

The Integration of Storage and Movement

Editor's Note: A June 2007 research study by Ian Hobkirk, "Integrated Transportation Management" published by Aberdeen Group, provided the inspiration for this article. "Performance by the Numbers," by Karl Manrodt and Kate Vitasek, an article published by DC Velocity, May, 2007, was referenced as well. KBA

Throughout the duration of our attention to supply chain management and its earlier incarnations as physical distribution and logistics, the critical interaction between those who move cargo and those who store it has been a focus for researchers.

The Historical Perspective

During the 19th and 20th centuries transportation terms like, *transfer, truck & storage, depot or terminal* were used in the names of many warehousing companies. One traditional definition of warehousing was "transportation at zero miles per hour."

When American transportation pricing and services were controlled by federal regulation, warehousing was a widely accepted method of controlling total logistics costs. Low-cost transport modes, such as rail, marine, and truckload carriage were used to position inventories near customers, and local warehouse operators provided pool distribution (a.k.a. cross docking), warehousing, customer pickup, and delivery.

New Challenges in Transportation

While the business of storage and warehousing has undergone substantial change during recent decades, the changes in transportation are greater and more profound. The distance factor is a major change. Nearly every distribution company imports an increasing percentage of products from Oriental sources that are thousands of miles distant from the destination. Accordingly, every commercial enterprise is involved in a slow, costly, and sometimes unpredictable struggle to manage lead times and control inventory shipped from overseas manufacturers.

The cost of transportation has escalated with increased distance. It is aggravated by record high costs of the petroleum products that fuel every transport mode.

A critical problem in the human resources area also has raised the cost of motor freight. Workforce turnover is a record 130% among long-haul motor carriers, meaning that the average truck driver stays with one company for

about nine months. Because new workers must be recruited and trained, the cost of the turnover is significant, and must be reflected in the rates charged by the carrier.

Older Challenges Still Remain

A study initiated by researchers at The Ohio State University a number of years ago, found that the majority of trucks on the streets of Columbus, Ohio, were lightly loaded or empty. They observed that the trucks contributed greatly to traffic congestion, and suggested that a multiuser consolidation terminal at the edge of the city could reduce the number of trucks entering the community. The research drew attention overseas, especially in the Soviet Union; however, no one in the USA wanted to interfere with the private enterprise system of motor freight delivery. In recent research, it was found that the waste generated by underutilized vehicles is just as great today as it ever has been.

Railroad transportation is not as competitive in either service or cost as it needs to be. The significant conflict that once existed between motor carriers and the railroads rarely is experienced today. Railroad companies bear the cost of ownership and maintenance of their "highways," while competing with motor, water, and air freight companies that enjoy the use of government owned facilities. Railroad management must make huge capital outlays to maintain their capability to handle the growing intermodal cargo from the Orient. Additionally, they must add the personnel needed to handle sharply increased volumes. One carrier estimated that recruitment and training of a new crew is a nine month process.

New Tools

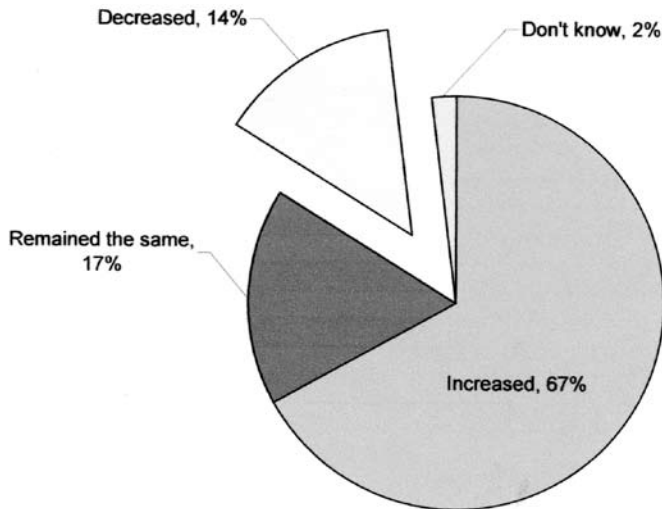
Even with increases in transportation costs, supply-chain management professionals have access to tools that were not dreamed of in the past. At one time, electronic communication, particularly overseas, was slow and expensive. Today, communication virtually is free and widely available almost everywhere in the world.

Global positioning systems (GPS) can pinpoint the precise location of vehicles. Visibility systems in warehouse and transportation management systems conveniently display information on the status of every shipment.

Years ago, Ohio State Professor, B. J. LaLonde, indicated that in the future, the supply-chain manager would be able to trade information for inventory, using superior systems to avoid needless investment. That future is now!

The Performance of “Best-In-Class”

As shown in the figure below, 14% of companies surveyed have reduced transportation expenses relative to revenue during the past two years. Given the substantial escalation of transportation pricing during the same period, this is an incredible accomplishment by a small group that Aberdeen designates as “best-in-class.”



How did they do it? It is conceivable that a few companies made major product changes that reduced the cost of movement. For example, technical advances might have enabled an electronics firm to replace a piece of computing equipment with a new, significantly smaller model, that is less expensive to transport. Greater visibility may have allowed significantly decreased use of premium transportation (air freight). Improved collaboration with carriers, suppliers, and customers usually results in a reduction of emergency shipments. Increased use of transportation management software enables shippers to purchase common carrier services wisely. This is more than merely a search for the lowest price. In some cases, it leads to the discovery that one carrier needs increased revenue in certain lanes, and is willing to make concessions to build volume.

Improved understanding of total supply-chain costs may result in the establishment of new consolidation and distribution centers that will reduce the cost of parcel delivery and LTL transportation. Others may increase their use of cross docking and pool distribution to control transportation costs.

Reduction of “Dwell Time”

One of the unfortunate realities of the motor freight business is the number of unproductive hours spent by the average driver. This “dwell time” currently is estimated at about 30 hours per week, and is spent waiting at warehouse loading docks or stopped by traffic choked highways. Federal regulations established during 2003 and modified during 2005 and July of this year, limit the time that a truck driver can stay in the vehicle without taking a rest break. While complaints have been voiced about federal interference, some have addressed the regulations in creative ways. One method is increased use of “drop and hook” loading and unloading at factories and warehouses.

With this system, the motor carrier drops a trailer in the customer’s yard, and then picks it up at a later time, after loading or unloading has been completed. With drop and hook, the delay that a truck driver experiences at the customer’s premises is limited to the relatively short time needed to place the trailer in a designated spot and to retrieve it later. While this strategy is not practical for LTL (less-than-truckload) or parcel carriers, it can reduce greatly the wasteful dwell time for truckload carriers.

The Growing Use Of Yard Management

The drop and hook procedure just described results in a new control challenge for the warehouse operator. Until recently, most warehouse operators were concerned only about systems to locate all of the material within the walls of the distribution center. Today, a growing number of managers must create a yard management system to supplement the warehouse management system. When there are dozens, or even hundreds of trailers parked outdoors, the problem of locating each becomes a significant challenge. Fortunately, software vendors have responded with yard management packages for the warehouse operator.

The Critical Task of Keeping Score

How do we measure success in integrating warehousing and transportation? The most comprehensive metric is the percentage of perfect orders. A perfect order is one that is delivered on time, complete, and without damage. Results of the survey by Manrodt and Vitasek found that median performance was 97 to 99% perfect orders, with “best-in-class” companies scoring as high as 99.9%.

Order cycle time is a critical quality measurement, which is not defined as comprehensively as it should be. The most common definition of order cycle time, is the time elapsed between receipt of order and its shipment. However, the customer is concerned with when the order is received, not when it was shipped. This means that the delivering carrier and distribution center management must work as a team to achieve continuous improvement in total order cycle time. The results of the Manrodt/Vitasek survey show that order cycle time performance of best-in-class companies declined between 2006 and 2007. That is a disturbing statistic.

Finally, how well does your company control its distribution cost as a percent of sales? There are major variations by industry, but survey results showed that median performance was 4.9%, with best-in-class dropping to less than 2.2%. The actual number is less important than the trend from year to year.

Putting It All Together

Today’s supply chain manager faces a daunting combination of challenges. In the face of relentless senior management pressures to improve quality and control cost, only a few companies have been successful at doing both. While there could be many theories to explain this improvement in performance, our belief is that more effective teamwork between warehousing and transportation providers has been the most important factor.

KEN'S COMMENTS

Vertical Or Horizontal Growth?



There are two ways to expand any business:

- Horizontal growth, which involves acquisition of other companies and movement into new cities or new markets.
- Vertical growth, which requires competing with suppliers, and sometimes with customers.

A warehousing company that emphasizes vertical growth might go into the construction business, or the development of land for new buildings. Transportation management would likely be part of the process. In some cases, the company might become involved with the packaging business, in order to control the quality of the packages stored in a warehouse. One successful vertical diversification is the staffing service business. Companies with a successful information technology product will try to sell that solution to other warehouse operators.

In contrast, the company that follows the horizontal growth model will concentrate on extending the reach of its warehousing services, either by acquiring other companies, or by organic growth into new markets.



Failure to Cope With Change

Throughout history, we have suffered with the “dinosaurs” who would not recognize or adapt to change. In 1876, the Western Union Company commissioned a study of a new invention, and concluded that “the telephone has too many shortcomings to be seriously considered as a means of communication.” When sound revolutionized the film industry during the late 1920’s, Harry Warner of Warner Brothers, said: “Who the hell wants to hear movie actors talk?” Ken Olson, founder of Digital Equipment, said: “There is no reason for any individual to have a computer in the home.”

Most of the technology we use today was considered a novelty before it evolved into useful tools. Prior to Henry Ford’s assembly line and Charles Kettering’s electric starter, the automobile was a plaything for the wealthy. The early photocopiers were used widely as a means of duplicating cartoons and jokes. A director of the Federal Communications Commission dismissed television as a “wasteland.” There were and still are many frivolous uses of the early application of web technology and e-mail.

WAREHOUSING TIPS

Why Have A Transportation Management System?

Few warehouse operators today will try to run a warehouse of any size or complexity without a warehouse management system (WMS). Because transportation management systems (TMS) are newer, the advantages of using one are not as well understood. Listed below are some of the things that a TMS will do for you:

- Search for the best route.
- Discover the best load pattern.
- Discover the lowest cost mode.
- Discover the best carrier within that mode.
- Control and reduce annual freight costs.
- Control and improve delivery performance.

If you do not have a TMS, ask potential suppliers whether or not they can address the points listed above.



Plugging the Freight Leaks

Many distribution executives are not aware of the many ways in which money is wasted with excessive freight costs. Here are five significant issues:

- Failure to control the cost of inbound freight is a common problem. If the vendor is allowed to ship

“best way,” the buyer may not receive substantial discounts that are available for volume shipments.

- All freight charges should be reviewed. Unfortunately, some carriers bill at a higher figure than their quote.
- Don’t neglect to review the transactions with parcel carriers (such as UPS and FedEx), and don’t assume that your company must pay the list price for their services.
- Be sure that your customers are paying an appropriate extra charge for “emergency shipments.”
- Review your freight claim experience with each of your carriers.



The Advantages of Appointment Scheduling

A surprising number of warehouse operators fail to organize a scheduled shipping and receiving dock. A variety of excuses are offered, including a common claim that the company is too small for the carriers to collaborate on schedule. In actuality, many managers do not have enough time to study information in order to estimate the time needed to load or unload each vehicle. In the absence of such estimates, it is impossible to establish an accurate schedule. The obvious advantage of scheduling is that surprises are eliminated. Carriers are pleased to cooperate, as long as the shipper demonstrates the ability to keep the appointments because scheduling is the best way to eliminate congestion at the shipping dock.

All Charged Up

By G. Weimer, *DC Velocity*, August 2007, pg. 60.

Explored in this article is the continuing debate between vendors of fast charge battery systems, and those who sell traditional batteries and battery changing equipment. The latter group argues that fast charge systems shorten battery life. Because batteries must be both charged and cooled, electric trucks used on three shifts require three batteries per truck, to enable them to be worked for eight hours, charged for eight hours, and cooled for eight hours. For maximum battery life, batteries should not be changed until an indicator light signals that it is time for a fresh battery. This may occur at a convenient time, when the vehicle is working far from the charging station. Fast charging allows batteries to be refreshed during lunch and coffee breaks, and it eliminates time and safety issues involved in handling heavy acid filled batteries. Opponents of fast charge systems argue that all batteries should receive a full charge each day as well as an "equalize charge" once per week. This suggests that the fast charge systems would work well for a two shift operation, but not for three. Contact information for nine vendors of both battery handling and charging systems is provided as an insert.



Software as a Service

By Denis O'Sullivan, *Focus*, April 2007 pg. 30.

Software as a service, (SAAS), is also referred to as on-demand. It is a good fit for small companies in which the IT staff does not manage information systems. It also is popular in large companies in which implementing new systems through the internal IT department may be difficult. Charges for the system are based on transactions, and there is little or no capital expenditure. Two of the most popular applications are vehicle routing and scheduling, and track and trace capability.



How to Win Friends and Influence Software

By J. A. Cooke, *DC Velocity*, August 2007, pg. 38.

Joining a user group is the easiest and most cost-effective way to have some influence in the modification and future development of your warehousing or transportation software. User groups are formed by customers of a particular solution vendor. They are an important communication channel between users and vendors, and can have measurable influence on product development. User groups may include warehouse managers, operations managers, information specialists and even CEO's. The attraction is the opportunity to learn from fellow users. For many, their relationship building facilitated by the user group becomes the most important benefit of all.

Withdrawing From A Third-Party Warehouse

By Steve Sordy, *Focus*, May 2007, pg. 31.

Mr. Sordy, and a British magazine, had the fortitude to address a subject that many managers find too ugly to discuss. The process involves the following six steps:

- Be sure you understand and can explain, effectively, the reasons for the withdrawal.
- Be certain that you have collected all of the relevant facts, especially contract details.
- Expect the unexpected. For example, are you liable for wear and tear to the owner's building?
- Engage senior management at the logistics supplier to maintain good relations.
- Create a project plan to cover every detail of the move.
- Implement the plan.

In a concluding note, the author warns: "Do not burn your bridges."



It's Not Easy Being Green

By Clifford F. Lynch, *DC Velocity*, March 2007, pg. 43.

While praising the green initiatives developed by Wal-Mart and others, the author described similar initiatives that met with disaster. A consumer products manufacturer introduced recycled corrugated, but the packaging engineers neglected to test stacking strength. As a result, bulk storage was replaced by much more expensive rack storage. When cartons were replaced by shrink wrapped cardboard trays, many automated warehouse systems were unable to accommodate the new packaging. Green initiatives must be accomplished in a logistics friendly manner.



Who – and What – Is Profitable?

By R Sabath, D. J. Daugherty, D. D. Mattioda, and H. Chen, *Supply Chain Management Review*, July/August 2007, pg. 44.

Many companies do not track profitability by customers or by products. These research results make a strong case for doing so. The authors reached these major conclusions:

- Customer information is more important than product information.
- Collecting profit contribution information has significant diagnostic value.
- Using profit information leads to stronger supply chain relationships.

Tracking profit contribution helps management to focus efforts and identify the biggest potential rewards. It enables management to set priorities.