invest or a fly by night operator. The Management structure of the company holds a clue to their focus on the various businesses and customers. This will enable you to find out the kind of management focus that the service provider has in warehousing or CL as a product.

A multinational company being able to invest into your business does not necessarily make the best choice. They can more often turn out to be expensive. Besides the availability of CL expertise in another location or country does not necessarily ensure competence locally. However, Multi nationals are preferred as partners most of the times due to many other advantages like integrated services, global standards, ability to invest, etc. Responsiveness measures the quality and speed with which the service provider company responds to your bid request and engages with you to offer a solution. The nature of response and interaction hold key to the company's culture and enables us to evaluate options of investing into a relationship or partnership possibility.

1.2 Technical & Operational Competency of Vendor

A vendor should be able to demonstrate the competency regarding its experience in managing functions for other customers and products. Besides the competency can be demonstrated and seen in the solution building process or document prepared and presented by the vendor. A company with experience in managing distribution center operations would have the team comprising of people with sufficient experience in the operations at management level, supervisory and staff levels. The company needs have to have a strong IT management and functional

operational competence and capability in managing the IT system at site as well as being able to support the site with IT administration at management level.

1.3 Service provider's interest and attitude towards your business proposal

The capability, interest and attitude of the vendor would help you to choose the vendor who is interested in your business with long term prospect and is willing to invest time, money and effort and not somebody who is chasing business as a sales target and doesn't have the required interest, organizational and operational capability to service your business.

2.0 LITERATURE REVIEW

2.1 Internal Planning for Effective Operations in Warehousing Projects

Globally outsourcing 3PL Market is growing fast. In the US, the industry is expected to reach over \$150 billion as compared to a global estimate standing at \$450 billion as per industry experts estimates. Companies aiming for aggressive growth in global scenario recognize the need to partner with 3PL logistics providers to be able to establish supply chain networks across countries. Outsourcing is the only vehicle with which they can operate and cannot afford to manage functions in-house. Warehousing activities whether in Finished Goods logistics or Plant logistics, are very critical to the entire supply chain. Take the example of an automobile manufacturer who depends upon a 3PL to manage complete inbound activities including vehicle unloading, inventory management, and JIT supplies to the plant.

The manufacturing facility completely is dependent upon the 3PL service provider. Both the buyer and 3PL co-exist together at the same location, over a period the systems and operations get enmeshed and integrated into the process of localization and finding practical solutions. In such cases, any non-performance on the part of 3PL due to any reason will affect the plant output. It is not possible to make a sudden switch to another 3PL overnight. Hence, the marriage has to be lived through and managed. Therefore choosing a 3PL partner for your warehouse operations needs thoughtful considerations and evaluation.

Of course, any project of this nature is dependent upon the relationship between the buyer and 3PL. Collaborative and partnership approaches have yielded very good results than a buyer and seller relationship. Where ever buyers have invested time and interest in engaging directly with 3PL operations, with helping in training and periodic assessments coupled with motivational exercises, have helped 3PL operations remain focused on the deliverables and maintain efficiencies. Before you start looking for a 3PL partner, internal alignment with management, clarity of the project and criteria for selecting 3PL Partner is to be worked out in detail. Following factors are to be considered internally to plan the exercise:

Internal Decisions: Outsourcing project should be clearly defined as to Scope of Activity, Business Risks Identified. Decision to outsource with definite timelines in-line with business function should be approved by Management. Budgetary approvals should be in place for the project implementation as well as the monthly logistical service outflow from concerned business functions and Management. Without clarity, many times RFP & RFQs are floated and discarded resulting in wastage of time and effort of all parties concerned.

Defining Project Scope and Responsibilities: Plant Supply Warehouses, Regional Distribution Centers, VMI, etc. projects are often very huge in size of operations as compared to a flow through finished goods warehouse in a supply chain network. Such big projects are characterized by huge capital outlay, multiple process designs, and infrastructure-intensive and involve complex IT system design and interfaces. RFP / RFQ would need to define each element very clearly and describe the scope of activity and responsibility on the part of the buyer as well as the 3PL. The document should define clearly the capabilities and competencies required for the project, the timelines, and deliverables. Detailed understanding of the project scope will ensure that only the 3PL who has the required capability and strength will bid for the project. An outsourcing project should have **clear internal guidelines** about the ownership of the project, individual program owners, business unit who will own the project after implementation coupled with operation management and escalation process. This information can be shared with the 3PL in the RFQ, and one should expect similar structure from the 3PL in its response document.

Defining Length of the Contract with possible scope for extension and period of extension is essential to help 3PL work out financials. It helps to define the methodology of costing template along with the RFQ to ensure common platform. Finally **determining process for evaluation of vendor** is very essential. What are the capabilities that you look for in a 3PL, what is the selection criteria, who are the internal team members to be involved in selection process and decision making should be clearly enumerated?

2.2 Warehouse Operational Efficiency Contributing Factors

Managing Warehouse Operations is akin to playing a symphony with people, systems, and processes. As long as these elements are balanced and in harmony the operations go on smoothly and efficiently.

People: People are very important assets of warehouse operations. Human resources can be the strongest and the weakest link to warehouse performance. Even in a highly automated and system controlled design, warehouse operations are heavily dependent upon people to run and manage operations. Typically, in warehouse operations, besides management structure, the operations resource categories are MHE Operators, Operations staff who manage shipments, put away, material picking tasks and other operations including labeling, packing, kitting, inventory counting, documentation and systems operators. These resources are mainly categorized as team leaders and operators. Normally in warehouse operations, the manpower resources structure is employed in a mix of, on the company role jobs, on contract and temporary or daily wages and outsourced contract labor. The categorization is based on the nature and skill set requirement of each job coupled with criticality of the position and the local supply and availability of resources.

Workforce - Quantity, Job Structure: Many times in 3rd party managed warehouses, workforce strength is often an issue that affects the operational efficiency. It has been noticed several times that few local managements try to cut corners by understaffing at various levels and extending the working hours or job responsibilities and trying to save costs. There can be several instances of shortage of manpower from the strength that has been planned and budgeted for. Any warehouse operations need to have an optimum workforce budgeted based on clear-cut tasks and volumes of transactions. As all operations are time bound activities having inter-related tasks and dependencies, estimation of work and work division clarity is essential to avoid overstaffing or understaffing. Overstaffing can result in slackness in individual performance levels besides increasing the costs. Warehouse activities very often are found to be seasonal and cyclical. The business type and seasons resulting in peak seasons and low seasons place similar demands on the warehouse to step up operational throughputs or cut down on operations. Besides internal requirement also creates temporary demand for workforce. Extra teams are called for during year-end operations, annual wall to wall stock takes or any internal inventory exercises, etc. Warehouses source temporary labor and resources from local nearby areas to manage this sudden surge in demands. Any change in internal process or business process or improvement in systems and processes can lead to redundancies. Many times, they are having to face over staffing problems and need to look at ways to reduce numbers or re deploy resources into other activities. Therefore, warehouse operations are never in a stable state or status quo for a long time. Managing people dynamics holds key to managing operations effectively.

Right skill sets: In warehousing operations, process and system compliance demands keen focus and discipline at all levels. The skill sets and attitude requirements are different for different jobs. The skill set requirement is more linked to attitude and functional capability of the persons and less dependant upon knowledge or educational qualification. Any person who works on Forklift would need to have a good sense of control, direction, and patience. Similarly, a picker would need to be able to identify and have a feel of locations, Inventory SKU types and be able to identify the part numbers, description. At operating level, people are required to understand what is expected of them, be able to follow the process and comply with the process and instructions. The operations require manual dexterity and ability to be on feet for long durations besides being able to bend down and reach up constantly to pick up items. Ability to lift small weights and walking distances in the warehouse are a Must Have strengths. These practical points have to be kept in mind and evaluated while hiring people.

Attitude and Outlook: It has been seen in warehouse operations that the workforce attitude towards the company, job and customer plays an important role in the operations. Studies done in various cases have shown a direct link between people's attitude and commitment to day to day operations. Wrong shipments, short shipments and defective deliveries coupled with warehouse equipment damage, misuse and accidents are few of the results of the problems that show up and need correction of attitudes at individual levels. Inventory management functions are highly vulnerable to individual performance and attention to detail. A good warehousing operations management team who is sensitive to the above factors and is equipped to manage a team and the dynamics would be successful in ensuring efficient operations.

2.3 Physical Inventory

Warehouse floor will have layout design with designated areas for stocking inbound materials waiting to be in warded, stocking locations with locations marked either in racks, shelves, bins or floor locations to store pallet level, carton level or unit level items and outbound shipment area where materials are removed from inventory locations and kept for consolidation and preparing cargo for outbound shipments. A good warehouse floor will have clearly marked aisles, locations with labels depicting various kinds of inventory like good stock, stock on hold/ QA, defectives, returns materials, reserve stocks, etc. The key to inventory health as well as to operational efficiency lies

in people following process to keep the right material in the right location, in the right way and updating system transaction to complete the cycle. Location accuracy is critical to the operations. In a huge operation, materials are picked based on system guided pick lists or RF enabled picking. Any wrong material lying in the location picked may get missed out in the process and end up as wrong shipment or pickers may have to waste a lot of time looking for right part numbers if the location accuracy is not perfect and the lead times cannot be maintained.

2.4 System Inventory

Warehouse operations and stocks are driven by Inventory management systems or warehouse management systems. WMS systems manage locations, initiate and control transactions for in awarding and outward shipments tasks coupled with inventory management besides interacting with external sources to receive advance shipment notices and to report back on warehouse inventory and transactions. In all cases system transactions and physical transactions are very closely linked. System always initiates action and tasks that are executed by Physical operations. Since system is the brain that drives operations and inventory, system inventory and physical inventory needs to be matching perfectly at all times. Matching system transactions with the physical transaction is a must and very crucial in day to day operations.

All system transactions have a bearing on physical transactions and vice versa. Therefore, process adherence to complete transactions is a must. Taking a simple example, if an operator initiates a change of location of one particular part number for operational purpose and does not update system, the system inventory will show wrong inventory location and not match with physical location. Similarly, if the system initiates any transaction that is not made good on the location will impact stocks adversely. In ongoing operation thousands of transaction keep taking place in the system and tasks keep getting generated and updated. Even in an RF driven operations scenario, there is always a need to ensure that every system transaction is closed. Best practices in warehouse operations involve a daily audit of system transaction audit and location accuracy audit on a continuous basis on all shift. System integrity checks are also conducted frequently.

2.5 Inventory Audits

Finally, a warehouse that gives important to inventory audits as much as to its operations reflects good healthy warehouse operations. Inventory checking and counting is practiced as a daily activity. Inventory counting teams consist of system operators and shop floor operatives. Inventory counts are normally system driven and stratified where a percentage of locations or Inventory is verified as per list thrown up by the system. In a 4-week cycle or a quarterly cycle, all locations in the warehouse would have been counted, and system throws up inventory discrepancies and transactions that are then resolved by management. Annually wall to wall audits are conducted to count all inventory in the warehouse before starting a new database for New Year. Besides system driven inventory counts, inventory audits are initiated by operations to verify process compliance and stock/ location accuracy.

3.0 CONCLUSION

In any Supply Chain, Inventory Management and Warehousing form a part of operations intensive function and is one of the key building blocks in the entire chain. Most of the inventory is held at the warehouses as compared to the pipeline, and the efficiency of the warehouse operations will determine the further supply chain efficiency. Though it is a normal industry practice now to outsource the warehousing operations to a 3PL Logistics service provider, the SCM managers who are the decision makers and network owners would need to know the intricacies of warehouse operations and get actively involved in choosing the right partner and right facility. A distribution center or a warehouse is the key to the entire model as it holds the inventories and also manages other operations like bundling, packing, labeling, co-packing, kitting, etc. as per buyer requirement. Most of the marketing and buyer's requirements are met with from the warehouses. Many factors and elements contribute to successful operations of a distribution center. The time taken to detail the project and build a model taking into account all considerations will go a long way in ensuring operational efficiency of the supply chain.

Physical Infrastructure: The building blocks or operational criteria of an ideal Warehouse Management System includes location, structure, roof height and flooring, design and layout external, utilities and facilities in the premise, internal layout design, storage infrastructure, material handling equipment, lighting and safety equipment and mechanisms, office infrastructure, IT and communications infrastructure, power and backup services and finally accessibility of the location and availability of labor. The list can be exhaustive and depends upon specific needs of each buyer's business.

IT Systems: The efficiency of warehousing operations is highly dependant not only upon the physical infrastructure but the system and intelligence that controls, directs and manages the physical transactions. A robust

WMS capable of managing inventory and locations which is RF driven or enabled would be the backbone of a good efficient warehouse.

The Warehouse Management System controls two sets of operations:

On the inventory front, the system maintains inventory in the warehouse at Zone & individual location level, SKU level, pallet wise, carton wise and unit level inventories for multiple customers and allows specific inventory attributes and parameters to be built in to manage, allocate or block the inventory. The system also provides options to adapt FIFO, LIFO or other methods of inventory flow.

On the Operations front the system manages, controls and directs all operations including receiving processes, put away processes, order processing, inventory allocation, picking process, packing process and finally shipment along with inventory updating. The intelligent system guides and helps operations manager to schedule and manage all operations for various groups and teams simultaneously depending upon the workload and pattern and thereby manage resource allocation too.

Another critical function of WMS is the cycle count process that is required to maintain the health of the inventory. WMS initiates daily cycle count and wall to wall counts as per user specification and attributes. Lastly WMS can provide various types and categories of reports and information related to inventory, shipments, transactions, timings of transactions and many more parameters.

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