Focus on the process rather than on the inventory. This philosophy is based on the idea that a warehouse is a service provider, and as such, it should focus on providing the best possible service to its customers. This means that the warehouse should be well organized, efficient, and always ready to respond to changes in customer demand.

Inventory Positioning


In a push supply chain, distribution decisions are based on forecasts, but the forecast is always wrong. In a pull supply chain, the determination of demand is based on actual customer demand. The manufacturer only produces to order, which does not work when leadtimes are long. With a push pull system, a manufacturer builds components to stock, and assembles the finished unit when an order is received. This process is also referred to as postponement or delayed differentiation. Customization of the product is based on the pull supply chain, but production of the components is push based. The authors claim that this strategy will reduce inventory costs while providing short lead times.

Inventory Positioning


In a push supply chain, distribution decisions are based on forecasts, but the forecast is always wrong. In a pull supply chain, the determination of demand is based on actual customer demand. The manufacturer only produces to order, which does not work when leadtimes are long. With a push pull system, a manufacturer builds components to stock, and assembles the finished unit when an order is received. This process is also referred to as postponement or delayed differentiation. Customization of the product is based on the pull supply chain, but production of the components is push based. The authors claim that this strategy will reduce inventory costs while providing short lead times.

Integrate Before Investing

By Mary Aichlmayr, ©2003, two volumes, 653 pages.

Each edition of this reference guide becomes bigger and better. This edition expands on the previous one by including new entries in Latin America. A report on the US warehouse industry includes tables listing the 20 largest commercial warehouses in North America, the 20 largest refrigerated warehouses, and the 30 largest companies that are not listed in this publication. The editor wrote that companies in the last group have become takeover targets. This publication is a class by itself in the detail published about logistics service providers.

Guide to Classifying Industrial Property


For those whose prime interest in property investment, this reference book is a “must read.” The authors are associated with First Industrial Realty Trust, Inc. A valuable tool provided by Professor J. R. DeLisle, of the University of Washington. Properties are divided by industrial classification, then by location, and then by investment characteristics. Warehouse distribution is subdivided into regional warehouses, bulk warehouses, heavy distribution, refrigerated distribution, and rack supported warehouses. Described in the location section are the kinds of sites that are most suitable for each of the property types. The location section is a guide to the general features of a property that are projected to add value to that property.

The Upside of Risk

By Mike Kilgore, Chief Logistics Officer, April 2003, pg. 8.

Logistics is a risky business, and this unusual essay turns the spotlight on those events that are most likely to cause trouble. They can be summarized, as “too many eggs in one basket.” The author described five kinds of concentration that will cause trouble. The first is concentration on one site, or the procurement of an item that is produced in only one plant. The second is concentration on sources, or reliance on a single vendor. Third, is concentration on transport mode which creates a problem if a labor dispute causes a shutdown similar to the West coast dock strike. Service concentration, or reliance on a single carrier who may not be able to handle a spike in volume is fourth. Fifth and final, is capacity and low inventory. If the flow is disrupted, as in the case of the 9/11 attack, assemblty plants will be shut down.

Macro View

By George Shultz, APICS, June 2003 pg. 28.

Proceedings from a recent meeting of Supply Chain Council, an organization with 700 member companies are reported in this article. The most critical supply chain management is the delivery of cash. Improved return on capital receives greater emphasis than ever before. Effective supply chain management can be a source of capital appreciation. Wall Street rewards some companies for exceptional supply chain execution. Are these opinions that were expressed by the various executives attending the conference.

WAREHOUSING FORUM

The industry publication dedicated to helping warehouse managers and their bosses improve productivity and manage more profitably with tips, comments and articles written by practicing professionals.

Most of our attention to the audit process in this publication has been focused on “how to,” but underlying all this commentary is “why?” Auditing any operation is hard work. Indeed, some may believe that there are insufficient potential results to be gained from the audit process. Just as people get sick, warehouses have the ability to slip into trouble. Typically, the trouble does not strike suddenly, but creeps up in almost imperceptible ways, and is not noticed until it is difficult to correct. Deterioration of customer relationships is one example of trouble that can be very difficult to detect until it is too late and the damage has been done.

Management looks for benchmarks, or standards, and frequently they have not been established because measurements have not been taken. When data gathering is part of the audit process, it is relatively easy to create and revise performance standards. Management wants continuous improvement in profitability. Just as we have reliable metrics to gauge the profitability of the warehouse operation, measurements also serve as a baseline to consider whether performance is improving. A good point at such consideration is to create a reasonable estimate of the benefits that will occur if the new technology is acquired. As processes are audited, you are likely to uncover redundancy in the form of reports and tasks that are assigned simply because “we’ve always done it that way.”

Relationships with people are fragile, and frequent examination of the people management process also can provide an early warning of potential trouble. We also audit the physical side of the business: Facilities, housekeeping, and inventory. The audit process provides early indication of potential problems.

As we examine the “why” of the audit process, each of these points will be considered in greater detail.

Staying Healthy

The first reason we audit warehouse performance is to provide an early warning that the operation is slipping into trouble.

What are the signs of trouble in a warehouse? Illness can strike suddenly in people, but seldom is trouble a sudden occurrence. Customer relationships depend upon perceptions. Warehouse service is only as good as the customer perceives it to be. Those perceptions can change for subtle and irrational reasons, as basic as two people who are unable to work together.

For the warehouse service provider, customer relations are the lifeblood of the business. Consider this example. A health in a warehouse is to create metrics, reports, and incentives that serve as a guide to what needs to be done. Housekeeping provides an excellent example. Good housekeeping is a matter of habit, as is bad housekeeping. When the appearance of a facility starts to change, there are always reasons. Perhaps the work crew is “too busy,” most likely meaning that management has set other priorities before housekeeping. Sometimes a single supervisor has a poor example, and housekeeping in his/her department begins to deteriorate because the signal has been received that nobody cares. When sloppy habits become firmly ingrained, they can be difficult to change. For this reason, housekeeping requires constant monitoring, to ensure that excellence becomes a habit.

Damage control is another case where slipping can occur over time, as bad habits set in. Warehouse damage is often caused by careless, or sloppy handling. Observers have noted that most individuals drive their automobiles by habit, so a reckless driver handles every vehicle carelessly. The same habits can govern the operation of mobile lift equipment, which can be corrected by training, so training should be included in the audit process. When a warehouse crew has become accustomed to a certain level of warehouse damage, there is a tendency to accept the status quo. A regular audit process can assist management in discovering and correcting high levels of warehouse damage.

Monitoring Customer Relations

The prime reason for the existence of warehouses is to provide better customer service than would be available without the operation. Relationships with people can be fragile and transient, changing as the people change. A warehouse manager who has maintained an exemplary relationship with one customer may need to behave differently if a key person at that company is replaced by an individual having different priorities and a different personality.

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multi-city warehouse provider replaced its retiring chief executive with a new individual. The new CEO was not liked by his subordinates, but over time he became apparent that his relationships with customers had developed some serious flaws. Only after the company had lost customers, did they become apparent to the Board of Directors that the CEO had to be replaced. Within a very brief period, under this administrat- or, the company’s customer relationships sustained seri- ous damage that took many months to repair.

For the private warehouse operator, there may be sev- eral kinds of customers, both internal and external. For example, we can give feedback to the warehouse operators to provide dependable service to the stores. In this case, the store managers are the customer. For the e-commerce or mail order fulfillment center, the custom- ers are individual consumers. In some warehouse opера- tions, the consignee that receives the shipment maybe the customer’s customer; yet, that consignee is truly the most important judge of our quality.

We monitor customer relations by asking the custom- ers how they feel about service levels. It is easiest to survey a relatively small number of store managers than it is to monitor the perceptions of millions of mail-order con- sumers; yet, the measurement of customer relationships requires a constant need to ask everyone, “How are we doing?” When slippage is detected, we must find out why.

Auditing For Process And Cost Control

Cost control is a serious issue. How much does it cost to position and load the merchandise? More important than the cost collected is the value added by better positioning and loading. The cost to the company, then the company need not have any com- mitments to third parties.

Third, we outsource to enhance a customer relation- ship. Many companies decide that it is better to outsource and save money than to try to keep relationships with third parties. Outsourcing is the quickest way to solve the problem.

Finally, we outsource to reduce risk. Our marketing warehouse within the next 60 days and our company might be wrong. Outsourcing is the best way to control the waste involved in handling merchandise more often than necessary. This is how the legendary Peter Drucker illustrated the this is the situation, and staging is occurring, it would be exposed as redundancy during an audit, and recom- mended for elimination.

Auditing To Maintain Quality

For the company placing high priority on quality con- trol, the purpose of the warehouse audit is to be certain that the quality standards established elsewhere in the or- ganization are maintained at the warehouse. For example, a quality audit might focus on lot control. In the produc- tion of pharmaceuticals and other products, each item may consist of several products and each must be separated. Sometimes the newest lots are held in quaran- tine pending a quality clearance. The auditor verifies that all lot separations are maintained correctly.

Auditing The People Relationship

Some companies take great pride in maintaining supe- rior relationships with their workers. Many find it easier to maintain such relationships in the office than in the warehouse. Those companies intending to maintain a un- ion free workforce recognize that warehouse workers may be more interested in their wages and salaries, and who to call company employees. For these reasons, the moni- toring of interpersonal relationships is a necessary part of the audit process.

Our skill in managing people has quantitative as well as qualitative measures. We measure quality by asking people how they feel about their jobs, and quantity by ex- amining employee turnover.

Monitoring Physical Assets

The two physical assets of prime concern in warehous- ing are inventory and storage facilities. A continuing stor- age density of distribution center product can be the major progess has been the increasing number ofick various kinds of mobile lift equipment, different types of storage rack or improved packaging.

While all warehouse managers control the inven- try they store, a few of them proceed from inventory con- trol to inventory management. In the management func- tion, they may discover that some of the items now in the warehouse could be eliminated with little or no impact on customer service; therefore, the audit process should do more than measure the success of inventory accuracy and control. It also should identify opportunities to improve the management of the inventory.

Justifying Warehouse Improvements

Warehouse managers often are competing with manuf- acturing, marketing, and other departments in the search for capital appropriations to improve their operations. The financial officer may be more impressed by a new ma- chine for the factory than a new lift truck for the warehouse. The audit process can be used to help manage- ment sell the financial people on approval of capital in- vestments for new equipment.

Every capital expenditure in the warehouse is justified by savings in space or time. We improve utilization of ex- isting space by increasing storage density. If the purchase of lift truck equipment and/or new racking is needed to this in the situation, and staging is occurring, it would be exposed as redundancy during an audit, and recom- mended for elimination.

KEN’S COMMENTS

Thoughts On Loyalty

An unfortunate hallmark of the logistics industries is high turnover. Many truckload carriers report turnover well above 100 percent, which means that the average em- ployee stays less than a year. Obviously, the cost of re- placing all of those people must be reflected in the fees charged for services rendered.

The worst part of this is a backlash. Some employers maintain a quality standard of what a worker can or cannot do. Others believe that if the worker has no loyalty to the company, then the company need not have any com- mitments to third parties.

Yet, retention improvement is one of the best ways to improve quality and reduce costs. Hiring and training are very expensive processes, with errors and other quality problems occurring more frequently with new employees than with seasoned ones.

Studies have proven that workers are interested in many things besides a paycheck. Yet, most managers think their workers leave because of money. In the truck- ing industry, for example, frustration with working condi- tions is recognized as a major cause of turnover. The prob- lem is waiting time before loading or unloading.

When workers receive no positive feedback, or worse, no feedback at all, they lose interest not only in the job, but in the company.

Still, it is relatively easy to maintain staff loyalty and interest. Recognition of successful work, constant feed- back and rewards are powerful tools.

When a worker understands that the supervisor cares, the result is an increase in loyalty.

Why Outsource Warehousing?

Even though we have asked and answered this question before, these are perhaps a good reminder.

First, we outsource to add value place. If an important customer cannot be served without an inventory in Los Angeles, then perhaps it makes sense to keep that inventory on the West Coast area. The benefit of outsourcing is the quickness way to solve the problem.

Second, we outsource to provide time value. If customer requirements indicate that we need two regional warehouses within the next 30 days and our company does not have the management available today to meet this requirement, outsourcing again is the simplest way to get the job done quickly.

Third, we outsource to enhance a customer relation- ship. Assume that Retailer Regional Inc. is our newest key customer. This Los Angeles based company has a pre- ferred logistics service provider adjacent to their com- pany warehouse, and they have agreed to use an inven- tory with that service provider. We consider outsourcing in order to maintain the relationship with an important customer.

Finally, we outsource to reduce risk. Our marketing people are convinced that a distribution center in the Paci- fic Coast area will greatly improve our sales but they might be wrong. Outsourcing is the best way to control the risk in a test market situation.
improve storage productivity, the capital investment in that equipment is justified by the avoidance of leasing outside space or construction of additional warehouse space to handle a growing inventory. If space utilization has been tracked on a continuing basis, the process of demonstrating a payback is far easier than when no benchmarks for storage productivity exist.

For example, management may consider the option of constructing a 10,000 square foot addition at a cost of $30 per square foot. As an option, the $300,000 investment can be avoided or delayed by investing $100,000 in storage rack, $40,000 in narrow aisle trucks, and $10,000 for labor to rearrange the warehouse. In this case, the capital cost is half the cost of new construction. By calculating the number of additional pallets that can be stored in the revised layout, justification is created that should be approved by the financial officer.

We improve productivity (use of time) by examining material handling. There are at least four ways to improve handling output: They are as follow:

- Use facilities and equipment for longer hours with multiple shifts
- Eliminate redundant processes, such as staging
- Refine and improve procedures, such as order picking
- Use technology to replace people

Consider this example: For $300,000, you might purchase a palletizing machine that will arrange individual cases in a specified pattern on a pallet. By using the machine on multiple shifts, you might replace the labor of four workers. The fully burdened cost of each worker is $2500 per month, or a total of $10,000 for the four people. The payback on the investment is 30 months ($300,000 divided by $10,000). The investment might be difficult to justify if the audit process had not provided good estimates of the current hours employed to manually palletize cases, and the burdened cost per labor hour.

When the labor market makes it impossible to find qualified people, tools to improve handling productivity become easier to justify. The labor market, as well as financial analysis, will influence the justification decision.

**Putting It All Together**

The process of auditing warehouse performance is sometimes ignored and frequently misunderstood. It is far more than a practice of giving grades or dispensing discipline. It is more than benchmarking, though comparisons may be part of the process.

Warehousing is deceptively simple. Many believe that the function is so basic that any manager can run an effective warehouse, but when the operation does not run smoothly, they do not understand why. We audit warehouse performance to get an early warning of trouble, to facilitate the search for best practices, and, to create an audit trail that records progress in improving the utilization of space and time.

### A Three-Step Approach To The Performance Audit

Three charts shown below are used by a wholesale distributor to track the most critical elements of warehousing: quality, productivity and service.

Quality is measured in the “lines shipped accuracy” chart that shows how seldom customers complained about shipping errors. Productivity is shown in the “lines shipped/man hour” chart. Service is shown in the “orders shipped on time” chart, which tells the percentage of orders received by 4 pm that were shipped on the same day.

**Quality**

**Productivity**

**Service**