

Missing link

Looking to reduce logistics cost? Processors may be missing the connection between packaging and supply chain optimization.

By Jack Ampuja

Although supply chain management continues to be a focal point for most U.S. processors and distributors, there still is no single answer for success. That said, shippers may miss an important link between supply chain optimization and product packaging.

Of course, optimization means linking production sites to distribution centers and customers to achieve a good balance between cost and service. If multiple production sites can manufacture the same products, the critical strategic issue becomes: How do we determine of how much product to make and where? Fortunately, today's sophisticated software helps to quickly and more easily analyze these types of tradeoffs.

On the other hand, most companies don't recognize that product and packaging attributes – elements of shape, size and strength of the shipping container – impact supply chain efficiency. Processors do understand that these attributes affect manufacturing but for some reason overlook logistics where the cost differences between choices can be much greater than those impacting internal operations.

In more than 300 consulting assignments during the past 15 years we have seen shipping case decisions made by all kinds of corporate functions, including R&D, marketing, advertising, brand management, purchasing, manufacturing and quality control. Moreover, we also have seen a growing trend to outsource this responsibility to packaging suppliers.

Unfortunately costs including transportation, handling, storage and damage associated with the shipping case decision show up in the logistics budget and it is a rare company in which that function is involved with the packaging selection.

“You can't be saving money!”

By bringing an integrated approach to this process – and including the impact of packaging on the supply chain – it is possible to reduce cost significantly.

How significant? One optimization project resulted in \$5 million in realized annual savings. Earlier this year we likewise came across a non-food product for which we were able to cut logistics cost by over 40 percent through packaging adjustments.

Sometimes the potential savings are so large that nay-sayers scoff at the results. In one instance, the vice president of manufacturing pounded the conference room table and insisted, “You can't be saving any money . . . you are still putting the same 40 pounds of material into each box.”

In this case, we had calculated how to get more cases on each pallet so that there were improved efficiencies in handling, storage and transportation. Although we pointed out the details the vice president still wasn't convinced. Eventually, the client's internal audit department verified the savings and confirmed our projections.

Backing up, it's important to note that any analysis starts by



Burris Logistics, Milford, Del., has completed a 177,000-square-foot addition to one of two Jacksonville, Fla., warehouses. General Manager Bob Sliger says the expanded 240,000-square-foot Jacksonville West location now boasts approximately 25,000 pallet positions, 24-hour security and enlarged rail siding and truck dock areas for improved access and increased traffic. New radio frequency and warehouse management software also will provide real-time inventory information flow. Burris is one of the largest temperature-controlled logistics providers on the East Coast with 14 locations in seven states.

Atlas Cold Storage Income Trust, Toronto, announced financial results for the first quarter ending March 31. Revenue increased to \$133.1 million in the three-month period, up 208 percent from \$43.2 million in 2002. Atlas noted that approximately 75 percent of revenue, or \$100.3 million, was generated in the U.S. versus 57 percent or \$24.6 million in 2002. Earnings before property lease rental, interest, amortization and income taxes amounted to \$20.7 million, up 63 percent from \$12.7 million in 2002. Atlas' largest unit, its PRW business, operates 50 facilities with 204 million cubic feet of temperature-controlled space across Canada and in four geographical regions within the United States.

Millard Refrigerated Services will build a 180,000-square-foot temperature-controlled distribution center in Mobile, Ala., located on the Theodore Ship Channel. Officials said the multi-million dollar facility will offer blast freezing, frozen distribution and shipping services from two ship births. Plans also call for a 70,000-square-foot addition to bring the overall size to 250,000 square-foot. Millard, Omaha, Neb., operates 27 refrigerated warehouse, distribution, and processing facilities nationwide.

photo courtesy The Stellar Group

PACKAGING FACTORS

Logistics managers! Here's a quiz to give your peers in packaging and operations.

- 1. The optimal shipping case is a perfect cube [identical dimension for length, width, height]. True or false?
- 2. If a cube case cannot be used, the next best choice is a square one [identical dimension for length & width]. True or false?
- 3. An interlocking pattern is generally the preferred way to stack cases on a pallet. True or false?
- 4. The most widely used pallet in North America is 40" x 48" in size. True or false?
- 5. Pallet and skid are interchangeable terms for the same item. True or false?
- 6. A case overhanging the pallet will lose more than 30% of its stated strength. True or false?

- 7. During the first five days a loaded case sits in storage it can lose up to 10% of its strength. True or false?
- 8. The value of each cubic foot of space in a truckload shipment moving coast to coast is about: (a) \$5.00, (b) \$1.00, (c) \$.50, (d) \$.10.
- 9. The largest factor in establishing shipping charges used by small package delivery and less than truckload carriers is: (a) weight, (b) cube, (c) density, (d) product value.
- 10. For most North American firms, the largest logistics expense is: (a) warehouse labor, (b) storage cost, (c) packaging cost, (d) transportation.

Answers on Page 84

Source: Warehouse Marketing Group

using a client's current cost data as a baseline. Last year, we did a project for a company in which we identified savings of almost \$1 million. Because the client had expected cost reduction of about \$20,000, management's reaction was, "The savings can't be that large! We must have given you inaccurate cost data."

Again, once we explained the details behind the process, this company's CEO had no difficulty accepting the results.

Who makes the call?

Such an integrated supply chain approach throws many companies for a loop. When shown the potential savings, one food conglomerate's director of purchasing simply responded, "What you're talking about is leading-edge thinking . . . this company would not be for that type of project for at least

another three or four years."

Similarly, after hearing about the link between supply chain and packaging, one grocery company's vice president of logistics was still baffled.

"What is that your company really does?" he asked.

Underneath it all, these responses also reflect an uncertainty about who might drive such a process. Some companies view it as a packaging issue while others – reacting to savings – focus on logistics alone. Truth be told, logisticians know how to make tradeoffs between transportation and warehousing but usually are not given the opportunity to consider packaging in the equation.

Ideally, the process should involve multi-functional team of marketing, logistics, manufacturing and purchasing. Certainly each of these departments is likely to be impacted by changes to the firm's supply chain.

Association news

The International Association for Cold Storage Construction

(IACSC) elected board members and directors at the group's recent annual conference. Now serving as 2003-04 Chairman is *Michael Cummins* of D. Cummins Corp., Modesto, Calif. Other new officers are *Nick Steine*, Steine Cold Storage, Inc., as vice chairman; and *Jeff Wiersum*, Genflex Roofing Systems, as treasurer. *Ron Vallort*, Ron Vallort and Associates, is immediate past chairman. New IACSC board of directors members are *Dwight Clark*, Jamison Door Co.; and *Peter Clayton*, Isoclad, Ltd. For more details about IACSC call (703) 373-4300 or visit www.iacsc.org.

Members of the **International Warehouse Logistics Association** were to vote on June 30 on a possible name change for the organization. If approved for the group, headquartered in Park Ridge, Ill., would become the **Association for Logistics Outsourcing**. For more information on the group, call (847) 292-1891.

The **Reusable Pallet and Container Coalition** (RPCC) issued guidelines for meat and poultry processors to integrate reusable containers into the supply chain. RPCC said its guidelines take into consideration processor concerns about food safety, a lack of RPC uniformity and conversion costs. For details, visit www.rpcc.us or call (202) 625-4899.

FYI

Leading third-party logistics services provider **AmeriCold Logistics, LLC**, Atlanta, now offers a compact disc detailing the company's operations, service offerings and capabilities. A North American network directory identifies all Americold locations and provides details on facility size, services and contact names. Officials say the CD provides consumer packaged goods companies with information critical to the movement of their products through the supply chain. The CD is available by either contacting AmeriCold directly at (888) 808-4877, or e-mailing link@amclog.com.

PACKAGING FACTORS EXPLAINED

(See quiz on Page 82)

1. **False.** A perfect cube is the worst shape possible for a shipping case. It is cumbersome to handle, inefficient for storage and more susceptible to damage.

2. **False:** A square box is second only to a cube in being inappropriate as a shape for a shipping case for the same reasons that a cube is to be avoided.

3. **False:** Although an interlocking pattern aids in providing unit load stability, it also reduces corrugated strength by 45% because the edge of one case sits on the middle of the case below it. There is no strength in the middle of a corrugated box.

4. **False.** The most widely used size is 48" x 40". The stringer length (usually 2' x 4's) is always quoted first so that the orientation of the pallet can be determined from the size. A 40" x 48" would be the opposite shape with the opening being the narrow dimension.

5. **False.** Although many mistakenly use these terms interchangeably, the items are different. A pallet always has bottom boards while a skid sits on the stringers. Skids are generally found

under very heavy, odd-shaped items like motors, which cannot be stacked.

6. **True.** An overhanging box loses 32% of its strength due to lack of pallet support.

7. **False.** Although it's true that a corrugated box loses much of its strength during the first month of storage, the 10% figure is much too low. A loaded box loses more than 30% of its strength during the first five days in the warehouse.

8. **B:** The shipping cost of a coast-to-coast truckload is about \$2,800, making each cubic foot in the trailer worth approximately \$1.00.

9. **C:** Although small package and less-than-truckload carriers bill on the basis of weight – usually per hundred pounds – all of their costing is driven by density. In fact they have a density factor computed for each regular customer.

10. **D:** Transportation is the largest logistics cost, accounting for more than 60% on a national basis.

Source: Warehouse Marketing Group

Interestingly enough, there was a time when it was apparently quite common for logistics to be involved with packaging and shipment loading. Bob Delaney, widely recognized for his annual "State of Logistics Report," relates that when he first started in operations after college, the standard training program assigned new recruits to the shipping department to help determine best truck and rail loading techniques to maximize payload.

Somewhere along the line, packaging and loading began to be viewed as specialized functions to be managed by engineers. That separation of responsibilities from

day-to-day operations has unfortunately worked to the detriment of supply chain in many companies. I do not denigrate the training and knowledge of packaging engineers (which is very valuable) but merely endorse their work to be considered in light of total supply chain impact.

Delaney has also gone on record with the viewpoint that after years of downward pressure on transportation and warehousing costs, packaging optimization is the last major opportunity for logistics.

The formula

The bottom line – affecting any

company's bottom line – involves the lowest total cost that a company spends for packaging, warehousing and transportation. Again, these factors are interdependent. If you change one, the other two are likely to be effected.

Accordingly, we study all three areas to identify potential savings. The basic approach involves:

- **Making certain that shipping cases are aligned with a client's storage, handling and shipping characteristics.** Earlier this year we were able to save one company \$100,000 by revising pallet patterns. The client happily admitted they just hadn't considered that factor.
- **Working with corrugated suppliers to ensure that the strength of the shipping case is matched to the client's needs.** Often a minimal increase in cost of corrugated generates big savings in storage. Recently we were able to get a 150 percent increase in storage density with a minor increase in container strength and cost.
- **Taking air out of the equation.** By ensuring that shipping cases have little or no internal slack they can be made smaller and thus less susceptible to damage and more efficient for logistics.

Where can you generate savings? The answer varies by company. For some it is spread across factors of packaging, warehousing, freight and damage reduction. For others the savings is primarily in one category. In any case, the average improvement realized is about 10 percent of total cost. By comparison, how many other ways can a logistician deliver cost reduction of such magnitude in this day and age?

Foods for thought

Ready for a case study or two? One product that clearly demonstrates the power of linking packaging to logistics is foodservice salad dressing.

MORE FOR THE MONEY, SAVINGS

Packaging optimization helps processors reduce filler and air in a package, develop better cases and pallet loads, and better maximize cube capacity in a shipping load.

Nearly all dressing processors pack four one-gallon containers per shipping case. In analyzing the costs of several competitors we learned that only the market leader has optimized the shipping case.

They enjoy a 33-percent cost advantage in storage, a 16-percent advantage in warehouse handling and they use a corrugated container that is 14 percent less expensive than the competitive standard. This allows the market leader to also be the low-cost producer in its industry. And despite this major cost difference the market leader still packs four one-gallon containers per shipping case just like everyone else. Amazing but true.

Many more opportunities abound. Frozen foods offer some of the best cases when you consider the value of a cubic foot of space in refrigerated logistics – both in warehouses and on trucks.

Another excellent category is light-density freight, which cubes out before it weighs out. The opportunity also is substantial for any company that manufactures product that ships in corrugated containers regardless of that product's value or physical characteristics.

Interestingly, the optimization opportunity is even bigger for many distributors engaged in pick and pack. Although the analysis necessary to complete one of these projects is immense (we have tackled two companies with over 150,000 SKUs) the savings is usually significant.

Distributing the savings

We were able to show one distributor that its shipping cases contained 35 percent filler and air. Although it is impossible to get that number to zero, it is feasible to knock it down to less than 20 percent.

The corollary to this action is that packaging optimization can increase a company's shipment density, which is the key factor in freight cost of small package and less-than-truckload shipments. The associated savings still have to be negotiated with carriers but -- at least in supporting a business with increased shipment density -- there is a solid basis from which to approach a carrier.

A common distributor's mistake is to reduce the number of shipping cases it utilizes to too few. For example, it is common perception that by reducing the number of box sizes used it is possible to save money by consolidated purchases, reduced corrugate storage expense and streamlined operations. Our experience has been that any savings garnered in this fashion is more than offset by increased distribution expense so that corporate profits actually decline. This is typical of the results when businesses are not integrated in their supply chains.

It also is important for distributors to re-evaluate their packaging makeup about every three years. An optimized supply chain can quickly slip into a more costly mode given constant changes involving suppliers, customers and the types of products handled.

Making the case for change

When it comes to case considerations, we often find that marketing organizations are reluctant to change counts and/or other option, which could necessitate a case-pricing change. This is understandable. Nevertheless, sometimes the possible savings can make this decision is a no-brainer.

We do have one case in which a change in case dimensions – still retaining identical cube – generated a 15 percent improvement in logistics costs and gave marketing three retail facings instead of two. This was a win-win for all functions (except the competition).

Can you post similar gains? Chances are, the answer is yes. Last year the grocery industry [manufacturers, retail & food service distributors] did a joint study on unsaleables, which had reached \$2.5 billion in 2001. The study showed that 63percent of damage was caused by inadequate packaging and poor logistics practices. The recommendation for improvement is to analyze packaging from the production line all the way to the shopping cart. In other words an optimized supply chain is the key to success.

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