

2014 RATE OUTLOOK

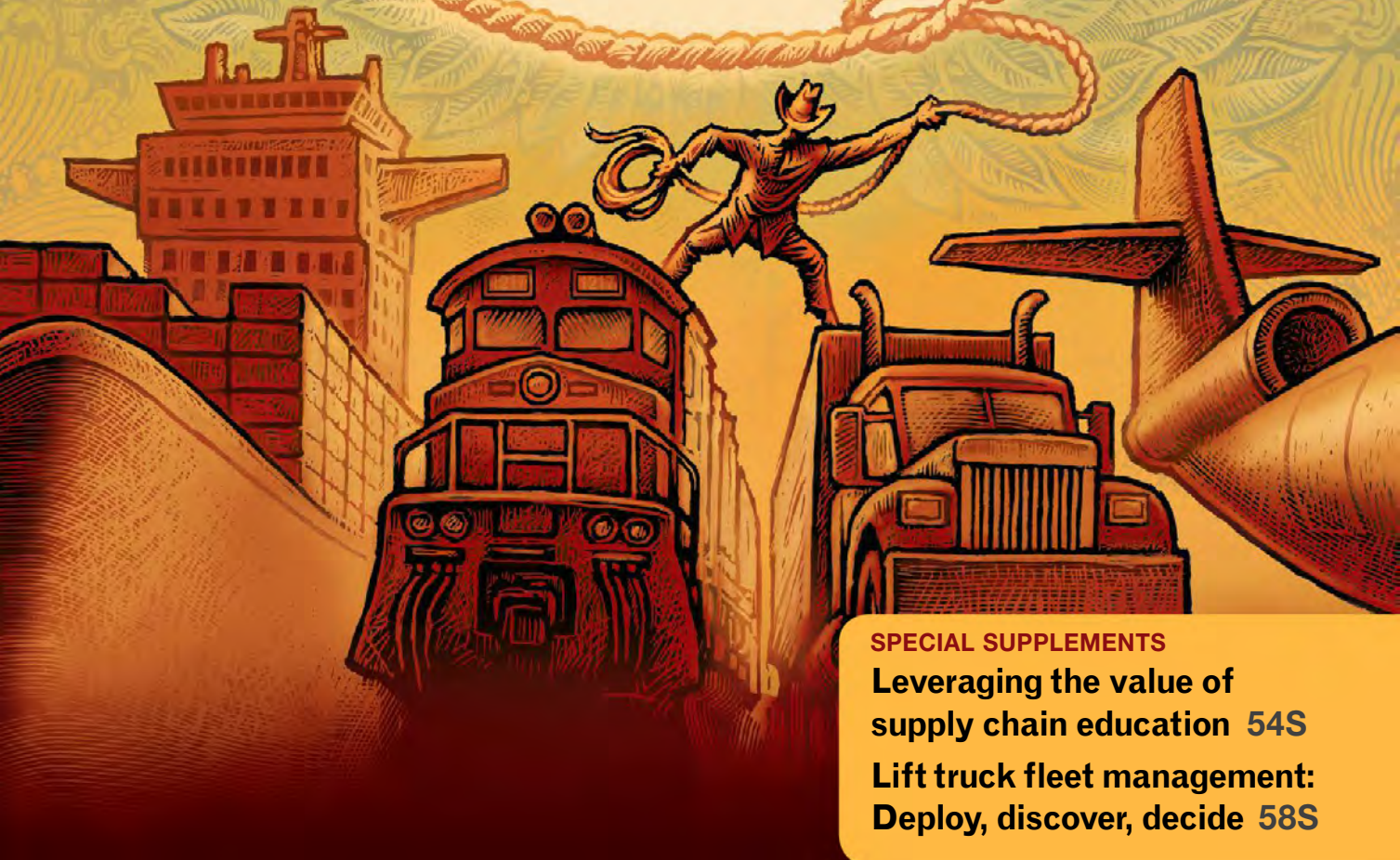
Ready to corral costs?

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+ SPECIAL RATE OUTLOOK WEBCAST

January 30, 2:00 p.m. EDT

logisticsmgmt.com/2014rateoutlook



SPECIAL SUPPLEMENTS

Leveraging the value of
supply chain education 54S

Lift truck fleet management:
Deploy, discover, decide 58S

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Blackbelt and a million
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management UPDATE

AN EXECUTIVE SUMMARY OF INDUSTRY NEWS

◆ **Changes at the top for BNSF.** Class I railroad carrier BNSF Railway announced in December that Carl Ice will take the reins as president and CEO this month, with Matt Rose shifting from president and CEO to executive chairman of the Berkshire Hathaway-owned company. A 34-year BNSF veteran, Ice has served as president since November 2010 and has been involved in various leadership roles for BNSF, including leading the team responsible for the merger and integration of Burlington Northern and Santa Fe Railway in 1995. BNSF officials said that Ice will continue working with BNSF's leadership on activities supporting BNSF's strategic positioning for growth and investment, including long-term organizational planning, market positioning, and public policy.

◆ **Now, that's a lot of freight.** While 2012 is long gone, it's not forgotten when it comes to freight volumes. The Department of Transportation's Bureau of Transportation Statistics (BTS) said last month that American manufacturers and related industries shipped nearly 11.7 billion tons of goods that were valued at more than \$13.6 trillion in 2012 based on preliminary numbers from its *2012 Commodity Flow Survey*. The survey found that trucks moved the majority of freight, representing roughly 8 billion tons in shipments valued at \$10 trillion, accounting for more than 70 percent of value and freight reported. Also noted in the survey was that multiple mode shipments using more than one type of transportation, including parcel shipments, carried only 347 million tons, or 3 percent of total freight weight.

◆ **Brighter air cargo outlook.** The International Air Transport Association (IATA) announced an upward revision to its industry financial outlook. For 2013, airlines are expected to return a global net profit of \$12.9 billion. This is expected to improve to a net profit of \$19.7 billion in 2014. Both are improvements on the September forecast that anticipated an industry net profit of \$11.7 billion in 2013 increasing to \$16.4 billion in 2014. The upward revision reflects lower jet fuel prices as well as improvements to the industry's structure and efficiency already visible in quarterly results this year. IATA expects 2014 to be a second consecutive year of strengthening profitability.

◆ **POLA & POLB see annual gains.** The two largest ports in the U.S.—the Port of Los Angeles

(POLA) and the Port of Long Beach (POLB)—both reported volume gains for the month of November. POLB imports, which are primarily comprised of consumer goods, at 296,638 TEU (twenty-foot equivalent units), were up 6.5 percent annually and represent the highest level for November imports over the last five years. While imports in November were up annually, they were at the lowest level since July and were below October, which is typically the busiest month of the year. Total November volumes at the POLA rose 17.3 percent to 683,849 TEU. Imports headed up 18.7 percent to 342,247 TEU and were behind October's 346,137 TEU. Exports increased 23.3 percent to 179,175 TEU. POLA officials said that the annual increases for imports and exports in November are due largely to larger vessels calling at POLA in conjunction with the U.S. economy improving.

◆ **Are trucking volume and rate gains in the cards?** Based on results from a carrier-based survey from Transport Capital Partners (TCP), the answer is a resounding yes. In its fourth quarter survey of more than 200 carriers, TCP found that positive volume expectations among carriers are currently at 61 percent compared to 29 percent during the fourth quarter of 2012. What's more, TCP noted that expectations for volume gains were intact regardless of carrier revenue. Sixty percent of both larger carriers (more than \$25 million in revenue) and smaller carriers (less than \$25 million in revenue) expect volumes to grow in the next 12 months compared to the previous 12 months, with less than 10 percent of larger carriers expecting volumes to decrease. Slightly more than 20 percent of larger carriers and nearly 40 percent of smaller carriers expect volumes to remain the same for that period.

◆ **Timely delivery matters most.** Current consumer behavior indicates that most of us are more concerned with how well retailers are able to deliver goods according to our preferences than we are about ordering via social media channels. Despite the hype surrounding the retail industry's need to focus investment on new shopping channels such as mobile and social media, a GT Nexus online survey, conducted in association with global polling company YouGov, tells a different story. Looking at

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LM management UPDATE

AN EXECUTIVE SUMMARY OF INDUSTRY NEWS

consumer retail habits, preferences and pain points in the U.S., U.K., Germany, and France shows that while 3 percent of respondents say that they've purchased goods using social media channels, consumers generally cite the inclusion of delivery options as being important to them when ordering a product either online or in-store (75 percent). Further interrogation of these numbers shows that consumers consider it important that their expectations of delivery times are fulfilled.

◆ **DHL Global Forwarding ready with new ORD facility.** DHL Global Forwarding, a subsidiary of global express delivery and logistics services provider DHL, held a groundbreaking ceremony for its \$35 million, Chicago-based facility at Chicago O'Hare International Airport. The new facility, which is DHL Global Forwarding's largest building in the U.S., is comprised of 53,000 square-feet of office space and 423,030 square-feet of warehouse space for the unit's 500-plus employees. DHL officials said that this facility will serve as a container freight station designated by carriers to receive cargo to be loaded into containers, and a Foreign Trade zone, which acts as a secure area under the supervision of U.S. Customs and Border Protection that is considered outside the Customs territory of the U.S. for the purpose of duty payment.

◆ **XPO makes another acquisition.** The acquisitions keep coming for non asset-based 3PL XPO Logistics, with the company announcing last month that it has entered into a definitive agreement to acquire NLM, the largest provider of Web-based expedited transportation in North America, from Jacksonville, Fla.-based Landstar System. Also included in the deal is Landstar's A3i that provides Web-based transportation and supply chain management technology focused on the order-to-cash process. This is XPO's tenth acquisition in the last two years. XPO Logistics Chairman and CEO Brad Jacobs told *Logistics Management* that this acquisition establishes the company's entry into the managed transportation space, which he said XPO has been keenly interested in for some time.

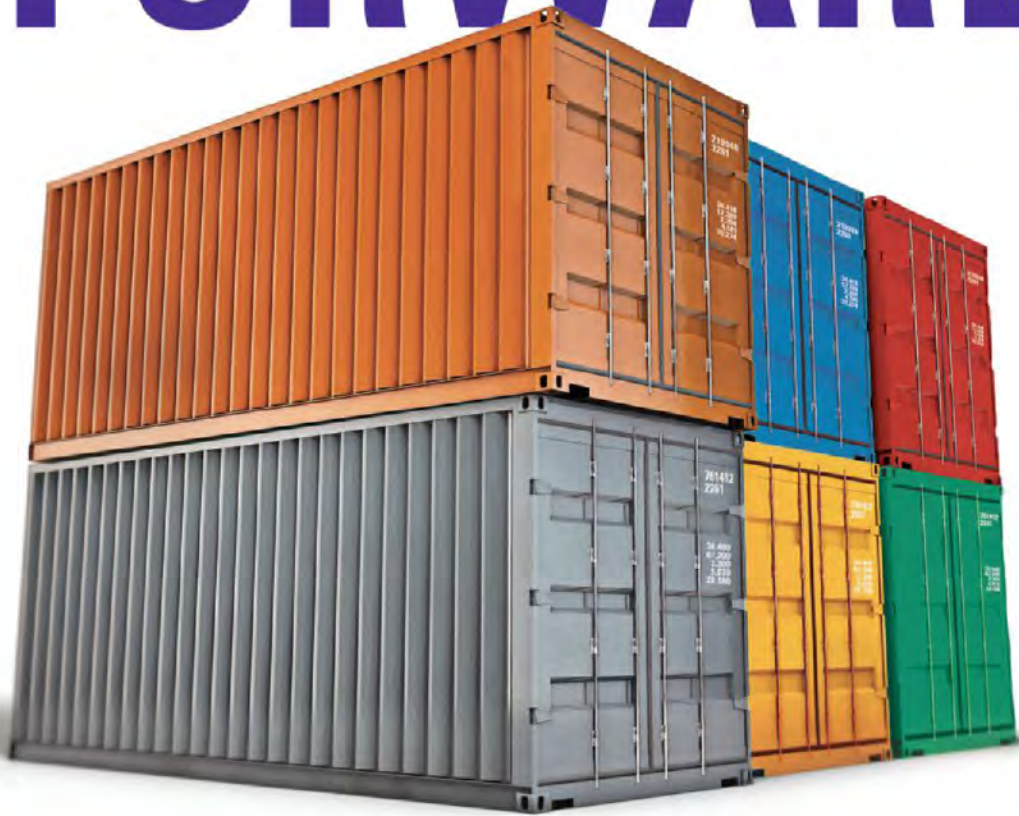
◆ **Port toolkits.** As part of a first-of-its-kind cooperative agreement, the American Association of Port Authorities (AAPA) and the U.S. Department of Transportation's Maritime Administration (MarAd) have teamed up to develop a port invest-

ment plan toolkit that will help port authorities create investment-quality infrastructure development plans in order to attract public and private capital to fund their infrastructure projects. Once completed, the toolkit will be available in the public domain. It will include guidance on writing grant applications, methods to analyze a project's economic benefits, and examples of best practices. However, the association and MarAd are first looking to recruit technical experts from ports and firms engaged in port planning, financing, and development who are willing to contribute their expertise to the production of a number of toolkit components.

◆ **U.S. transport pros should do OK.** The World Bank recently issued its biannual Global Economic Prospects that drastically downgraded its forecast for economic growth from the previous biannual report. The Washington, D.C.-based global agency projected growth of the world economy in 2014 to clock in at only 2.4 percent, down from its forecast six months ago of 3.0 percent. Consequently, there doesn't look to be a lot of growth in the transportation industry globally in the coming year. The outlook for the U.S. economy, however, is much more uplifting. Experts expect a bull market and unemployment rates slowly dropping to under 8 percent. Although the federal government will continue to under-invest in the transportation industry (.6 percent of their annual budget), it should still be a profitable year for transportation carriers and service providers.

◆ **Steady as she goes.** Logistics managers are becoming less reactive and more measured in their approach to inventory control. That observation and others are contained in a report issued by Genpact Limited. The company recently announced the third quarter 2013 results of its *Volatility and Adaptation Index (VAI)*, a first-of-its-kind framework that monitors approximately 600 large global companies' volatility events as well as related adaptation. The VAI total score was 39.0 in the third quarter, with half of all companies measured revealing volatility and structural changes. Genpact analyzed events such as profit warnings or the effect of adverse regulatory environments, as well as signals of adaptation, including restructuring plans, acquisitions, or geographic expansions. Analysts add that in the third quarter they saw a dramatic increase both in the total number of volatility events and the range of companies across industries that felt their impact. □

FREIGHT FORWARD



Orders without borders.

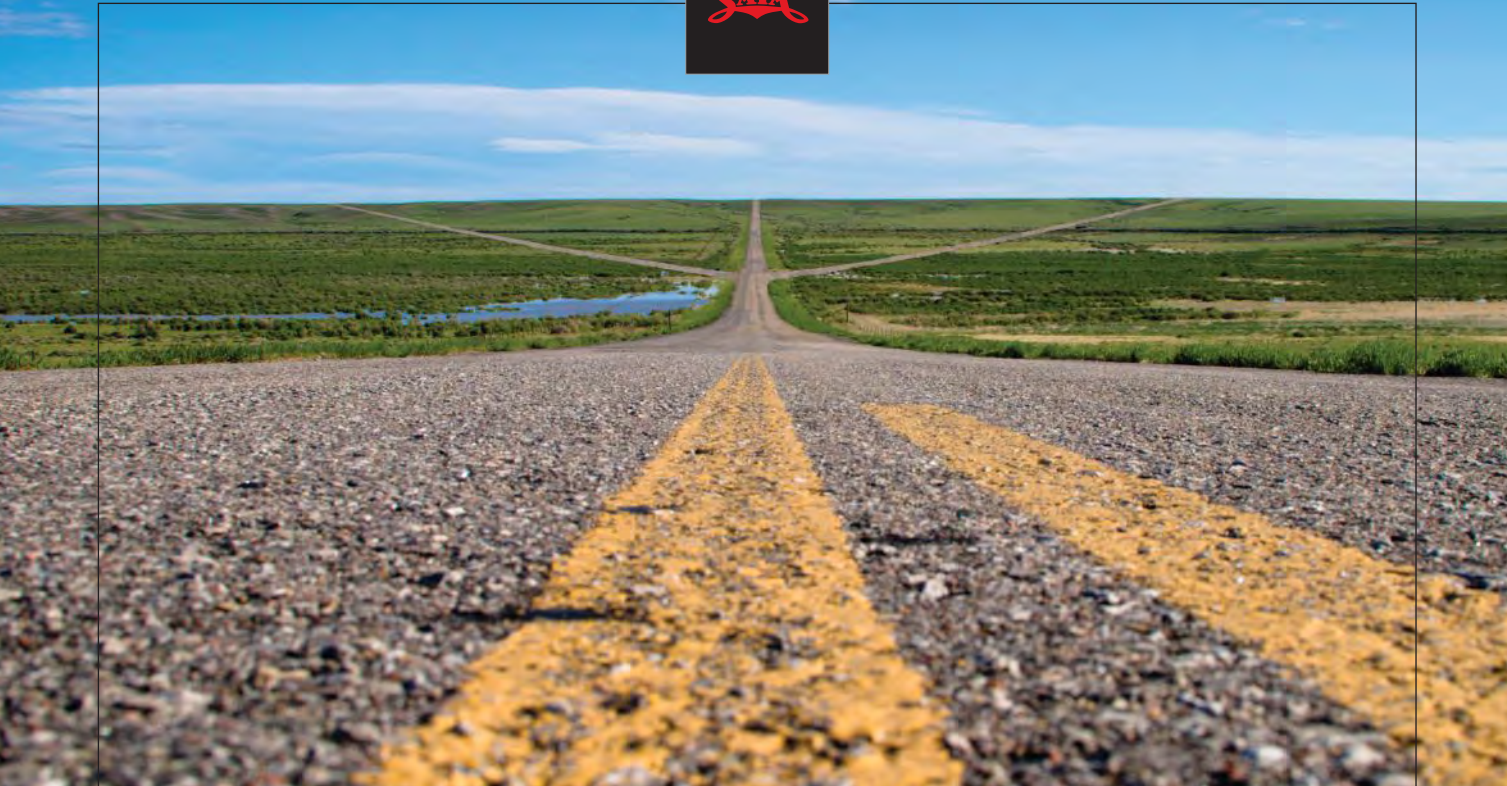
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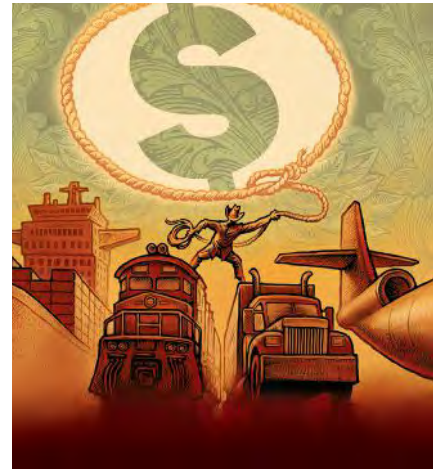
Logistics resources and experience to reduce costs and increase supply chain efficiency

2014 RATE OUTLOOK

Ready to corral costs?

24 With the exception of parcel, freight transportation rates will only make incremental gains in 2014.

However, our top market analysts tell us that controlling total landed costs by using a variety of modes is now imperative.



Cover illustration: Phil Foster

TRANSPORTATION AND BEST PRACTICES

Truckload: Fighting the tide

28

While truckload shippers can brace for modest rate increases in the 2-percent to 4-percent range in 2014, carrier executives and analysts say that the boost will only offset the consistently rising costs that continue to hamper the sector.

SUPPLY CHAIN & LOGISTICS TECHNOLOGY

5 factors driving WMS growth

34

A mature market by supply chain software standards, warehouse management systems (WMS) continue to play a prominent role in the ever-changing shipping and distribution environment. Here are five market drivers that are sure to keep its usage on the rise.

GLOBAL LOGISTICS

2014 Customs/Regulations Update: Shippers called into action

38

New Customs laws and regulations provide both significant challenges and opportunities for U.S. companies. Our experts outline a transactional checklist that will help shippers find their way.

WAREHOUSE/DC

Inventory Management 101: Time to revisit the principles

42

In many cases, inventory related costs can rival transportation spend as the largest logistics cost—and often holds the most opportunity for significant improvement once it's closely examined. Our warehouse/DC insiders give us a refresher on the all-too-often overlooked practices.



Truckload 28



Customs update 38



Inventory Management 42

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Logistics Management Exclusive Webcast

**2014 Rate Outlook:
Managing costs via multiple modes**
Thursday, January 30 @ 2:00 p.m. ET
www.logisticsmgmt.com/2014rateoutlook

Where are your freight transportation rates headed in 2014?

Our panel of top economic and transportation market analysts agree that freight rates will most certainly see gains in 2014.

Join our panel as they share their insight on where rates are headed and the issues that will be driving those rate increases over the next 12 months. Attendees will gain a better understating of:

- The current state of the U.S. economy and its impact on transportation;
- which way oil and fuel prices are likely to go in 2014; and
- what to expect in terms of rates and capacity across all modes.



SPECIAL REPORT

A blueprint for supply chain optimization

As customer service requirements become more complex, supply chain optimization studies are the foundation for some of the most successful companies' logistics and fulfillment operations. We look at the best practices behind supply chain optimization. Page **48**

SPECIAL SUPPLEMENTS

Leveraging the value of supply chain education

With interest in supply chain education at an all-time high, now is the time to use it to expand your own team's skills, knowledge, and capabilities. Page **54S**



Lift Truck Fleet Management: Deploy, discover, decide



Optimizing a fleet is not an exact science. Although technology can help, it's often the culture on the floor that makes or breaks a fleet management program. Page **58S**

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ETA: 9:30 - 11:30 A.M.

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31	1	2	3	4	5	6
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Crank up the sunshine

TO KICK OFF 2014, I'm going to reinforce a rather bold suggestion that Group News Editor Jeff Berman made in his first blog post of the new year: Let's cut out the use of the adjective "cautious" before we use the noun "optimism" when offering a U.S. economic forecast.

One merely needs to tune into the daily drone of consumer news media to feel the warmth. Unemployment is finally heading in the right direction, housing is robust in most regions, and the consumer confidence index ticked up more than six points in December, recouping the drop caused by the government shutdown in October.

And on these pages and online, we continue to reveal beams of light concerning trade, manufacturing, and even the trend of "reshoring."

In quick review, *Port Tracker*, a monthly report issued by the National Retail Federation and maritime consultancy Hackett Associates, is calling for a positive end to 2013 in terms of annual import growth at U.S. retail container ports. According to the report issued last month, total import volume for 2013 should ring in at 16.2 million TEU, a 2.3 percent increase over 2012.

To round out this data, the United States Department of Commerce reported last month that U.S. exports hit \$194.86 billion on a seasonally adjusted level in November. This number stands as the new high water mark for exports, and when partnered with the import data results is the lowest trade gap since 2009.

"We are well on our way to a sustained recovery," Hackett Associates Founder Ben Hackett tells Berman this month."

There's also positive news on the state of U.S. manufacturing. According to the economic forecast issued by the Institute for Supply Management (ISM) last month, U.S. manufacturing revenue is set to increase 4.4 percent in 2014, with capital expenditures slated to rise 8 percent and capacity utiliza-

tion to ring in at 80.3 percent.

According to Brad Holcomb, chair of ISM's survey committee, this 2014 forecast is based on the positive momentum that started in the middle of 2013, with each month increasing over the previous month through the end of the year. "Our panel of purchasing and supply management executives are forecasting a continuation of that growth trend in 2014," said Holcomb, "with a good first half and an even better second half."

One of the more intriguing bits of upbeat news comes out of survey results issued by business advisory firm Grant Thornton. The report, *Realities of Reshoring*, found that more than one third of responding U.S.-based companies are planning to bring production, customer service, or IT infrastructure back to the U.S. in the next 12 months.

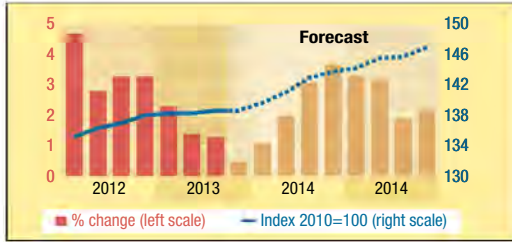
"The idea of going overseas was to drive costs down," Grant Thornton's Wally Gruenes, the study's lead, tells us. "Now, many companies have identified cost savings in the analysis of data they receive from partners in the supply chain. They're looking for closer collaboration or face-to-face meetings to improve these savings, and proximity can be important."

If the results of this study come to fruition, we could see a substantial impact on U.S. trade balances and even more pressure on our straining infrastructure and domestic trucking capacity. However, all of this upbeat data indicates that even U.S. business has confidence in the U.S. again—and for me that's enough to crank up the sunshine.

Michael A. Levans, Group Editorial Director
Comments? E-mail me at mlevans@peerlessmedia.com

price TRENDS

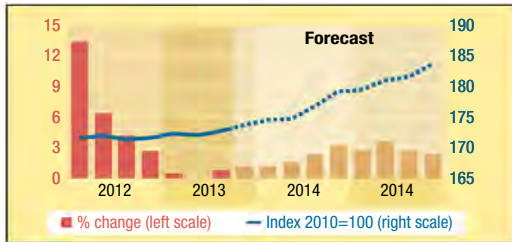
Pricing across the transportation modes



% CHANGE VS.:	1 month ago	6 mos. ago	1 yr. ago
General freight - local	0.0	0.0	-0.5
TL	0.2	-0.7	0.0
LTL	-0.2	2.6	1.6
Tanker & other specialized freight	-0.3	0.3	0.4

TRUCKING

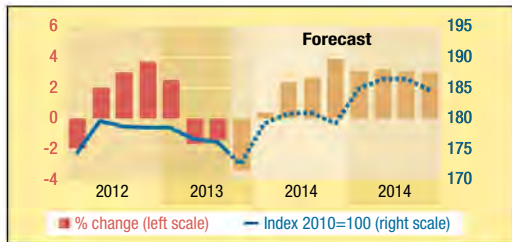
The latest survey of truckers shows that inflation faced by buyers is well under control. Indeed, LTL tags dropped 0.2% from month-ago and increased only 1.6% from same-month-year-ago price levels. All other trucking categories reported month-ago price cuts except long-distance truckload. Prices for truckload services are projected to have increased by a mere 0.4% in 2013. Average transaction prices for LTL services are also estimated to be up 3.2% in 2013. Looking ahead, TL prices will increase 2.3% this year and 2.1% next year. LTL prices will increase 2.5% in 2014 and 3.3% in 2015. Trucking industry costs, meanwhile, are forecast to increase only 0.6% this year.



% CHANGE VS.:	1 month ago	6 mos. ago	1 yr. ago
Air freight on scheduled flights	-0.1	0.6	0.8
Air freight on chartered flights	-1.5	7.6	-3.7
Domestic air courier	-0.4	-0.2	2.3
International air courier	-0.2	0.1	1.5

AIR

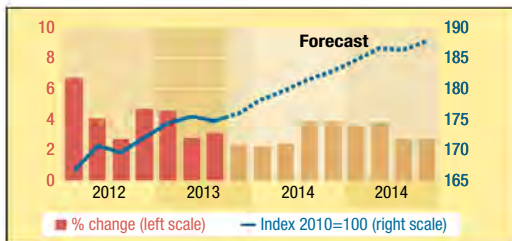
Pushing price hikes in the airline industry remains as difficult as ever. November's surveys report U.S. airliner prices for all services declined 1.6% from a month ago. Prices for air cargo on scheduled flights also fell 0.1% and on non-scheduled flights (chartered flights) dropped 1.5%. Looking at the annual inflation rate, airline industry prices flew at a 4.3% pace in 2013 and are projected to hold steady with a mere 0.1% inflation rate in 2014 before lifting up 5.5% in 2015. As for scheduled air freight service on U.S.-owned airliners, prices grew only 0.6% in 2013 and are forecast to increase 2.1% in 2014 and 2.5% in 2015. Prices may soar again when demand finally does strengthen, but not yet.



% CHANGE VS.:	1 month ago	6 mos. ago	1 yr. ago
Deep sea freight	-3.3	-3.2	-3.4
Coastal & intercoastal freight	0.2	-9.9	-8.8
Great Lakes - St. Lawrence Seaway	1.2	-1.7	-1.3
Inland water freight	2.9	1.4	-3.5

WATER

For four consecutive months the U.S. water transportation industry has reported price declines. By the end of 2013, in fact, prices had fallen back to levels last seen in October 2011. Inland waterways towing is the only category with any appreciable inflation. Here, the most recent survey shows prices up 11.5% from month-ago and up 1.1% from same-month-year-ago levels. Falling prices, however, have been the norm. While not as sharp as the 8.6% price drop seen in 2009, the industry's average transaction prices are estimated to have declined 1% in 2013. Looking ahead, water transportation prices are expected to see annual inflation rates of 2.3% in 2014 and 3.1% in 2015.



% CHANGE VS.:	1 month ago	6 mos. ago	1 yr. ago
Rail freight	0.2	0.2	2.1
Intermodal	-0.2	0.3	1.4
Carload	0.3	0.1	2.2

RAIL

Inflation in the rail industry continues chugging along, albeit at a somewhat slower rate than usual. The latest survey shows average transaction prices for carload services up 0.3% from month-ago and up 2.2% from same-month-year-ago levels. Intermodal rail tags are down 0.2% from month ago and up 1.4% from same-month-year-ago. We estimate that the 2013 annual inflation rate stood at 3.3% for carload and 2.4% for intermodal rail service. All told, the rail industry's average transaction prices grew 2.4% in 2013. If price trends of the past few years continue unabated, as we expect, then buyers of rail transportation services will face annual inflation rates of 3.1% in 2014 and 3.2% in 2015.



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Also:

- Despite high inventory levels, Port Tracker is positive about economic prospects, Page 13
- ISM semi-annual report paints a positive picture for 2014 growth, Page 14
- Oregon Rep. proposes gradual fuel tax increase, Page 14
- YRC, lenders carve out deal to cut debt by \$300 million, Page 15

Union-free carriers trying hard to stay that way

Challenges for union carriers offer clear indications why non-union carriers don't want to take that turn.

By John D. Schulz, Contributing Editor

FRAMINGHAM, Mass.—Unionized jobs in the trucking industry are as scarce as four-leaf clovers in the desert, and the growing non-union trucking sector says that's no accident.

Excluding government workers, unionized representation in all industries has fallen to a 60-year low, while only 6.6 percent of all private sector workers belong to a union. In trucking, about 2 percent of all 3.5 million truck drivers are unionized, and non-union trucking executives see the hard-fought labor battles at long-haul less-than-truckload (LTL) carriers YRC Worldwide and ABF Freight System as further impetus to remain union-free, they say.

Both YRC and ABF have had to negotiate packages of wage and benefit concessions with the Teamsters union that reluctantly agreed to those concessions, but only after a long, contentious effort by management.

Still, non-unionized carriers say that they are feeling extraordinary pressures to maintain their union-free status as the Teamsters continue to spend millions of dollars on organizing efforts. The Teamsters are now using social media in innovative ways rather than going terminal to terminal to get out their message.

New changes in the composition of the five-member

National Labor Relations Board (NLRB) are also worrying some employers who fear an increase in the NLRB's pro-labor bias. President Barack Obama recently appointed two pro-labor NLRB members, former AFL-CIO general counsel Nancy Schiffer and Kent Hirozawa, formerly NLRB general counsel.

Trucking management fears that the NLRB may promulgate rules allowing "quickie" representation elections that companies say are biased toward the union. Also, a renewal of the "card check" legislation, which failed in 2010, may be reintroduced next year depending on the outcome of the 2014 mid-term elections.

In fact, unions may not even be called "unions" any more. Labor has tried to organize "worker centers," shunning the word "union," but acting very much like a union in any event.

But experts say that the best way to stay union-free can be boiled down to a couple key points. "Build relationships with your employees and get rid of your recalcitrants," said Thomas Krukowski, a labor attorney familiar with union organizing and founding partner of Krukowski & Costello.

There have been more than 600 union-trucking company bankruptcies and closings since the Motor Carrier Act of 1980, eliminating more than 500,000 Teamsters from the freight industry. Today the Teamsters have fewer than 70,000 members in the heavy freight sector, mostly at long-haul LTL carriers YRC and ABF.

The Teamsters' largest employer is UPS, which has more than 260,000 Teamsters in its parcel division—making up nearly 20 percent of the 1.4 million member union. The only sizeable trucking company to become unionized in the last 30 years was UPS Freight, formerly Overnite Transportation, which UPS bought in 2005 for \$1.2 billion. At the time, Overnite was partially organized by the Teamsters and had just endured a three-year strike from



1999-2002.

David Rittorf, president and CEO of Modern Management, a consulting firm that works with companies on union issues, says that the Teamsters is the most active of all unions in filing petitions for representation. In the last 10 years, the Teamsters have filed 5,974 petitions, but the majority were withdrawn.

"They are among the least successful unions in terms of winning contracts," Rittorf said.

Then, there's the issue of "card check," the unions' favored method of organizing because they don't have to organize an entire company nationally. Instead, they have to show that a majority of workers have signed a card at a particular facility—a trucking terminal or warehouse, for

example—and that's enough to become the bargaining agent at that unit.

Employers were able to beat back a card check legislation in 2010, but fear it could come up again. Unions usually win about 45 percent of secret ballot elections, but they succeed about 78 percent of the time using card check. If a union is able to collect a majority of signed cards at a particular facility, that union automatically counts that facility as being organized.

Rittorf advises that companies make an honest self-assessment of vulnerability, share experiences with others, prepare a web site touting the company's intentions of staying union-free, and communicate more proactively with employees.

"Over-communicate is what you need to do," Rittorf said. □

last year, and retailers were well-stocked for the holiday season," said Jonathan Gold, vice president for supply chain and Customs policy.

Port Tracker expects total import volume for 2013 to come in at 16.2 million TEU, representing a 2.3 percent increase from 15.8 million TEU last year. In his analysis of the data, Hackett Associates Founder Ben Hackett noted that the U.S. economy appears to have found "a sustainable trend" if the recent third-quarter GDP estimate of 3.6 percent is a reliable indicator.

"For a mature economy, those are quite high growth rates," Hackett said. "We are well on our way to a sustained recovery, and with unemployment now down to 7 percent, it appears that the recovery will continue at a healthy pace."

But despite the GDP gains, Hackett said that consumer spending remains cautious and "does not come anywhere near the expansion of GDP," mainly because inventory levels are increasing. He noted that even with back-to-school sales, Black Friday, Cyber Monday, and regular sales, the inventory-to-sales ratio is still too high, but said that increased consumer spending in November and December might help to reduce those inventory levels.

—Jeff Berman, Group News Editor

IMPORTS

Despite high inventory levels, Port Tracker is positive about economic prospects

WASHINGTON, D.C.—Boosted by some promising signs in the U.S. economy, the most recent edition of the *Port Tracker* report from the National Retail Federation (NRF) and maritime consultancy Hackett Associates is calling for a positive end to 2013 in terms of annual import growth at U.S.-based retail container ports.

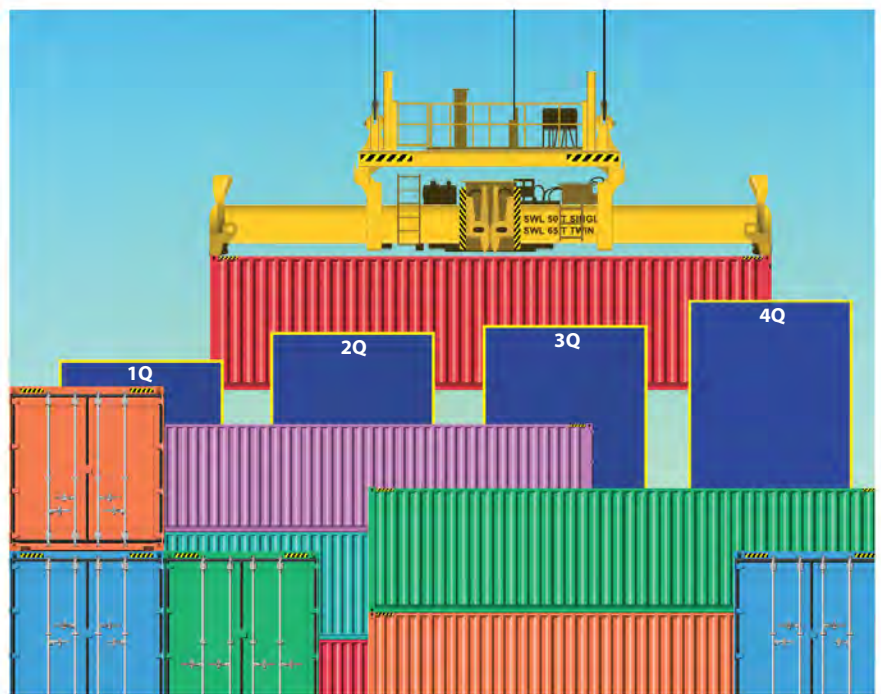
Authors of the report explained that cargo import numbers do not correlate directly with retail sales or employment because they count only the number of cargo containers brought into the country—not the value of the merchandise inside them. However, the amount of merchandise imported provides a rough barometer of retailers' expectations.

In October, the most recent month for which data is available, the report said that the surveyed ports handled 1.43 million twenty-foot equivalent units (TEU), which dipped 0.4 percent from September and was up 6.4 percent compared to October 2012.

The report added that August through September cumulatively accounted for 4.35 million cargo containers, up 4.3 percent compared to the same period

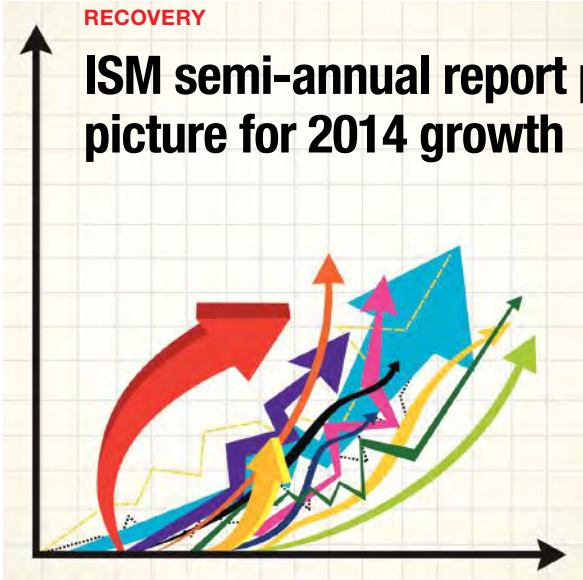
last year and a period that accounted for 26.8 percent of all retail imports for 2013. What's more, the NRF recently predicted 2013 holiday sales would be up 3.9 percent annually at \$602.1 billion.

"Imports have seen good growth over



RECOVERY

ISM semi-annual report paints a positive picture for 2014 growth



TEMPE, Ariz.—As has been the case in its respective monthly manufacturing and non-manufacturing reports on business, continued growth remains in the cards for 2014, according to the December 2013 Semi-annual Economic Forecast recently released by the Institute for Supply Management (ISM).

On the manufacturing side, the report noted that manufacturing revenue is expected to increase 4.4 percent in 2014, with capital expenditures slated to rise 8 percent, and capacity utilization at 80.3 percent.

Some other manufacturing data points cited in the report include inventories rising 0.9 percent to support planned 2014 sales levels; employment pegged to increase by 2.4 percent, with labor and benefit costs going up by an average of 2.3 percent; and raw materials prices expected to head up 1.2 percent through April and then another 0.4 percent throughout the rest of the year.

Looking ahead to 2014, the report laid out the biggest concerns respondents are facing, including domestic sales growth (32 percent); international sales growth (18 percent); healthcare reform uncertainty (14.6 percent); and ongoing government shutdown and debt ceiling concerns (13.5 percent).

In a special question focused on supply chain improvements in 2014, the report said that 69 percent of respondents planned to take various steps to

improve supply chain management processes, including things like strategic sourcing/supply base rationalization, process and information systems improvements, supplier relationship management, inventory management and control, and improved cross-functional planning and scheduling.

Brad Holcomb, chair of the ISM Manufacturing Survey Business Committee, said that manufacturing has been on a positive trend through the second half of 2013, with each month increasing over the previous month going back six months.

“Our panel is forecasting a continuation of that growth trend into 2014, with a good first half and an even better second half,” said Holcomb.

When asked about inventory management in manufacturing, Holcomb said that over the last year it has been a key focus for manufacturing. “It’s an opportunity to control costs, but not at the expense of being prepared for filling new orders at the 50 percent mark,” he said. “Manufacturers have been doing a good job with this, and I see pretty much the same going forward.”

For non-manufacturing, the report expects revenue to increase 3.6 percent and capital expenditures to head up 4.6 percent, with capacity utilization at 86.3 percent. The primary business concerns for non-manufacturing respondents included domestic sales growth (31.8 percent); government regulations (18.9 percent); healthcare costs (14.9 percent); and healthcare reform uncertainty (14.9 percent).

And for the special supply chain question, non-manufacturing respondents noted that technology and process improvement was the most commonly cited means of improving supply chains, with other areas including strategic cost and contract management, strategic sourcing, supplier relationship management,

and professional development.

Like his manufacturing counterpart, Tony Nieves, chair of the ISM’s Non-Manufacturing Business Survey Committee, said that the continuation of growth patterns in the non-manufacturing sector were evident, with the second half of 2013 performing slightly better than the first half.

“Future growth is about expectations and capacity,” said Nieves. “The way things look now there is a fair amount of optimism in non-manufacturing for 2014.”

—Jeff Berman, *Group News Editor*

INFRASTRUCTURE

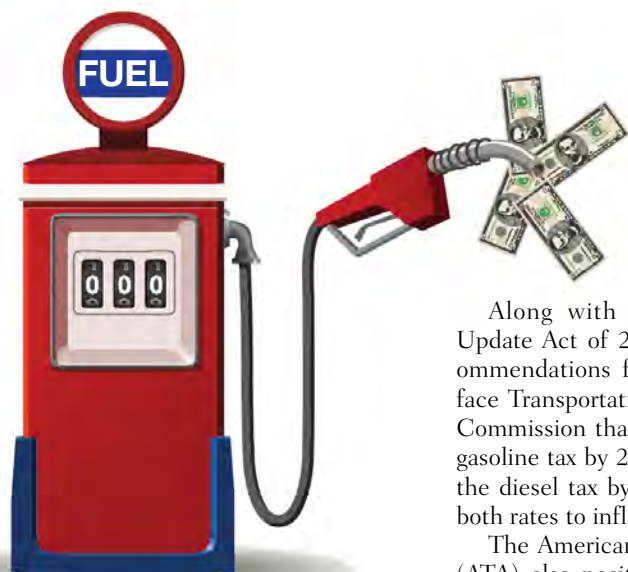
Oregon Rep. proposes gradual fuel tax increase

WASHINGTON, D.C.—Last month, Rep. Earl Blumenauer (D-OR) introduced legislation that would gradually increase the existing federal fuel tax levels by 15 cents over the next three years.

This tax has held steady at 23.4 cents for diesel and 18.4 cents for gasoline and represents roughly 90 percent of Highway Trust Fund (HTF) net revenues that are allocated for federal highway, transit, and highway safety programs. But the amount of money being collected through this tax is dwindling, with the Congressional Budget Office noting that the HTF will have a \$15 billion shortfall by 2015.

The bill, H.R. 3636, The Update, Promote, and Develop America’s Transportation Essentials (UPDATE) Act, would take the recommendations of the Simpson-Bowles report that was issued by President Obama’s bipartisan commission charged with reducing the national deficit in November 2010 and drafted by Alan Simpson, former republican senate leader, and Erskine Bowles, white house chief of staff under Bill Clinton.

Simpson and Bowles recommended that raising the tax by 15 cents would “dedicate funds toward fully funding the transportation trust fund and therefore eliminate the need for further general fund bailouts” of the Highway Trust



Fund, which has occurred in recent years to keep the HTF solvent by transferring more than \$50 billion of General Fund revenue to the HTF.

Blumenauer is subsequently calling for a 15 cent increase in the federal fuel tax and indexing it to inflation so that it would remain intact as a viable and sustainable revenue source.

"Instituting a reasonable gas tax increase now provides the revenues Democrats say they want with a form of a user fee which historically has been acceptable to Republicans including Ronald Reagan, who increased the gas tax by a nickel a gallon in 1982," said Blumenauer. "Addressing the infrastructure deficit, stabilizing transportation funding,

and helping America's all-too-slow economic recovery is critical if we want a livable and economically prosperous country in the years to come."

Along with Simpson-Bowles, the Update Act of 2013 also leverages recommendations from the National Surface Transportation Policy and Revenue Commission that call for increasing the gasoline tax by 25 cents to 40 cents and the diesel tax by 15 cents and indexing both rates to inflation.

The American Trucking Associations (ATA) also positively received the bill. ATA President and CEO Bill Graves said that underinvestment in highways is an enormous burden on the trucking industry, raises the cost of moving freight, and undermines the reliability of a logistics system that is critical to the country's competitiveness.

Randy Mullett, vice president of government relations and public affairs for transportation and logistics services provider Con-way Inc, also endorsed the bill.

"This is a good thing," said Mullett. "We've been supportive of increasing fuel taxes for a long time. The highways are our assembly line, and the only way to get improvements for them is for somebody other than us to make them. It is a very unusual situation for a business like ours to be in."

—Jeff Berman, *Group News Editor*

sheet, significantly improving the company's credit profile, and is expected to secure some of the best paying jobs in the LTL industry," said James Welch, YRC chief executive officer and president of YRC Freight.

"The last two years have been a long and hard fought journey in turning around one of the largest trucking companies in America," Welch added. "After shedding a significant portion of our non-core assets and operations, and with the help of our unionized and non-unionized employees, we have focused our attention back to what we do best, North American LTL trucking.

Under the agreement, the investors will inject \$250 million in cash for newly issued shares of common stock of YRC Worldwide at a price of \$15 per share. YRC shares jumped more than 20 percent to around \$18 on the day the debt-for-equity swap was announced.

The proceeds will be used to pay off about \$69 million in existing 6 percent convertible notes that are due February 2014 and pay off the existing Series A Convertible Notes due March 2015. YRC has \$325 million in debt payment due next September and \$675 million due in March 2015.

According to YRC, consummation of the agreement is subject to a number of other customary conditions as well. "These transactions will result in a substantial reduction of our debt and will position the company to address impending maturities," said Jamie Pierson, YRC Worldwide CFO. "These transactions will also clear the way for us to enter the senior debt markets to refinance our current term and asset-based loans at more favorable interest rates."

If the Teamsters ratify continuation of the wage concession package, YRC said its improved financial picture will allow the company to increase its investment in new tractors, trailers, technology, and the training and developing of its employees."

But that promise came with a subtle warning from the company. "Alternatively, if we are not successful, it would unfortunately mean some very difficult decisions for the company and its employees," added Welch.

—John D. Schulz, *Contributing Editor*

LTL

YRC, lenders carve out deal to cut debt by \$300 million

OVERLAND PARK, Kan.—Clearing a significant hurdle in its latest financial restructuring, YRC Worldwide says that it has reached a debt-for-equity deal with lenders and other institutional investors to reduce its debt by about \$300 million.

The financial restructuring is contingent on a "yes" vote by some 26,000 Teamsters on a five-year labor agreement that would extend a 15 percent wage cut and other benefit concessions to its rank-

and-file workers. That vote is ongoing, and results will be announced Jan. 8.

YRC needs the Teamsters concession as part of a longer term corporate refinancing. In addition, the debt reduction deal is contingent on getting holders of at least 90 percent of the \$124 million of the company's pension fund debt to amend and extend the currently outstanding note.

"The agreement is a momentous step toward delivering the company's balance

Newsroom Notes

with Jeff Berman

Jeff Berman is Group News Editor for the Supply Chain Group publications. If you want to contact Jeff with a news tip or idea, please send an e-mail to jberman@peerlessmedia.com.



Driver shortage: Will we ever see relief?

NO MATTER HOW MANY ways it's sliced and diced, one thing remains certain when it comes to truck driver turnover: It's a difficult situation that has been going on for years, and there are few—if any—meaningful signs that it will ever improve.

This line of thinking was apparent in the most recent edition of the American Trucking Associations' (ATA) *Trucking Activity Report* that showed the annualized driver turnover rate for large truckload fleets in the third quarter fell two percentage points to 97 percent.

With close to 100 percent turnover for large truckload fleets, ATA Chief Economist Bob Costello said that even with this slight dip, the market for experienced, qualified drivers remains very tight—and should the economy continue to show growth, he believes that the market will get even tighter.

“Between increasing demand for freight services and ongoing regulatory pressures on carriers, I expect fleets to remain challenged to find enough qualified drivers, and we'll be contending with a driver shortage for the foreseeable future,” Costello said.

Driver turnover and tight capacity are two things that clearly go hand in hand in the trucking industry, especially during the current tight market conditions that were spurred by a slow economic recovery, the December 2010 implementation of CSA, and the July 1 changes to driver hours of service (HOS).

Regulations like CSA and HOS, as well as the implementation of electronic logging devices (ELD), continue to play a major role in carriers' hesitancy to increase capacity and subsequently hire drivers. In fact, projections from freight transportation forecasting consultancy FTR Associates estimate that this problem is likely to get worse, and by 2014 the driver shortage could be in the 250,000 range.

Stifel Nicolaus' analyst John Larkin added that the evolving situation is going to create a capacity shortage that will translate into “fairly sizable rate increases” that might be steeper than what occurred during the slow growth period over the last couple of years.

And while the driver turnover rate, especially for large carriers, remains high, it could reach even greater

heights should the economy see material gains. At the FTR Transportation Conference in September, Larkin said that strong recruiting is the best way to keep driver capacity utilization at bay.

“The sophisticated and largest carriers are doing their best to recruit experienced drivers, and many have solid training programs,” said Larkin. “They're the ones treating drivers the best and getting them home regularly.”

While turnover figures will remain a top concern, the onset of additional regulations to HOS and CSA will most certainly lead to increased hiring. FTR Senior Consultant Noel Perry said that by the third quarter of 2016 there could be 1.4 million new drivers in the marketplace—a staggering statistic.

According to Stifel Nicolaus' analyst John Larkin, the evolving situation is going to create a capacity shortage that will translate into “fairly sizable rate increases” that might be steeper than what occurred during the slow growth period over the last couple of years.



Larkin's earlier-referenced rate increase thesis was also supported by recent research from Transport Capital Partners (TCP) that noted that carriers are feeling good about volume gains and rate increases in 2014—coupled with the fact that positive volume expectations among the

nearly 200 carriers it surveyed is up to 61 percent in the fourth quarter compared to the same period a year ago.

It's become painfully obvious that something has to give on the driver shortage and retention front. But, as usual, the question remains: How and when will the market ever see some relief? □

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Your 2014 truckload pricing checklist

SHIPPERS WHO ARE FACING PRICING PRESSURE from driver shortages, new regulations, and rising fuel and equipment costs frequently ask me: “How can we get the carriers to be more efficient?” I interpret more as: “How can I save money without suffering from poor service?”

By way of response, I like to remind shippers that much of what they do in the freight buying process and in their daily operations drives up carrier costs significantly. To help keep a handle on these costs, I keep a list of elements handy that Dynarate’s Hank Mullen—the sage of truckload pricing—can rattle off from memory. Here are 10 of Hank’s favorites for shippers:

- ☑ **1. Start in your customer service area and work to extend the notice you give carriers of upcoming loads.** Instead of waiting for the warehouse or transportation system to issue freight orders, provide estimates of inbound and outbound needs as early as possible. A day or two of notice is worth money to carriers in optimizing their operations.
- ☑ **2. Can you take advantage of a backhaul lane of your carrier?** Planning time is important. Get to know the truckload carrier’s network and ask about lanes you can work together on.
- ☑ **3. Do you have the best rates in your supply chain?** Your customer or a supplier may have found that lowest backhaul or round-trip rate already. Don’t insist on using your carrier until you check with all of your business partners.
- ☑ **4. Who are your neighbors?** Talk with nearby companies and see if you can jointly schedule a continuous move, joint load, or shared trailer pool.
- ☑ **5. Are you holding up a road driver at your facility?** Under hours-of-service restrictions, you need to help the driver keep moving with “drop and hook” options as well as by providing space for stand-by equipment.
- ☑ **6. Do you really need a 53 ft. trailer?** If you have dense freight or less than a full truck to move, take advantage of reefer backhauls and 48 ft. trailers rather than insisting on a 53 ft. unit.
- ☑ **7. Call a LTL carrier.** They may surprise you

with a truckload rate (> 10,000 lbs.) in a unique situation (“lane special”) where they need to reposition equipment. You’ll possibly also learn that your LTL carrier is moving long hauls by interlining with your truckload carrier or by intermodal already.

☑ **8. Do you have some hidden truckload freight?** Could you possibly increase your volumes by combining more LTL into truckloads? There are systems that can help you explore multi-stop and pool distribution options. Increasingly, we see customers asking for multiple deliveries of smaller amounts during the week to save on space and spread out inventories. Pool distribution contractors will take your truck-

“Shippers can make an impact on a carrier’s efficiency by broadening the scope of investigation into their own operations.”

load and then schedule multiple deliveries from their facility during the week.

☑ **9. Are you paying too much for insurance?** If you have corporate coverage for your product through to destination, or if you can sign off on a low release value per pound, then you are entitled to ask for relief in your rates. See the Carmack Amendment and your carrier’s rules tariff for more details.

☑ **10. Can you save on warehouse space with trailers?** This may or may not be a plus for your carriers and should not be abused, but it’s worth exploring with your carrier on utilizing storage in transit to pre-stage inventory and postpone warehouse receipt by holding loaded trailers in a safe location. The carrier can balance driver schedules, and the shipper can relieve space pressure and costs in meeting customer demands.

If you’ve spoken to Hank Mullen, as I have many times, you know the list goes on. Shippers can make an impact on a carrier’s efficiency by broadening the scope of investigation into their own operations. Collaboration with your service providers will yield savings every time. □

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Using M2M technology to improve supply chain performance

THEY MAY NOT RECOGNIZE THE TERM, but a lot of logistics and supply chain executives are concerned about “permanent volatility.”

They know, for example, that constant fuel-price swings compromise their ability to manage supply chain costs. They fear that their companies' security systems won't be able to cope with a growing onslaught of cyber invasions. They understand that more weather events and political threats mean new visibility problems and supply disruptions. And they're keenly aware that rapid globalization requires the frequent readjustment of supply chain strategies and supply chain resources.

It all falls under the banner of permanent volatility.

Leveraging wireless machine-to-machine (M2M) technology—automating information exchanges between pieces of equipment or with a control center—can be a great way to deal with permanent volatility. M2M is not new; in fact, factory control systems like programmable and numerical controllers have been around for decades. However, there are many new reasons to embrace the technology.

The most salient is 4G mobile technology standards. M2M is increasingly synonymous with “wireless” which, compared to hardwiring, offers broader

coverage, less implementation effort, lower operating costs, increased standardization, and simpler enhancements and upgrades. Small wonder that researchers are predicting that use of wireless M2M will increase by 25 percent to 30 percent annually.

In addition, new M2M innovations and applications are being developed at a rapid rate. This means ever-improving performance, new sensing capabilities, increased affordability, and new opportunities for near-real-time information sharing. M2M technology is a multi-faceted way to address supply chain management's most pressing challenges and subsequently raise shareholder value in the following:

Fleet tracking: Monitoring fleet arrivals/departures and flagging exceptions can improve end-to-end visibility and improve planning.

Event-based monitoring of driver behavior: Documenting speed, idle time, and hard braking of delivery vehicles can reduce fuel and insurance costs, while increasing driver safety.

Field force management: Overseeing field-force activities from a centralized location can make it possible to practice real-time routing based on traffic information.

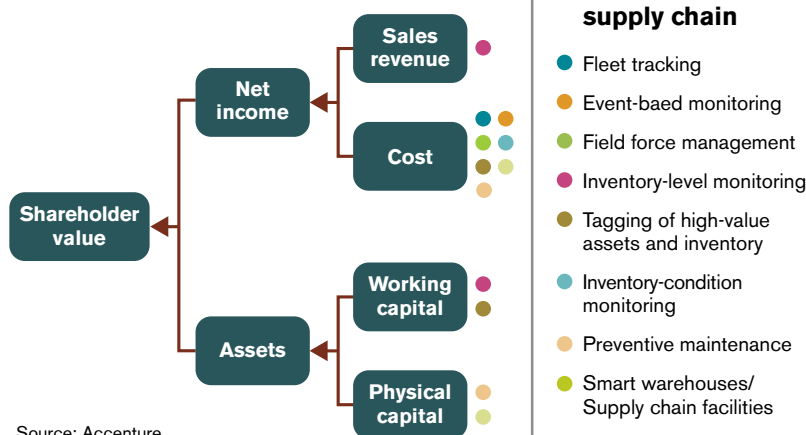
Inventory-level monitoring: Viewing and communicating inventory levels can help companies build automated replenishment programs and share information with suppliers.

Tagging high-value assets and inventory: M2M systems can help companies keep track of particularly valuable assets, such as computers, data-storage devices, consumer electronics, and ATMs.

Inventory-condition monitoring: By tracking inventory longevity as issues associated with humidity, temperature, pressure, and

M2M technology is a multi-faceted way to address supply chain management's most pressing challenges

Enhanced shareholder value



Source: Accenture

light, companies can do a better job of overseeing product shelf life and maximizing the efficacy of medicines.

Preventive maintenance: Monitoring equipment remotely and proactively improves an organization's ability to ward off failures and improve scheduled (preventive) maintenance.

Smart warehouses/supply chain facilities: Through remote metering and control, companies can optimize energy use in warehouses, production facilities, and other locations, thus reducing operating costs.

The following high-level framework could help companies set the stage for a new or enhanced M2M capability:

1. *Understand the unique challenges and business requirements associated with your company's supply chain.* After all, you're basically building a custom solution since M2M involves a variety of applications.

2. *Develop an M2M strategy.* The overarching goal is to turn enhanced visibility, data, and analytics into better insights and faster execution. A global roadmap and detailed business case are needed to demonstrate how—and at what cost—this can be made to happen.

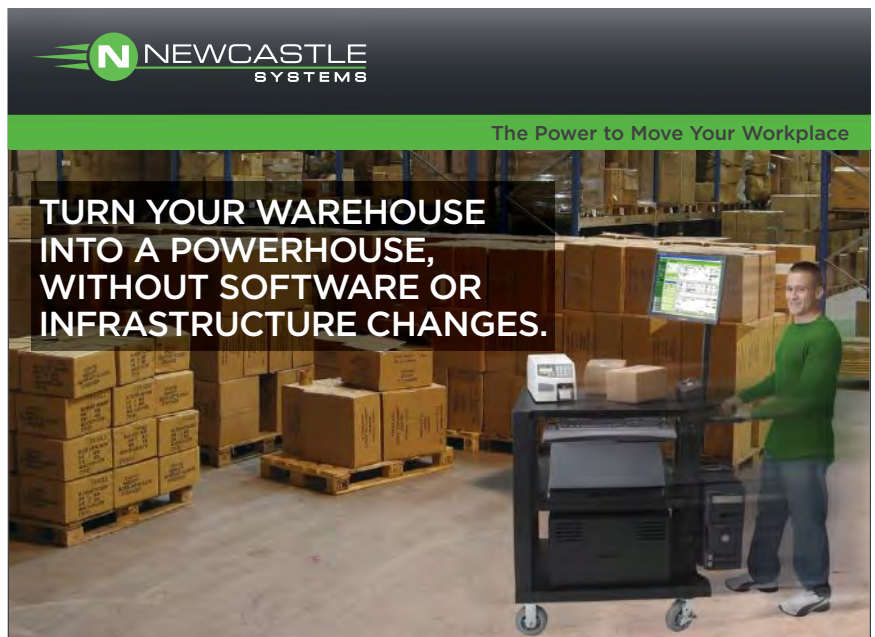
3. *Consider what supply chain modifications may be needed to maximize M2M's contributions.* Every component of the supply chain should be examined: network and asset configurations; risk management approaches; organizational structure; business processes; IT architecture; performance management programs; intra-and inter-company collaboration mechanisms; and data sharing with business partners.

4. *Pick the right partners.* A comprehensive M2M solution requires more than an internal or contract systems implementer. A variety of collaborations across the value chain—device, network, application—may be needed to ensure end-to-end coverage.

5. *Develop a detailed implementation plan.* A top priority is complete integration with the company's supply chain systems and business processes. Another is using a phased approach to minimize risk, capture quick wins and gain experience.

Lastly, remember that today's M2M goes far beyond the factory floor—

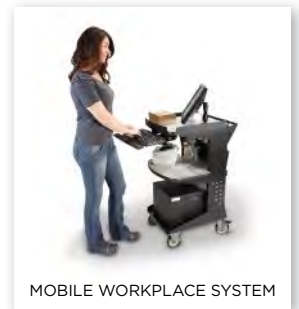
machines controlling machines. Huge strides in wireless technology have helped make M2M an increasingly crucial information-management tool. It's now a way to subtract costs and risks and add greater amounts of visibility, standardization, and predictability. As much, or more, than any other solution, M2M is a potential antidote to permanent volatility. □



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Movement to CNG/LNG fleets encouraging, but not without risk

INTEREST IN ALTERNATIVE FUEL VEHICLES skyrocketed in 2013, with successful pilot programs for compressed natural gas (CNG) and liquefied natural gas (LNG) trucks being deployed in both private and for-hire truck fleets.

While the success stories are encouraging, investing in CNG/LNG fleets is expensive and not without risks. Decision makers must understand and quantify these risks and balance them against positive developments in the alternative fuel industry.

Regarding the later, the rapid growth of natural gas vehicle fleets and continued strong price differentials between diesel and CNG/LNG (measured on an energy equivalent basis) have inspired a rapid build-out of public, fast-fill CNG fueling stations and promoted growth in the LNG fueling infrastructure as well.

Thus, the long-standing “chicken and egg” question appears to be answering itself—alternative fuel fleets and infrastructure are being built out concurrently.

The growth in demand for CNG-powered trucks has both enabled and driven CNG tank manufacturers to invest in research and development aimed at reducing the weight of CNG tanks. Tank manufacturers have also invested in technologies that help dissipate heat so that a larger volume of CNG can be pumped into the tanks at fast-fill facilities.

These investments have made CNG more competitive against diesel, and as the market grows, it should be expected that scale economies would continue to put downward pressure on the price for CNG tanks. Similar progress has been made in LNG tank design, but the market for LNG trucks remains small.

Similarly, growth in demand for medium and heavy-duty CNG/LNG power plants will continue to inspire innovation and suppress prices. Moreover, as the number of CNG/LNG trucks grows, confidence in the end-of-lease residual value estimates increase, and the inherent investment risk will experience further declines.

While innovations and economies of scale will continue to enhance the viability of CNG/LNG powered fleets, these positive developments must be weighed against the risk that the fuel price differential will contract to a meaningful degree over the life of the fuel-switching investment requirements. In cases where public fueling stations are utilized, the price differential will only have to persist for three to five years—just long

enough to cover the lease life of the vehicle and ensure viability of the residual value.

In cases where fleet managers also invest in on-site CNG/LNG fueling infrastructure, the price differential will need to persist for a much longer period of time.

A number of factors could cause the price differential between a gallon of diesel and a diesel gallon equivalent (DGE) of CNG or LNG to either grow or contract. Ultimately, the retail price is driven by the underlying price of oil and natural gas, and it is further influenced by transportation and processing (refining, compression, or liquefaction) costs as well as the retail markup and taxes.

Regarding the underlying commodity price, we see that the average price paid by domestic refiners to acquire a barrel of oil is currently \$100.23, and that the highest average price paid over the prior year was

Looking forward, strategic decisions will hinge on how oil and fuel markets develop and how diesel and CNG/LNG prices evolve over the next few years both regionally and internationally.

\$106.20. By comparison, the lowest price paid was \$98.67. In relative terms, the difference between the highest and lowest average acquisition cost in 2013 pencils out to approximately seven percent.

While oil prices have remained relatively flat, natural gas prices have fluctuated significantly. The lowest price paid for a unit of natural gas (one thousand cubic feet) at the Henry Hub distribution facility was \$3.18 (first week of January 2013), and the highest price paid was just over \$4.50 (late December 2013). This equates to a price increase in excess of 41 percent over the year. From a commodity perspective, oil prices remained flat while natural gas prices rose significantly through 2013.

Of course, these values represent national averages, and significant regional price differentials exist. The most recent data indicate that the cheapest diesel was to be found in retail stations in the Gulf Coast region. At just \$3.76 per gallon, retail diesel prices were approximately 10 percent less expensive on the Gulf Coast than they were on the West Coast where a gallon of diesel will set the consumer back \$4.13. The price differentials between states are even higher.

By contrast, on a diesel gallon equivalent (DGE)

basis, retail CNG prices ranged from just \$2.10 in the Midwest region to \$2.91 in New England—equating to a regional price differential of nearly 40 percent.

Similar price differentials exist for private-fleet refueling facilities. Interestingly, on a regional basis, the retail markup for CNG ranges from insignificant to enormous. On the West Coast, the difference in the average price for a diesel gallon equivalent of CNG acquired at a public retail fueling station was \$0.81 (or 43 percent) higher than the final costs per unit at private-fleet stations. By contrast, there was almost no price discount for fleet managers in the Midwest that had installed their own CNG compression and fueling infrastructure.

Looking forward, strategic decisions will hinge on how oil and fuel markets develop and how diesel and CNG/LNG prices evolve over the next few years both regionally and internationally. Key questions include:

- What price is required to return domestic natural gas production, which has been stagnant since January 2012, to growth?
- Will natural gas production return to growth rates that persisted between 2006 and 2012, when dry gas production grew from approximately 1.5 to 2.0 trillion cubic feet per month?
- Alternatively, what price is required to bring the

natural gas drilling rig count back up after declining from more than 800 in January 2012 to 430 by December of 2012 to just 370 in December 2013?

- What will be the price impact of the four LNG liquefaction plants that have been permitted for construction and are forecasted to bring LNG exports up to 2.3 trillion cubic feet per year—or approximately 10 percent of the current level of domestic dry gas production?

- On the diesel side, how will the boom in shale oil production impact world oil prices and regional refiner crude oil acquisition costs?

- Moreover, how will the build-out of oil and refined product pipelines impact the crude oil acquisition costs of regional refineries, and will costs/savings be passed to the consumer?

- Finally, how will federal and state regulations and incentives impact the cost of the initial investment?

The coming year promises to be exciting as dynamic market conditions cause the diesel/natural gas price differential to evolve. Market pressures suggest that the price differential will contract over the next 12 months. At the same time, economies of scale will increase and the investment differential between CNG/LNG and diesel power plants should contract. □

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August	99.0%	98.3%	98.5%	97.7%	97.9%	98.0%
September	99.0%	98.4%	98.4%	97.2%	97.6%	97.5%
October	98.8%	98.5%	98.4%	96.9%	97.5%	96.7%
November	98.7%	98.8%	98.1%	96.5%	97.5%	97.6%
Average	98.9%	98.5%	98.4%	97.1%	97.6%	97.5%
	2012	2013	2012	2013	2012	2013



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2014 RATE OUTLOOK: Ready to corral costs?

BY PATRICK BURNSON, EXECUTIVE EDITOR

While the Institute of Supply Management (ISM) reports that economic activity in the manufacturing sector was strong for the sixth straight month, logistics managers may still wish to examine this “exuberance,” say economists. With that said, transportation rates are unlikely to surge this year, no matter how vibrant the manufacturing sector remains.

According to ISM, manufacturing firmed once again at the end of 2013, climbing to its best level since April 2011 in both production and new orders. But there’s still reason for skepticism, says Michael Montgomery, U.S. economist with advisory firm IHS Global Insight.

“The problem remains the chronic lack of confirmation in government data on manufacturing,” says Montgomery. “It shows gains as barely over tepid growth, but the ISM report hardly indicates robust growth.”

Montgomery adds that the surveys seem to be reporting that the strengthening is broad-based, and that the most recent industrial production data did show gains. But what does it take for gains to be both broad and deep? The answer is simple, say IHS economists, who contend that the world manufacturing and goods trading markets need to all be moving in synch.

“Right now the world is growing at several different speeds,” says Montgomery. “The U.S. and Japan are both reporting good gains in the surveys. The UK is booming, but the Eurozone and China are struggling with very modest gains.” He adds that if China and Europe can catch up to the growth pace of the other three, then the manufacturing sector will be on a roll. “If that’s the case,” says Montgomery, “with one side of the ocean pushing the other to strength, that will spur growth in the first.”

But it’s that synchronization that’s currently absent as Europe struggles with its structural problems. Meanwhile, industry experts in the fuel, rail, trucking, air, ocean, and parcel sectors are telling shippers to ready themselves for a gathering concentration of rate hike attempts.

Fuel: Loaded with uncertainty

Surplus oil production capacity has been an unreliable metric to date, notes Derik Andreoli, Ph.D.c., senior analyst at Mercator International LLC and *Logistics Management’s* popular Oil & Fuel columnist. He adds that, historically, when surplus production capacity declines to 1.5 percent of total liquid fuels consumption, oil prices increase and become much more volatile.

“This year, surplus production capacity fell from 3.0 percent of total consumption to 1.7 percent by August, but rebounded to 1.9 percent in September,” says Andreoli. “With such a thin cushion, any price forecast will be loaded with uncertainty.”

Andreoli adds that if global oil demand picks up faster than producers are able to add capacity, prices will ramp up, and any credible threat of disruption will have the same effect. “Alternatively, production disruptions currently amount to more than 2.0 percent of global capacity, so if just half of these bottlenecks are relieved, surplus capacity could rise to a comfortable level and price pressures would ease.”

With these caveats in mind, Andreoli says that weak demand in emerging markets, continued “sustainability” gains in Europe and the U.S., and continued growth in domestic production of shale oil will likely cause oil prices to decline slightly through the first half of the year. Then, he believes that price levels will spike in the second half of 2014 as the pace of global economic growth accelerates.

“And as a result, diesel prices are likely to remain elevated, and alternative fuels, especially compressed natural gas, will continue to sell at a steep discount on an energy equivalent basis, even as natural gas wellhead prices rise,” says Andreoli.

According to Andreoli, Mercator International has modeled dozens of fuel price scenarios in order to evaluate the feasibility of CNG and LNG fleet conversions from a firm-level cash flow basis. “We’ve concluded that conversion offers significant savings in many, but not all, cases,” he says.

Over the coming year, he adds, shippers can expect the

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With the exception of parcel, freight transportation rates will only make incremental gains in 2014. However, our top market analysts tell us that controlling total landed costs by using a variety of modes is now imperative.



rapid adoption of CNG alternatives, but the current fleet is so small that even a doubling of the number of natural gas vehicles will not dent diesel demand.

Trucking: Modest bump

Andreoli's forecast resonated with Stifel Nicolaus trucking analyst John Larkin, who observes that the expense of diesel will remain stable. Meanwhile, trucking rate increases lost momentum in 2013, as the much-anticipated capacity crunch failed to materialize—even after the implementation of new capacity sapping hours of service (HOS) rules on July 1.

"Some truckload carriers were able to push rates up 1 percent to 2 percent on average, with most of those gains realized early on in the year," says Larkin. Others, he adds, were able to push unit revenue up a little beyond that level by applying technology to better select higher rated freight and improve their freight mix.

"LTL carriers also experienced some deceleration in the amount of year-over-year rate increases as the 2013 wore on," says Larkin. A sluggish economy seemed to be the culprit in this instance, he adds.

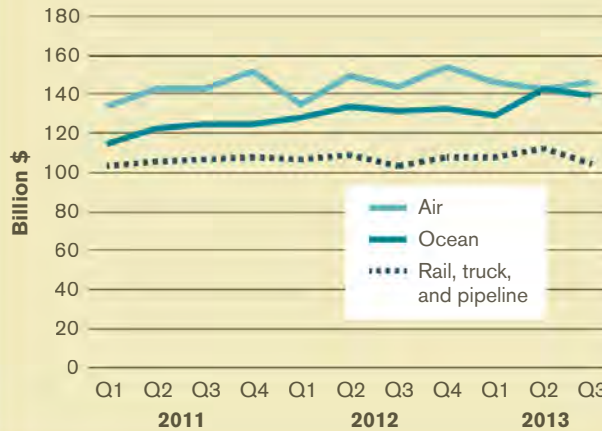
So, as 2014 looms the question remains: Will 2014 be the year when the capacity crisis actually kicks in and drives trucking rates up mid- to high-single digits?

"While we would like to think that's a real possibility, without the economy shifting into a higher gear this outcome is unlikely," Larkin says. "We would expect more of the same for both truckload and LTL carriers—low-single-digit year-over-year rate increases."

According to Larkin, until the electronic logic devices (ELDs) are mandated across the board by the federal government, the sluggish economy, coupled with collaborative supply chain efficiencies put in place by shippers and carriers alike, will drive

U.S. exports

(USD value, by mode of transportation)



Source: Zepol

"pedestrian" rate increases.

"Once the ELDs go into effect, we may finally have the catalyst that drains enough capacity from the market to drive the much anticipated mid- to high-single-digit increases," adds Larkin.

Rail/Intermodal: Increase on track

Brooks Bentz, a partner in Accenture's supply chain management practice, jokingly referred to "yawns of surprise" when evaluating rates in 2013, and does not see a significant change this year.

"I believe that the economy will continue recovering, but at a very modest pace, and that rate making in carload and intermodal will reflect that," says Bentz. "Exceptions may be there in the

really hot areas, such as drilling pipe, frac sand, as well as petroleum and gas output. But since there's not much of a long history there, it will be hard to gauge."

Bentz says that intermodal is doing well domestically and still lagging internationally—a trend he sees as ongoing. The "market-changers" will be the willingness, followed by the ability, of some carriers to mount an assault on the shorter-haul markets with their hub-and-spoke approach. According to Bentz, this is a burst of new thinking and an approach to penetrating the market segment that has some

of the largest volumes.

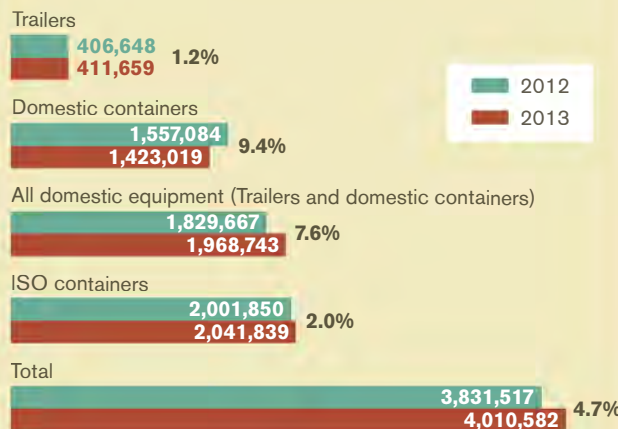
"Railway operating efficiency is very strong across the board, but they are still striving to do better, which will make them a very competitive force for a long time to come," says Bentz. "That means, shippers who are new or casual users of rail—either carload, intermodal, or both—should do the due diligence to examine rail as an alternative mode."

According to the Intermodal Association of North America (IANA), the Southeast region led the intermodal sector in the third quarter of 2013, boasting an 11.3 percent gain over the same period last year. Following immediately behind was the Northeast region, which posted an 8.3 percent gain compared to the same quarter in 2012. The Midwest maintained its year-over-year third quarter hold on the largest percentage share of regional traffic, with 28 percent.

"It is also worth noting that the trailer segment grew in all three months of the third quarter, reversing three years of decline and contributing to domestic growth," says Joni Casey, president and CEO of the Intermodal Association of North America.

Finally, says Casey, there is always variability in these factors between domestic and international intermodal services. Shippers are mitigating

Third quarter 2013 intermodal volume comparisons



Source: IANA (Intermodal Association of North America)

their exposure to sudden rate increases by segmenting lanes and repositioning warehousing closer to hubs and ocean cargo gateways. “We keep knocking miles off the length of the haul,” she adds, “and that is going to address a lot of rate issues for us now and in the future.”

Ocean: Hikes unlikely

An ocean carrier price fixing case currently under investigation by the European Commission (EC) may indicate how desperate things have become in this sector, say analysts for the London-based consultancy Drewry Supply Chain Advisors.

“On one hand, carriers will argue that they are only doing what they have always done, namely notifying shippers of future price increases in good faith,” says Philip Damas, Drewry’s director. “Moreover, the way that they’ve been carrying out the function hasn’t gotten them anywhere, as evidenced by the downward spiral in freight rates in the past four years.”

On the other hand, the EC can counter that since the historical practice of announcing general rate increases (GRIs) started, the lack of financial justification for them has become more evident, suggesting that the targeted increases are now only motivated by supply and demand.

“The EC’s legal proceedings are certainly badly timed for the P3 alliance because Maersk, MSC, and CMA CGM need to be seen as responsible carriers in the eyes of industry regulators,” says Damas.

Martin Dixon, Drewry’s research manager, also notes that there is an “increasing disconnect” between market fundamentals and freight rates. He notes that despite respectable load factors, carriers are struggling to achieve sustainable rate increases on the spot market—and this is strengthening cargo owners’ hand in contract rate negotiations.

“Carriers continue to be spooked by the specter of imminent big ship deliveries and so are fighting to hold onto market share,” says Dixon. “This market behavior will put further pressure

on freight rates through 2014.”

Rosalyn Wilson, senior business analyst with Delcan Corporation, maintains that the proposed rate hike by the transpacific stabilization agreement is also unlikely to succeed.

Air: Flying low

Overcapacity seems to be plaguing the air cargo sector as well, says Charles “Chuck” Clowdis, managing director of transportation advisory services for IHS Global Insight. Still, he predicts a slow gradual increase in tonnage by the end of this year’s first quarter.

“The European air cargo lanes are increasing, but still have a ways to go

Geneva-based organization announced an upward revision to its industry financial outlook.

“For 2013, airlines are expected to return a global net profit of \$12.9 billion. This is expected to improve to a net profit of \$19.7 billion in 2014, says Tony Tyler, IATA’s director general and CEO.

Parcel: No smooth skating

No matter how good shippers have become at negotiation, chances are that delivery costs have gone up much faster than they expected, says Jerry Hempstead, president of Orlando, Fla.-based Hempstead Consulting.

“The exit of DHL from the domestic playing field some five years ago has left shippers at the mercy of a duopoly,” says Hempstead. “Shippers have little recourse. If one marries a carrier, there’s a good chance that there are yearly increases built into the agreement someplace.”

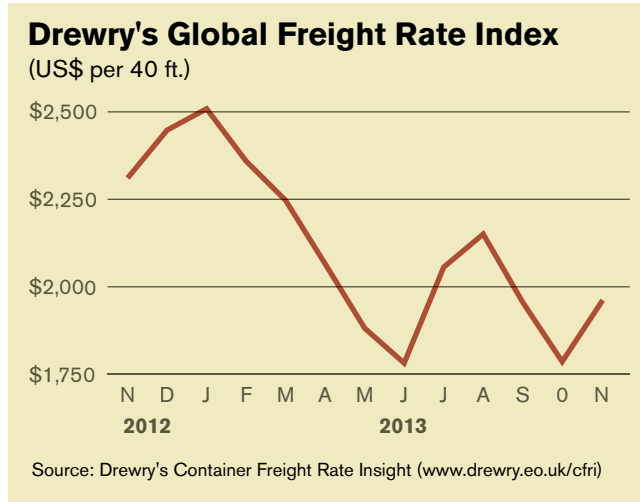
Hempstead says one of the largest changes since DHL left has been the escalation of the minimum charge. Shippers with big discounts often experience the jump in minimums the most. Since January of 2009, the ground minimum is up over 35 percent.

“Both FedEx and UPS have experienced laudable earnings growth in spite of a tepid economy,” says Hempstead. “Imagine how they might fare if the economy picks up? When we consider all the complexities of carrier pricing, we can’t envision many shippers skating by without some pain.”

But one mega-shipper may transform the scene in coming years, Hempstead predicts. “Amazon has sent a warning message out to the private carriers,” says Hempstead, “that it’s willing to explore alternatives to traditional services.”

Although Amazon may be a big customer of FedEx and UPS, they could become a threat as a competitor—and only time will tell if all three will work together to leverage each other’s strengths.

Patrick Burnson is Executive Editor of Logistics Management



despite being up slightly over last year,” says Clowdis. “Africa is the only region to show a decline from a year ago.”

Meanwhile, North American airlines returned to a solid growth rate in October after a slight drop in September. Significantly, says Clowdis, the October increase was not affected by the 17-day, U.S. federal government shut down. Manufacturing activity in North America appears to be supporting demand for air transport of goods produced, but the expansion rates are still extremely small—and three times slower than at this time last year.

“Rates will follow growth, but capacity still is abundant and until some is absorbed, rates will still remain sustainably low,” concludes Clowdis.

Analysts with the International Air Transport Association (IATA) agree, but say that the skies may brighten for carriers in the new year. Late last month, the

Truckload: Fighting the tide

BY JOHN D. SCHULZ, CONTRIBUTING EDITOR

Analysts and carrier executives agree that since the Great Recession of 2008-2009, the truckload (TL) sector has been the slowest to recover. In fact, during this challenging period of time, the TL market lost more than 20 percent of its capacity, and the nation's so-so economic recovery has made TL executives gun-shy about ramping up capacity now that they're unsure about overall economic demand.

"In general, it's kind of a choppy environment," says Eric Starks, president of freight data research company FTR Associates. "The market continues to move forward with some growth, but it's not to levels most had expected at this point in the economic cycle."

While TL shippers can brace for some modest rate increases in the 2 percent to 4 percent range in 2014, carrier executives and analysts say that the boost will only offset the consistently rising costs that are dogging the sector.

In fact, the industry's top analysts are saying that truckload fleets will continue being hit by higher costs for just about everything. Increased government regulation is causing lost productivity, driver wages are rising because the shortage of qualified drivers is real and getting worse, and fleets are trying to cut costs wherever they can.

In some cases, fleets are just giving up while mergers and acquisitions are on the rise. Recently, Iowa-based Heartland Express bought Seattle-based Gordon Trucking for \$300 million in one of the largest of many deals that are percolating inside the TL system. The move will create the nation's fifth \$1-billion-plus TL carrier.

Analysts say that deals like the Heartland-Gordon merger are *not* involving financially distressed companies. In fact, just the opposite, giving hints that better times may be just around the next bend for the TL sector.

"You've got buyers who've got money and believe that things are going to get better," says Lana Batts, partner at Transport Capital Partners, a firm specializing in trucking merger and acquisition activity. "To try and grow one truck at a time will take too long. They want an acquisition now."

Over the next few pages we'll take a closer look at the key challenges affecting the truckload market, including the harsh regulatory environment that's hampering productivity and raising everyone's costs as well as the continued scarcity of drivers.

Government crackdown

Simply put, the trucking industry has been hit with a regulatory *tsunami* since the Obama administration took charge in 2009. The government's Compliance, Safety, and Accountability (CSA) initiative of 2010 has a goal of weeding out as many as 150,000 unsafe truck drivers from the nation's 3.5 million long-haul drivers—that's on top of increased mandatory drug and alcohol testing, more extensive background safety checks, and tougher scrutiny of unsafe trucking operations.

The most recent change was last summer's tweak to the hours-of-service (HOS) rules. They now require drivers to have at least 34 hours of off duty before being able to "restart" their work week—and those restarts are limited to one per week. The rules also require at least two periods of off duty from 1 a.m. to 5 a.m. on consecutive days, causing scheduling headaches for both the largest and smallest TL fleets.

Well-run fleets such as Schneider National have estimated that the July 1 HOS tweak has added 3.1 percent to its overall cost of operations. FTR's Starks has concluded that the overall TL sector has taken a 3 percent to 5 percent hit in productivity due to the HOS changes. However, for some fleets, especially those utilizing team operations, the cost increase could be even higher.

"It's clearly had an impact," says Starks. "Not everybody has been hit with a productivity loss, but a majority of the truckload industry has, and any type of productivity loss hurts the overall industry."

Saul Gonzalez, president of Con-way Truckload, the nation's 17th-largest TL fleet, says that the new HOS rules particularly hurt those carriers engaged in hauls in excess of 800 miles. "We have been focused on dwell time between loads, trying to reduce wait time, and get our drivers assigned

While truckload shippers can brace for modest rate increases in the 2-percent to 4-percent range in 2014, carrier executives and analysts say that the boost will only offset the consistently rising costs that continue to hamper the sector.



loads faster,” says Gonzalez. “We’re also working to reduce loads where the customer wants too much time, which ties up our truck and driver unnecessarily.”

For example, a 300-mile TL load should normally be delivered in just over six hours. However, if the customer wants it delivered second day that means that the driver has to sit on it and can’t be assigned another load.

“Now we’re asking the customer to accept the load for delivery when it’s available,” explains Gonzalez. “We can’t afford to make the driver wait, nor can we afford to lose any more time on deliveries. When the driver’s waiting he’s not making any money, and we have an asset that’s not generating revenue. We can’t absorb that.”

Gonzalez adds that loads that require these tight service times, especially in congested parts of the country, as well as time-sensitive longer length of haul shipments, are particularly prone to being affected by the new HOS rules.

“Government regulations are adding huge layers of cost and inefficiencies. If you don’t have enough trucks, you can’t spread that costs around. You have to have more trucks to spread it around, and you need more trucks in order to gain more efficiency.”

—Lana Batts, partner, Transport Capital Partners

“Government regulations are adding huge layers of cost and inefficiencies,” says Batts. “If you don’t have enough trucks, you can’t spread that costs around. You have to have more trucks to spread it around, and you need more trucks in order to gain more efficiency.”

For smaller carriers, that pain is particularly acute. Jim O’Neal, president of O&S Trucking in Springfield, Mo., a small fleet with 100 trucks, says the latest HOS changes were unnecessary and bad for productivity. “The HOS revision done in 2004, the first meaningful change in 60 years, was appropriate,” he says. “The further changes put forth by the Obama administration has made trucking a much harder job, and it’s made it harder for drivers to get rest. It just wasn’t based on sound

science, and it has made a tough job harder and less safe.”

Driver dilemma

It’s made the business a whole lot more costly as well—not just for shippers and carriers, but also for drivers. A recent survey by the American Transportation Research Institute (ATRI), an arm of the American Trucking Associations, concluded that the HOS changes have hurt carriers and cost drivers money due to the enforced rest periods.

Specifically, the report projected lost driver wages ringing in between \$1.6 billion and \$3.9 billion for the first 12-month period ending this July 1. More than four out of every five fleets surveyed by ATRI said that they were experiencing lost productivity as a result of the HOS changes.

According to O’Neal, there’s no quicker way to chase truck drivers out of the industry than to reduce their pay—and that appears to be happening because of the HOS and other regulatory changes in trucking.

A recent survey of the Owner-Operator Independent Driver Association (OOIDA) showed that two out of every three truck drivers were experiencing lower income due to the HOS changes. Specifically, the 34-hour restart provision was causing 56 percent of the 4,000 survey respondents to suffer a loss in income.

“We’re seeing these guys complaining,” adds O’Neal. “It’s just disruptive all around. We have a pretty good driver program, but it’s just harder and the HOS changes have made that extra difficult with planning and routing due to the restart.”

And it’s certainly showing up in driver turnover. In ATA’s most recent *Trucking Activity Report*, turnover at large TL fleets, those with more than \$30 million in annual revenue, hit 97 percent on an annualized basis—the highest since the third quarter of

Dedicated: One bright spot in TL picture

Whatever the vagaries of the general truckload (TL) market, carrier executives and analysts say that one area that has remained in constant vogue with shippers is the dedicated truckload market. As much as \$40 billion of the roughly \$300-billion TL market is moving under dedicated contract carriage, analysts say.

Dedicated carriage, which is contract freight movements secured with long-term contracts over “dedicated” regular routes, is a “win-win-win” for carriers, shippers, and their customers, according to Con-way Truckload President Saul Gonzalez.

Carriers stand to gain due to the assurance that a certain portion of their fleet is used on a regular basis, typically with the same drivers over the same routes, creating a familiarity that nearly guarantees top-flight service.

Shippers gain because dedicated rates are typically 10 percent to 15 percent below what normal contract carriage sells for, depending on lane and freight characteristics, of course.

And finally, shippers say their customers win as well. That’s because drivers become very familiar with the specific needs of certain customers—inside deliveries, time of day, set-up and removal of old merchandise—that makes dedicated carriage a customer-specific type of trucking service that other modes find impossible to match.

“My general sense is that it’s paid off for shippers to go to dedicated,” says Eric Starks, president of freight data research company FTR Associate. “They weren’t paying significantly higher rates for that capacity, which you might have assumed to be the case. I would expect dedicated will stay on the forefront of a lot of shippers minds for next year or two.”

The only thing that would cause a drop in demand for dedicated truck carriage would be a significant economic slowdown, Starks says. “But I don’t see that happening yet.”

—By John D. Schulz, Contributing Editor



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2012. At smaller fleets, the rate was 82 percent.

The market for experienced, qualified drivers remains “exceptionally tight,” according to ATA Chief Economist Bob Costello. “I expect, as the economy continues to pick up, we’ll see that market get even tighter.”

Turnover at truckload fleets with less than \$30 million in annual revenue dropped eight points to 74 percent, its lowest level since the first quarter of 2012. “Between increasing demand for freight services and regulatory pressures, I expect fleets to remain challenged to find enough qualified drivers and will be contending with driver shortage-related issues for the foreseeable future,” Costello said.

For TL executives, it’s just another worry in their bonnet. “We’re managing through it,” Con-way Truckload’s Gonzalez says. “Drivers want quicker turns on loads and less time waiting, either for a new load, loading, or unloading at the customer. It’s too early to tell what the impact will be on turnover, but we’re always tweaking how we recruit and are now looking at areas where we can revamp and improve our pay package.”

FTR Associates is sticking with its forecast that the nation will need to hire an additional 160,000 drivers by 2016 in order to handle what is projected to be increasing freight demand—and most of those drivers will be needed by TL fleets.

“Drivers are tight,” Starks adds. “As we go forward, we expect that to get worse. Even modest economic growth will continue to put pressure on that, and I don’t see it going away. It will continue to be a major headache for the TL sector.”

Government piling on?

As if a crackdown on driver safety and reduced productivity through loss of available driver hours aren’t enough, fleets are staring at other government initiatives that will serve to reduce overall available capacity.

“I know you can never be safe enough, and that one truck fatality is too many,” Batts of TCP says. “But I think the government is playing rugby with us, and it’s piling on.”

The government’s continuing



crackdown on truck safety will continue, as electronic on-board recorders (EOBRs) will soon be required on virtually all trucks within the next couple of years. These devices will have the ability accurately track how long a truck has been in operation, largely ending the use of paper log books—or “comic books” as some drivers refer to them—for recording hours of service.

Larger fleets welcome these changes that are estimated to cost the industry another \$2 billion in compliance. Some carriers, such as U.S. Xpress, the nation’s sixth-largest TL carrier, have already equipped their fleets with EOBRs, saying that the technology improves efficiency in areas such as driver pay.

“Right now we’re asking 3 million truck drivers to work on the honor system,” says Lane Kidd, president of the Arkansas Trucking Association, an organization that has long backed mandatory use of EOBRs.

Kidd’s group represents some of the largest TL carriers in the nation—J.B. Hunt, P.A.M. Transportation, USA Truck and Wal-Mart’s private fleet, among them. Kidd estimates that as many as one-third of all TL drivers cheat using paper logs.

Bringing the “outlaw” drivers into compliance will even the playing field for all fleets, Kidd says, as well as increasing safety through less fatigued driving and making scheduling and payroll more streamlined.

But because EOBRs will sharply curtail HOS cheating, productivity will take another hit. “The need to put more drivers into the system will become greater,” FTR’s Starks says. “And all of this will add more fuel to those who say that the government is

piling more regulations on an already weary trucking industry.”

Duane Long, chairman of Longistics, a team-based TL operation, recently told the House Small Business Committee that unnecessary changes to trucking regulations were having serious negative impacts on the industry.

“Simply put, the July 1 hours-of-service rule changes were unnecessary,” says Long. “The regulations adopted in 2003 were working and the administration offered rhetoric, but little data to explain why they needed to be changed. Unfortunately, the gap between the administration’s rhetoric and the trucking industry’s operating reality is very wide. These changes are having a very real, and very negative impact on hundreds of thousands of drivers and motor carriers.”

As a result, shippers should brace for higher TL rates. “We’re finally seeing some rate increases in the system, but it’s a tough environment,” says Starks, who is predicting some decent rate increases—3 percent to 5 percent—in the TL sector. “Capacity will continue to tighten over the next year,” he adds. “We don’t see rapid changes in the capacity environment, but we see things tightening. But if those changes happen rapidly that’s when pricing changes quickly.”

However, Batts adds that increased merger and acquisition activity tells her that the TL industry has a lot of faith in the future. “Expectations are that volumes and rates will go up,” she says. “Current rates haven’t met the cost increases, but expectations are getting quite high.”

John D. Schulz is a Contributing Editor to Logistics Management



FACTORS driving WMS growth

A mature market by supply chain software standards, warehouse management systems (WMS) continue to play a prominent role in the ever-changing shipping and distribution environment—both onshore and overseas. Here are five market drivers that are sure to keep usage on the rise.

BY BRIDGET MCCREA, CONTRIBUTING EDITOR

If ARC Advisory Group's predictions are on track, the warehouse management systems (WMS) sector of the supply chain software market is bracing for more growth after recently experiencing an 8 percent expansion.

Defined as the systems that manage a warehouse's resources—including space, labor, equipment, tasks, and material flows—these solutions also rely on radio frequency identification (RFID) and real-time location systems to gather and disseminate critical information about the activities taking place within the four walls.

According to Clint Reiser, the ARC research analyst who recently completed a five-year WMS market analysis and technology forecast, the market is largely being driven by the need to replace or upgrade existing systems and retailers' growing need for omnichannel management and visibility.

"Retailers are reconfiguring traditional warehouses with new zones focused on e-commerce and purchasing in-store WMS solutions to improve store-level inventory accuracy and expand order and fulfillment options," says Reiser.

Calling WMS a "maturing enterprise software market," Reiser says that the worldwide market for these solutions has been "extremely volatile" over the last few years. That volatility could level out over the next few years as adoption of add-on modules—labor management, slotting optimization, and warehouse analytics—grows and as logistics professionals extend their WMS footprints to increase warehouse productivity.

However, we can expect WMS vendors to step up to the plate and come up with solutions that meet users' changing needs. "Incumbent WMS suppliers will support this trend," Reiser predicts, "with ongoing product development to meet existing customers' evolving requirements."

Whether WMS repeated its 2012

performance of 8 percent growth in 2013 or not, the software sector is definitely garnering more attention across numerous industries and being utilized by a wide range of logistics organizations. Here are five more market drivers to keep an eye on in 2014.

1 More "out of the box" WMS solutions.

With technology advancing at the speed of light, there is a certain expectation that supply chain solutions will come out of their boxes ready to use and fitted perfectly for the user.

This expectation has grown over the last year, says Brian Flynn, a manager at Capgemini and a WMS implementation solutions architect. "There's definitely an expectation on the part of the shipper that WMS functionality will be a closer fit right out of the box," says Flynn. "The best WMS solutions deliver on that promise, but in most cases we're seeing an 80 percent to 90 percent fit for any particular site."

Thanks to this high percentage, Flynn says that his team has had to write fewer and smaller customizations during the implementation phase. "Because we get so close with standard WMS functions," says Flynn, "we can close the gap with a week's worth of work rather than a year's worth."

2 Closer integration of WMS and warehouse control systems (WCS).

In his recent feature story in sister magazine *Modern Materials Handling*, Executive editor Bob Trebilcock writes that the new generation of warehouse control systems (WCS) are creating a lot of buzz and "taking on the order fulfillment tasks once assigned to a WMS, especially in highly automated facilities with complex order fulfillment strategies serving omnichannel retail sales environments."

Dwight Klappich, research vice president at Gartner concurs, saying that he's seeing "a slow progress of WMS vendors moving down into

the WCS layer." Oracle and SAP, for example, have both integrated "material handling interfaces" into their solutions. "They don't call it WCS, but it is," says Klappich, who expects the growing demand for automation to continue driving the closer convergence of WMS and WCS. "Most WMS vendors aren't there yet, but they could be," Klappich adds.

3 Better WMS support for new distribution strategies.

While the fundamentals of product distribution haven't changed much over the last 20 years, the number of consumer sales channels and potential partnerships have pushed firms to rethink the way they get items from Point A to Point B.

In October, for example, Amazon announced that it was using Procter & Gamble's warehouses as the online retailer makes a push into household products like shampoo and toilet paper. According to the *Wall Street Journal*, the arrangement enables Amazon to cut the delivery time to consumers and to better compete against Walmart, Costco, and others.

Such developments push the traditional WMS into new territory, according to Simon Ellis, practice director at IDC Manufacturing Insights. "WMS has to become better at handling individual items as opposed to cases and pallets," says Ellis. "It also translates into the potential for warehouses to become smaller, more frequent, and more modular in nature."

This trends dovetails with the omnichannel paradigm, which finds retailers blending their online and offline distribution methods into a single, cohesive approach. "If manufacturers start to ship and sell directly to the consumers, then WMS providers will have to tackle functions like piece-picking," Ellis explains. "At this point, most manufacturer DCs are dealing with truckload or LTL shipments, but not parcel."

4 Improved, highly customized analytics and metrics.

Defined as the skills, technologies, applications, and practices used by companies to gain insight into past business performance and drive future planning, business analytics have come to the forefront for logistics professionals that want to work smarter, better, and faster in today's competitive business world.

The WMS sector isn't immune to this trend, says Flynn, who is seeing increased demand for such data. "Metrics, defined as any type of measurement used to gauge some quantifiable component of a company's performance, are coming up more and more during WMS implementations," says Flynn. "Everyone wants to have them in place and wants to be able to use them to make smarter business decisions."

The fact that third-party logistics providers (3PLs) have had such information banks in place for years is pushing an increasing number of logistics managers to take the 3PL route, remarks Flynn, who expects more attention to be paid to metrics and analytics in the WMS sector in the coming year.

And we can expect those metrics to be highly customized, Flynn adds, noting that such measurements are not universal across organizations. "Every company measures things differently," he says, "hence the need for a different approach for every implementation."



5 Tighter focus on work planning.

A couple of years back, Klappich presented a session at a Warehousing Education Research Council (WERC) event entitled Putting the "M" in WMS. In the session he talked about how WMS should really be called "execution systems" because most lacked true management capabilities.

"They are focused on execution, with little or no management," says Klappich. "In fact, warehousing is about 25 years behind manufacturing in adopting constraint-based planning

techniques." That pendulum is beginning to shift slightly, says Klappich, who sees recent advances in work planning capabilities as a positive sign.

"Companies have been doing work planning, or the movement of labor around the warehouse as projects and tasks change, by the seat of their pants for years," says Klappich, "because WMS has not been good at looking at upcoming tasks and telling warehouse managers how to plan ahead for those jobs."

A WMS equipped with such functionality, for example, could help large retailers plan for extreme seasonality—such as the need for a larger workforce over a 10-day to 15-day period ahead of the holidays. "Work planning is going to be a biggie for WMS over the next few years," Klappich predicts. "We're seeing some progress in this area already."

As one of supply chain's most mature software markets, WMS isn't likely to experience any major shifts or disruptive events over the next year, according to the analysts interviewed for this article. "Don't expect the industry to change a great deal," says Flynn, who adds that while technological advancements have made WMS implementations easier and faster, "the process of putting in and using a WMS is still a major project for any company."

Bridget McCrea is a Contributing Editor for Logistics Management

Emerging markets say: "We want WMS."

When he breaks the WMS market down into "established economies" and "emerging economies," Gartner's Dwight Klappich says that the latter will be a particularly bright spot for vendors in 2014.

"We're definitely seeing marked increases in demand for WMS from the emerging markets right now," says Klappich, who singles out Eastern Europe, Latin America, Southeast Asia, Australia, and New Zealand as five of the particularly "hot" areas for new WMS implementations in the coming year.

And while those five regions may not be considered "emerging" in the traditional sense, most companies operating in those areas are stuck in the 1980s when it comes to warehouse management solutions. "At this point, many of them are looking for basic systems that provide them with governance

and control," Klappich explains. "They aren't looking for a lot of bells and whistles, they just need something to get them from Point A to Point B."

From their WMS, Klappich says that logistics professionals in the emerging markets are looking for better control over what's happening in their warehouses, labor savings, and customer service. Many are also dealing with fairly high pilferage and damage issues, he says, and looking for solutions to those ongoing hurdles.

"Labor is cheap in those countries, but throwing labor at these types of issues doesn't solve the problem of a missed shipment or damage," Klappich says. "For that, they need better controls and many of them are looking to WMS for help."

—Bridget McCrea, Contributing Editor



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2014 Customs/Regulations Update: Shippers called into **ACTION**

New Customs laws and regulations provide both significant challenges and opportunities for U.S. companies. Our experts outline a transactional checklist that will help shippers find their way.

BY PATRICK BURNSON, EXECUTIVE EDITOR

Amid heightened concern about the integrity of cargo moving through the world's supply chains, Customs is increasingly relying on importers to promote the security of the U.S. by making certain that their goods are moving through a transparent pipeline. And while Customs offers incentives to importers who adopt appropriate programs to ensure compliance, the price shippers pay for *not* doing so is about to become more punitive.

"Importers have an affirmative duty to exercise 'reasonable care' in making entry declarations," says Terrence Stewart, head of the Washington, D.C., law firm Stewart and Stewart. "This requires strong and reasonable efforts to declare correct classifications, dutiable values, origins, and the like."

Stewart adds that importers are increasingly obliged to engage in comprehensive self-assessments and implement Customs compliance programs in order to avoid severe penalties. This means that shippers must understand proposed legislation, rules, and regulations regarding changes in Customs duty protections—and to challenge any and all of these that undermine duty protections.

"At the same time," says Stewart, "shippers may file petitions to request corrected classifications, valuations, and duty rates for imported merchandise that is unfairly competing with domestic merchandise due to improper Customs duty assessments."

Identifying instances in which importers or foreign producers may be circumventing antidumping or countervailing duty orders through their classification or valuation of imported merchandise is also a priority, says Stewart. Finally, shippers should understand the implications and requirements of free trade agreements.

Suzanne Richer, president of Customs & Trade Solutions, Inc., says that the majority of penalties or "holds" issued against importers are not due to non-compliance with new regulations, but rather with non-compliance against long standing regulatory requirements.

"For 2014, importers should more closely monitor trade regulations specific to their commodity types and ensure that they're meeting existing regulations," says Richer. "The company strategy can't be based on the idea that 'we never had that happen before.' Rather, a closer audit of an importer's practices to assess gaps and determine what steps should

be taken to close those gaps would be highly recommended."

Customs checklist

Given the complexity of importing in 2014, trade analysts and legal firms are suggesting that shippers compile a checklist for compliance as soon as the New Year begins. Here's a rundown of basic essential steps to be taken:

- **Understand country of origin rules for marking and special preference programs.** Most imports must bear a marking indicating the country of origin. Again, the controlling rules are complicated, particularly when the imported goods are produced or assembled from materials originating from multiple countries. Mismarked goods are subject to exclusion and assessment of special penalties.

- **Determine classification and valuation of imported goods.** The classification and value of goods determines the amount of duties assessed, and the controlling regulations are often vague. Careful analysis can minimize duties and avoid possible customs penalties for mis-declarations upon entry.

- **Parse free trade agreements, trade preferences, and other duty-free programs.** There are numerous



DANIEL VASCONELLOS

programs in which imports may enter the U.S. duty-free either in whole or in part. These include, among others, the North American Free Trade Agreement (NAFTA) as well as various regional and bilateral free trade agreements. There are also trade preference programs that aim to encourage development through commerce. They include the Generalized System of Preferences, along with the Andean Trade Preferences and Drug Eradication Act. Shippers should also become familiar with the Caribbean Basin Initiative and the Africa Growth and Opportunity Act.

Additionally, certain provisions in Chapter 98 of the Harmonized Tariff Schedule provide duty-free treatment to imports of various categories of U.S. goods, such as American Goods Returned; American Goods Repaired or Altered Abroad; and American Components Assembled Abroad.

- **Become reacquainted with**

duty drawback. Importers can obtain refunds of duties—"duty drawback"—that they pay on imports that they subsequently re-export or use to produce other exported goods. Careful planning to assure conformance with the rules can result in duty savings.

- **Find Foreign Trade Zones and bonded warehouses.** Importers may import goods into Foreign Trade Zones (FTZs) or bonded warehouses and not pay duties at the time of importation. They may also further process the imports while they remain in those locations. The goods become subject to duties only at the time of withdrawal if they ultimately enter the U.S., and they completely escape duty assessment if they are, instead, exported. Even when they enter the U.S. they sometimes can be subject to lower duty rates in certain appropriate situations. These programs create options that can minimize or even

eliminate duties.

- **Learn about Customs ruling requests.** Importers can gain certainty as to prospective import transactions by seeking formal Customs rulings on a broad array of legal issues, such as the classification, value, and origin of goods.

- **Study Customs compliance and self-assessment programs.** This requires affirmative efforts to declare correct classifications, dutiable values, and origins. Importers are increasingly obliged to engage in comprehensive self-assessments and implement customs compliance programs in order to avoid customs penalties. Customs expects importers to engage consultants with appropriate expertise.

- **Obtain information on prior disclosures and corrections.** When an importer discovers that it has made a mistake on its Customs documentation or declarations, a Post-Entry

Amendment/Post-Summary Correction or prior disclosure to Customs may be appropriate to correct the error. A valid prior disclosure can protect an importer from large penalties, especially if the importer has made multiple errors.

Shippers need to invest in systems

While legal experts emphasize the importance of checklists, other trade analysts suggest that shippers must also formulate a strategic plan for 2014. Beth Peterson, president of BPE, Inc., a consultancy specializing in import/export operations and the development of global supply chain security programs, says that the majority of shippers admit that they still use manual or spreadsheet-based processes for import operations and compliance.

"In our annual benchmark report, we found that shippers may be aware of the necessary legal protections out there, but are still unwilling to invest in systems that make compliance easier," says Peterson. "And we know that without automation true integration with legacy systems isn't even possible."

According to the BPE report, 60 percent of shippers have no plans to integrate their global trade management

Set your strategic objectives

- Customers/Community
- Strategy/Communication
- Tools/Systems
- Change management
- Leadership
- Finance/Administration
- Training/Professional development
- Metrics



Source: BPE Global

(GTM) and transportation management systems (TMS) functions, or only have it, at best, in their five year plan. Furthermore, blending of operations and compliance is not a priority for the majority of shippers surveyed.

"Yet, less than one-third of global shippers are satisfied with their current setup," says Peterson. "And the barrier to investment in import IT

is largely one of cost, or lack of ROI, or an inability to communicate the importance of automating the compliance and transportation processes."

The BPE survey indicates that systems-based shippers are clearly more efficient than their manual counterparts in certain areas, such as their ability to process shipments. Furthermore, systems-based shippers process more than three times the number of entries than manual shippers, yet require only twice the full-time equivalent employees that manual shippers do.

"That efficiency enables systems-based shippers to maintain more complex import supply chains," says Peterson. "On average, they import from 62 percent more countries of origin and answer to nearly 40 percent more regulatory agencies."

Peterson also observes that companies are taking a long and hard look at the classification of their products. In the past, companies put the U.S. Harmonized Tariff System classification on every shipment and hoped that the customs broker at destination would use the correct, local HTS.

"We saw brokers just dropping the last four digits of the HTS and ending up with incorrect classification," says Peterson. "This also resulted in charges on duty-free items because of the misclassification."

When shippers undertake a classification project they should be looking for four things, says Peterson: Accuracy, consistency, completeness, and a system of record. Any classification effort that does not do all four of these things is "doomed to failure."

"Shippers simply need a system of record," Peterson adds. "If they do all of the work we've described and don't have a way to track and share their classifications, it's a wasted effort."

Finally, Peterson says that shippers should remember to save their "classification logic" and keep each version when they change it. Judging by the increased scrutiny looming in the Customs arena in 2014, change will remain a constant.

—Patrick Burnson is Executive Editor of Logistics Management

Countdown to implementation of the Japan Advanced Filing Requirement (AFR)

Japan's 24-hour rule—the Advanced Filing Requirement (AFR)—goes into effect on March 1, 2014, and the penalty phase will apply just a few days later on March 10, 2014. This doesn't leave much time for those who have not already started the process of selecting a service provider as well as the process of developing internal procedures and training programs.

The Japan AFR requires the electronic submission of shipment details 24 hours prior to vessel departure for all Bills of Lading covering shipments that discharge in Japan. The AFR applies to both carrier and non-vessel operating common carrier (NVOCC) bills of lading. There is no so-called "carrier option."

The penalty could be a 500,000-yen fine (approximately \$5,000), or up to a year in jail. A potentially more severe consequence could be the refusal by Japan Customs to issue a permit to discharge the cargo.

"There are a number of nuances in the application of the rule relative to specific types of cargo or shipment situations," says Bryn Heimbeck, president of Trade Tech, a provider of cloud-based trade management applications. "Smooth compliance is going to mean being able to work collaboratively with offices in Japan for review of special ordinances and laws requirements or transshipment vessel tracking. The service provider's application interface is going to be critical to handling large volumes of cargo smoothly."

A whole host of approved service providers have been collaborating with NACCS, the private sector IT division of Japan Customs, to get information out to the market through a series of seminars presented around the world beginning last spring. The seminars are designed to outline the regulations and to discuss the challenges and solutions.

—Patrick Burnson, Executive Editor



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Inventory Management

Time to revisit the principles

In many cases, inventory related costs can rival transportation spend as the largest logistics cost—and often holds the most opportunity for significant improvement once it's closely examined. Our warehouse/DC insiders give us a refresher on the all too often overlooked practices.

BY NORM SAENZ AND DON DEREWICKI

Historically, companies have evaluated their supply chain operations with a primary focus on transportation costs. For most companies, transportation costs represent the largest logistics costs—and this simply isn't going to change without a radical shift in network configuration or strategy. In many cases, however, inventory related costs can rival transportation spend as the largest logistics cost and often holds the most opportunity for significant improvement once they're more closely examined.

Let's face it: Inventory gets a bad reputation, but it's the essential ingredient for companies to support their customer requirements. They must have what their target customers need in order to keep their business and beat the competition to the punch. This last fact is why so many companies keep very slow moving or "dead" inventory on the shelves.

The inventory requirements at a given company vary based on the customer support requirements and the type of business being a manufacturer, retailer, wholesale distributor, or e-commerce company. Even within

these general channel categories, there will be significant differences within inventory management in pharmaceuticals/drug, food, apparel, general merchandise, automotive, electronics, building materials, and other types of businesses.

While the industry and service levels influence inventory practices, there are general business reasons why some companies have excess inventory, such as supply chain and vendor risk and uncertainty; variable customer demand and forecast accuracy; seasonality leveling; lead-time issues; price hedging; risk of losing loyal customers; and marketing driving sales with new merchandise.

Over the next few pages we'll highlight a few key considerations and practical recommendations related to inventory management, and then we'll present some practical steps you can take to improve inventory control in your operations.

Why gain better inventory control?

Why should you take the time to get a better handle on your inventory control? Well, simply *not* controlling your inventory can lead to excessive space

related costs, higher labor costs, and, of course, loss of business.

If you've seen the very large distribution centers (DCs) while landing at your local airport, then you know why holding inventory is expensive. The fact remains that the majority of the space within most of those DCs is holding inventory within storage rack or on the floor. With this in mind, a warehouse and DC professional needs to verify that the inventory under your control is supporting the requirements of your business and not consuming company resources (capital, space, labor) that could be better used elsewhere.

Unless you warehouse fine red wine, high-end Scotch whiskey, or art masterpieces, the value of your inventory probably doesn't improve with age. In many instances, as with perishable foods, consumables with expiration dates, and industrial materials that deteriorate over time, the inventory becomes worthless.

Even with product that maintains its quality and utility over time, technical obsolescence, changing consumer preferences, and myriad other factors can significantly reduce the value of inventory. Additionally, excess inven-

101:



tory has other related costs, including:

- labor for inventory management, including counting inventory and re-warehousing/stock relocation;
- costs associated with refurbishing or damage;
- wasted warehouse labor activity working around obsolete inventory; and
- warehouse expansion or use of satellite warehouses to hold excess inventory.

And you need to consider that the space used for excessive inventory could be removed from your lease or used for revenue generating purposes like manufacturing.

But most importantly, given the size of the inventory of even modest sized companies is in the millions of dollars, reducing costs through better

inventory control by a few percentage points will add-up to significant dollar savings. It's clear that these savings and operational enhancements will get positive attention from top management and from your customers.

Know what you have

In order to fully understand your inventory position, it's critical that warehouse and DC management know at the stock keeping unit (SKU) level what's in inventory, how much you have, and where it's located. Going a step beyond this essential information, managers should know the order history of each SKU.

The key to having the right information you need to properly manage your inventory is having the appropriate SKU

level inventory and order history data by location available in your warehouse management system (WMS) or enterprise resource planning (ERP) system.

This inventory database must include the order history or "usage rate" at the SKU level that provides you with the number of days or weeks of supply you have on-hand. Suggested minimum information fields for this database should include key metrics specific to the inventory control issues of your company, but typically include inventory aging and expiration.

After you review your inventory, look at some of the key issues such as excess or aging stock, product expiration, and potential opportunities to collaborate with business partners to reduce inventory levels.

Understand warning signals

The easiest way to identify that you have too much—or the wrong inventory—is the amount of dust settled on the product in storage. If you see more than ½ inch of dust, then that’s likely a sign of obsolete inventory. However, there are other, more specific indicators that inventory management issues need to be addressed.

If there are significant discrepancies between the book inventory and physical inventory, this is a direct indicator that there is a problem with inventory management. Another distinct indicator is when your warehouse staff is having trouble locating inventory on a timely basis—an issue that’s particularly critical when FIFO, batch/lot number or serial number controls are involved.

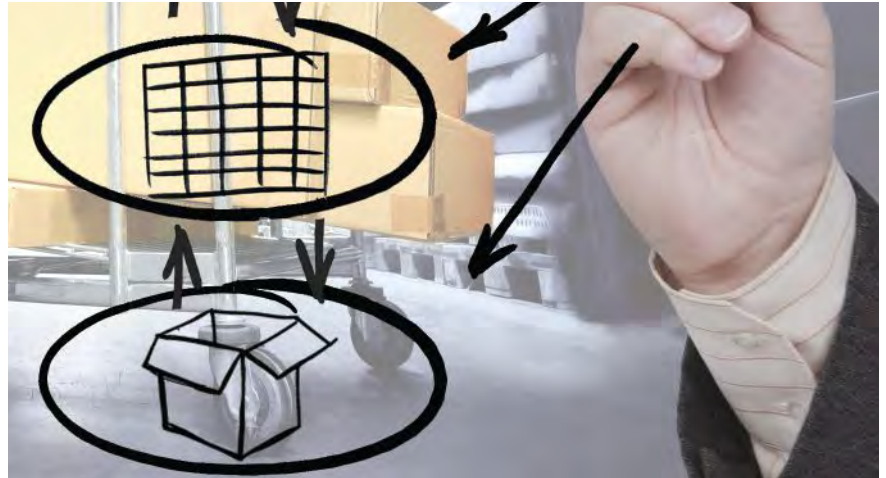
The issue of locating specific inventory is typically tied to inventory discrepancies. And, of course, if you’ve seen a trend in the increased use of outside storage space, then this can indicate another ongoing inventory management issue.

Practice change

It’s much easier to identify an inventory management problem than it is to fix one overnight. That’s not what you want to hear, but it’s the truth in most situations. However, there are valid factors that can lead to more warehouse inventory than you need, which can be studied and altered.

However, one of the largest factors contributing to excess inventories in recent years is marketing’s challenge to drive sales. This is the dreaded “marketing versus logistics” scenario that you’ve probably experienced. It typically goes like this: The logistics/warehouse manager says, “Why are we receiving all of these green toys when we have a thousand of the yellow ones in inventory that haven’t moved in six months.” The marketing manager then says, “We need the green toys which our survey shows will increase our sales, which could also increase the sales of the yellow toys.”

It’s easy to get frustrated with the situation described above, but what needs to happen is a collaborated effort to discuss the cost impact of high or obso-



lete inventory versus marketing activities. Each is trying to perform their jobs effectively, but both need to understand the impact of those decisions across the network, including inventory levels and

Good systems support are critical to prevent the returns process from being a source of inventory problems. Returns metrics specific to your company need to be established and monitored.

warehouse performance.

For example, if additional inventory takes your facility from 85 percent to 95 percent storage utilization, the results can negatively impact customer orders getting shipped. Consider these questions: If more inventory results in a required expansion or use of a satellite warehouse, is the cost warranted? Is the management of inventory in the warehouse resulting in poor use of storage space and unidentified obsolete inventory that could free-up space?

What’s important is to collaborate on these topics and help management understand the cost implications of marketing decisions. A way to remove the emotion and impact of personalities from the situation described above is to conduct an operations research based inventory and sales simulation model. This will provide analysis-based answers to the inventory issues and the related

costs/benefits.

Improving inbound processes

Improving inbound processes starts with collaborating with product planning and procurement people to understand their plans for bringing products into your warehouse/DC.

You need to insist on having visibility into the overall flow volume and timing of inbound material, and you should be proactive about including criteria that are important to the warehouse/DC into the terms of purchase. Ideally, you should get involved with planning the following:

- Advance Shipment Notices (ASNs);
- shipment delivery windows and carrier delivery requirements;
- material acceptance/rejection criteria; and
- product/material identification—both human readable and Auto ID.

Properly identifying and counting materials at receiving is critical to good inventory management practice. If materials aren’t received into your systems accurately and on a timely basis, you will spend an excessive amount of time and effort correcting errors as opposed to having the right processes and properly trained staff. Wherever practical, receiving should be based on Auto ID processes to eliminate human error.

Putaway and replenishment

Putaway and replenishment should be system directed and scan verified. System decision rules need to be reviewed on a regular basis to ensure that the putaway and replenishment people are

directed to take the most appropriate actions. Based on the system decision rules in place, people may or may not be directed to do what's best for the current business requirements.

The putaway and replenishment process should be used to verify inventory accuracy at the location level. While the operator is at the location, the system should direct them to do a cycle count. In this case, there is no additional travel, given that the person is already at the location and any problem can be fixed quickly. The putaway and replenishment people should also be instructed to do a visual inspection of the product at the location to confirm that there's no damage or other issue that needs to be addressed.

A replenishment frequency report should also be regularly generated. The purpose of this report is to highlight pick locations that have to be replenished too frequently as well as those that are rarely replenished. The pick slot size for those locations should be reviewed to determine if re-slotting to appropriately sized locations is required.

Improving picking

Picking should be system directed and scan confirmed, while paper pick sheets and manual checking is only appropriate for very small operations. Based on your business requirements, voice picking, pick-to-light, or RF directed picking might be more appropriate.

All three of these techniques have proven their effectiveness in improving control over the inventory by enhancing order accuracy. Voice and RF/scanning technologies offer the additional advantage of being highly flexible to changing picking needs and can be used in other warehouse/DC functional areas such as receiving, putaway, replenishment, and shipping.

Accuracy verification

Order accuracy verification should be automated wherever practical. This can be done most effectively in conveyor based shipping systems. A weigh-in-motion system to validate the weight of the carton is proven technology; however, weigh-in-motion can only be effective when the database of

SKU weights is highly accurate.

Non-mechanized systems typically rely on statistical based procedures for checking of orders, and order accuracy validation should be focused on those pickers who are new to the function or those with historical accuracy problems. Orders for customers who report higher percentages of errors should be prioritized for checking.

The ultimate goal is to achieve inventory optimization to minimize overall cash investment without increasing the risk to the enterprise. All of the factors that influence the actual inventory investment need to be reviewed on a regular basis.

Common causes of order picking errors include:

- having multiple SKUs in a single pick slot location—if you do this correct it immediately;
- wrong quantity, which sometimes can be caused by problems with the unit of measure—for example, a case or inner pack is picked instead of an each;
- similar items are slotted next to each other;
- poor pick list format; and
- inadequate lighting.

Root cause analysis needs to be done with participation by pickers themselves to identify the basis for the errors and to determine the best approach to eliminate or at least minimize the problem. Undetected picking errors invariably lead to inventory inaccuracies, so minimizing these errors is essential to good inventory management practice.

Improving returns

Every warehouse/DC manager hopes he sees the day when nothing shipped gets returned—we should all live so long. Returns can be a major source of inventory management problems if they're not handled properly. Issues with returns include:

- validating the quality of returns before entering them into the inventory;
- ensuring that returns do not include obsolete and/or expired product; and
- controlling the timing of entering

the returns into the book inventory.

Having well-trained returns people and good systems support are critical to prevent the returns process from being a source of inventory problems. Returns metrics specific to your company need to be established and monitored. Additionally, returns root-cause analysis should be performed to determine the cause of

the returns and what can be done to reduce the quantity.

Ultimate goal

The topic of improving inventory management in warehouses and DCs could fill a textbook. Over the last few pages, we've focused on key principles to improve control in several operations areas.

As you go about your improvement process, it's important to keep in mind that the essential factors to improving inventory management are obtaining management commitment; developing effective cross functional teams; realizing accurate data; maintaining good WMS analytics capabilities; keeping appropriate policies and procedures; motivating and training staff; and, of course, putting in a lot of hard work.

The ultimate goal is to achieve inventory optimization to minimize overall cash investment without increasing the risk to the enterprise. All of the factors that influence the actual inventory investment need to be reviewed on a regular basis. Inventory levels should be adjusted to account for changing business needs with the goal of minimizing the likelihood of obsolete or excess inventory.

Norm Saenz is managing director at St. Onge; Don Derewecki is a senior consultant at St. Onge. Both are frequent contributors to Logistics Management.

A blueprint for supply chain

BY DALE PICKETT, TOMPKINS INTERNATIONAL

In today's demand driven, omni-channel world, it's easy to underestimate the complexity of global supply chains. Yet the growth of global markets, increasing customer expectations, rising costs, and more intense and diverse competitive pressures are driving the development of new supply chain strategies and intricate network designs. That increasing complexity is exactly why supply chain networks need to be frequently re-evaluated.

In fact, a world class supply chain network is essential for product to consistently flow from the point of manufacture to the end user, regardless of the industry served. A well-designed supply chain network can significantly improve margins, support expansion into new markets, enhance the customer experience, and reduce operating costs. That applies to companies in all stages of maturity: Growth-oriented companies, companies in transition, and companies with stable business operations can all benefit from distribution networks that are optimized to meet ever present challenges and opportunities.

While there are more tools available than in the past to perform a network analysis, there remain a number of important steps that must be taken. In this article, we present a blueprint for successful supply chain optimization.

It starts with a network

A world class, transformational supply chain begins with a network that employs an all encompassing view of the various business areas that manage delivery of products to customers. The result is significant capital, operational, and tax savings while achieving optimal customer satisfaction.

There are three critical elements to a world class supply chain network.

1. Strategy before network. With complex and competing business goals—such as minimizing capital, improving operating margins, lowering the carbon footprint, and enhancing the customer experience—a clear and concise supply chain strategy must be fully aligned with your business strategy. Surprisingly, many companies begin reducing network costs before they define how the network can be fully leveraged to support the business strategy. Uncertainty in product mix and volumes, expanding markets, margin goals, dynamic customer service strategies, value-added opportunities, and product returns and obsolescence are just some of the considerations that are often given minimal consideration or overlooked entirely.

2. Focus on total profit optimization.



As customer service requirements become more complex, supply chain optimization studies are the foundation for some of the most successful companies' logistics and fulfillment operations. We look at the best practices behind supply chain optimization.

optimization

An increasing number of companies are asking the question: "How can my supply chain be used to maximize profits?" This is a different objective than traditional network optimization projects, which define the objective as reducing costs and maintaining customer service levels. Currently, a combination of operating scenarios are required that drive alternative network models. Then sensitivity analysis is performed to evaluate impacts on how a company is working to improve the parameters it uses to drive shareholder value. Some examples include: EBIDTA, capital employed, working capi-

tal, operating expenses, tax effectiveness, margins, and cash-to-cash conversion.

3. Project versus ongoing process. World class supply chain networks evolve as sourcing adapts to market changes, product line performance varies, and companies integrate. A world class network incorporates an ongoing process that focuses on the flexibility of the supply chain and ensures that objectives are met consistently and over a range of market conditions while enhancing the key drivers of shareholder value.





A well-designed supply chain network can significantly improve margins, support expansion into new markets, enhance the customer experience, and reduce operating costs.

Frequency and types of analyses

When an organization decides to evaluate its network, the internal leadership team must first address the type of effort that should be performed. Strategic reviews of a distribution network design often follow:

- a major business expansion, such as an acquisition;
- a change in business strategy, such as targeting new market opportunities; or
- the passage of time—a full review is typically needed every four to six years.

There are various methods of planning when it comes to guiding and positioning an organization. Planning needs to cover predictable and unpredictable circumstances. Without sound plans, a firm risks insufficiently anticipating problems and failing to implement solutions within the required lead time. With plans, a company becomes active and not passive. A good framework for planning is illustrated below.

Strategic planning

Strategic planning is the process of deciding on the firm's objectives. The goal of strategic planning is to define the overall approach to stocking points, transportation, inventory management, customer service, and information systems as well as the way they relate to provide the maximum return on investment. It addresses such issues as organizational structures, realignment of capacities, network planning, and impact on the environment.

Strategic planning is also a proactive tool

designed to guard against predictable changes in requirements in which timing can be anticipated. This type of planning is directed at forecasting needs far enough in advance to efficiently allocate resources across the supply chain.

Granted, forecasting with a long planning horizon is a risky business, and distribution plans based on such forecasts often prove unworkable. Nevertheless, the forecast is a supply chain's best available information concerning the future.

Tactical planning

The tactical planning timeframe is one year to two years. Its primary purpose is to plan policies and programs, as well as to set targets to accomplish the company's long-term strategic objectives. Tactical planning must anticipate the distribution center workload to prevent overloading the primary resource—the workforce—during peak demand.

In addition, the tactical plan defines how to develop the resources needed to achieve the goals in the strategic plan. For example, if a firm decides in its strategic plan that it requires a new warehouse location to enhance customer satisfaction, then the tactical plan allocates resources for the facility.

Tactical planning first attempts to provide timing for each step. Second, it considers major issues, such as identifying specific skills required to accomplish the plan and the time needed for each step. Third, specific capital requirements are identified for each step.

A fourth component is often the need for outside resources. In warehousing, this could mean anything from engaging a consultant to hiring a construction company. Other types of tactical planning include inventory policies, freight rate negotiation, cost reduction, productivity improvements, and information system enhancements and additions.

Operational planning

Operational planning implements tactical policies, plans, and programs within the framework of the distribution system

Bases for Model Alternatives

Type of Planning	Reason	Focus
Strategic	Determine overall objectives and resource requirements	Policy making
Tactical	Translate the strategic objective of the distribution system into an action plan	6 mo.-18 mo.
Operational	Ensure that specific tasks are implemented into the day-to-day operations	5 yrs.
Contingency	Respond to emergencies	Backup

to devise the daily routine. An operational plan is where the rubber meets the road. Ironically, it is where the planning process is most likely to fail because the majority of the daily activities are routine. It becomes easy to lose sight of the planned goals.

The time horizon for operational planning can vary from daily to weekly to monthly. The major components of operational planning are managing resources—such as labor and capital assets—and measuring performance to aid operating efficiency and anticipate future operating issues. It can involve tasks such as: distribution center workload scheduling; vehicle scheduling; freight consolidation planning; implementing productivity improvements and cost reductions; and operations expense budgeting.

Contingency planning

One of the most overlooked yet meaningful tools for sound distribution management is contingency planning. This is a defensive tool used to guard against failure resulting from unpredictable changes in distribution operations.

Typically, contingency planning asks “what if” questions. For example: “What if a major supplier is on strike” or “what if we had a recall” or “what if my primary supplier location is destroyed due to a major weather event?” The prepared manager will look to contingency planning to counter the potentially devastating impacts of the many emergency situations that may directly involve distribution.

Contingency planning is the opposite of crisis management (“putting out fires”), which entails developing a plan *after* something has occurred. The idea behind contingency planning is to significantly reduce the lead time required to implement a plan of action. You do not wait for a fire to start before installing sprinklers in the warehouse.

Events that can adversely affect a distribution system include:

- *energy shortages,*
- *strikes,*
- *natural disasters,*
- *product recalls, and*
- *acts of violence.*

Defining the project scope

Most business units within an organization are impacted by a network optimization. Therefore, senior leadership must understand and support which direction the project will take in order for it to be successful. This is where a clear definition of project scope becomes critical.

Prior to the project, the leadership team agrees to an overall business direction for the following categories.

1. Sales – What direction is the company taking to increase sales? (Global expansion, acquisition, e-commerce, same store sales, etc.) Is marketing willing to reduce inventory to see the impact to customer service levels?

2. Timeline – What is the desired recommendation date? This is tricky since it can result in a push to meet a date versus providing the best overall recommendations.

3. Marketing – Are there changes in the business that will create a metamorphosis of product distribution, such as Internet daily promotions vs. bi-weekly store level promotions? Is marketing willing to reduce inventory if there is an impact to customer service levels?

4. Production – Does production understand the impact of optimal manufacturing batches to inventory to locations?

5. Finance – How critical is cash flow and the impacts to major investment?

6. IT – Are there systems in place to give the necessary information for the analysis to be conducted properly? If not, agree to understanding the recommended approach from the support teams.

7. Sacred cows – Identify facilities, batch size, quality hold, product shortages, or other constraints that will not change in the foreseeable future.

8. Sensitivity metrics – This is a great time for the leadership team to identify metrics that should be considered for sensitivity analysis. This can include but not be limited to fuel costs, service time, planning horizon, and capital investment.

9. Internal vs. external – Who should perform this analysis? Senior leadership must decide if it makes sense to perform the project in-house or to use an outside resource.

The distribution network planner must balance these conflicting needs to find the lowest cost distribution network and inventory management technique that satisfies both the customer and company objectives.

The graphic on page 50 depicts the complexity that an end-to-end supply chain analysis should incorporate. Network planning and optimization that is founded on fact-based, quantitative analysis should be coupled with a review of processes, technology, and people that:

1. *Ensures alignment* with the overall business environment and growth strategy to minimize costs and achieve desired service levels.

2. *Utilizes the best analytical tool* for the individual project objectives.

3. *Analyzes alternative processes* to maximize return-on investment while delivering improved operational metrics for customer service, inventory control, and transportation performance.





Without sound plans, a firm risks insufficiently anticipating problems and failing to implement solutions within the required lead-time.

4. *Models the design* with the intent to be refreshed as inventory policies change; transportation routes, cost, and service levels change; new products are launched; or suppliers change.

Key network components

All distribution networks have these key components: stocking points, transportation, inventory management, customer service, and ERP/MIS systems. Where and how these are located and managed will be determined from a network optimization.

Stocking points can be distribution centers, consolidation points, terminals, ports, return centers, or other points that receive goods from production plants or suppliers or are ship-to-demand points. Their job is to receive, store, pick, and ship product. Any point through which produced material flows to reach the customer is a stocking point.

Transportation includes movement from plant to warehouse, warehouse to warehouse, and warehouse to customer.

Inventory management is the purchasing and control of products based on a market forecast. Inventories are typically a buffer between vendors, production, and the customer to permit the system to accommodate unexpected variations in demand or production. Inventory management generally consists of forecasting requirements, procuring orders, and managing what is on hand.

Customer service is responsible for handling the key interactions between the company and its customers in order to assure customer satisfaction. It involves handling customer inquiries and order changes and managing other situations that occur in the customer/supplier relationship. Customer service may also include the ordering process. In addition, it is responsible for monitoring the goals management establishes for each product or market segment, (e.g., order fill rate, delivery time).

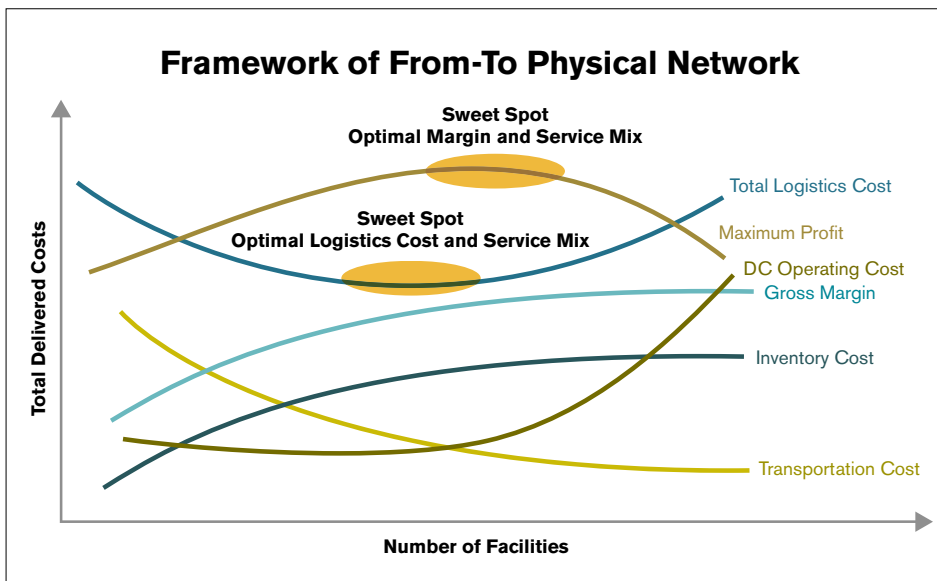
Management information systems (MIS) or enterprise resource planning systems (ERP) are communication and/or control systems that support distribution. Their tasks range from taking incoming orders to managing fleet operations. In short, MIS/ERP systems process data to support the functions of the business. The types of systems most distribution operations make use of are:

- forecasting,
- budgeting,
- inventory management,
- order processing and invoicing,
- customer relationship,
- omni-channel communications,
- warehouse management, and
- transportation management.

Launching a strategic network analysis

Once the leadership team understands the components of its network, has defined the scope of a project, and elects to do a network evaluation, the team responsible for the execution of the plan should begin the primary data collection for the modeling effort. It is not necessary to have everything prior to solicitations, but generally most reputable consultants will need the following information.

- a. Growth by organizational tier-formularized
- b. Sourcing locations and flow by SKU
- c. Outbound Flow by SKU to customer
- d. Trans-shipment movements between facilities
- e. DC cost metrics
- f. Outbound distribution\



fulfillment costs (fixed vs. variable)

g. Facility characteristics (size, staff, lease/own, drawings, equipment within, capacities)

h. Fleet characteristics (Internal vs. external)

i. Published costs metrics (case/cube/lb)

j. General Ledger accounts for the businesses units involved

k. SKU listing

l. Inventory by SKU location

m. Expected start date and requested completion no later than date (three or four required alternatives)

Many times, this becomes a very challenging step. An organization must understand that evaluations require significant resources that recognize a sense of urgency but also a need to ensure that the information collected is accurate. There are costs and impacts to the accuracy of the network analysis if the beginning information is in poor condition.

Establishing and communicating “what we do”

When kicking off a network analysis, team members often forget that one of the most important tasks is communication. Without communication, a plunge into the retrieval of information and direction to perform a network analysis will surely experience gaps and intensive rework.

The second task is to re-establish the scope of the project, taking into account any changes that have occurred to that scope. A third is to establish an executive strategies workshop. This should be a formal meeting in which the business leaders agree to the primary drivers and direction of the company.

Next, the team must document the existing network. It is critical to collect information from all sites being considered because the study could result in recommendations for closing, moving, or expanding them. Visiting those sites can be insightful. The following information needs to be collected for each site:

- *space utilization,*
- *layout and equipment,*
- *warehouse operating procedures,*
- *staffing levels,*
- *receiving and shipping volumes,*
- *building characteristics,*
- *access to location,*
- *annual operating cost,*
- *inventory, and*
- *performance reporting.*

In addition to facility information, the following information should be collected for the transportation system:

- *freight classes and discounts,*
- *transportation operating procedures,*
- *delivery requirements, and*
- *replenishment weight/cube.*

At the end of the data collection, a project team meeting is held to summarize the data collected and assess each site. This assessment will give the team insight into the operation and costs of the existing network. In addition, it will reveal information unknown to management that will be useful in developing alternatives.

Ideally, this meeting provides a “sanity check” to ensure that the information captured is representative of what will be modeled. Then the project team can provide a recommended aggregated plan to be reviewed by the entire team. This process of identifying assumptions will aid in information gathering and uncover any holes. Once everything is presented, the team can move forward with the analysis.

From the executive strategy session, an understanding of marketing strategies and sales forecasts should be applied to project the future state of the business. After all parties have conducted a view, this establishes the two baseline states for modeling purposes: current and projected.

Modeling the status quo

The steps just taken provide the information the team requires to determine the network operating requirements, the status quo. This involves examining the baseline cost and the service and performance characteristics of the current network. Key elements to be identified include:

- current facility locations, capacity, throughput, cost, performance, flexibility, effectiveness, and efficiency;
- inbound transportation costs from plants and suppliers;
- outbound transportation costs to customers and intra-company facilities;
- current inventory levels, in-stock percentages, and inventory carrying costs;
- delivery time to customers;
- current supply points for vendors and production facilities; and
- distribution of customer demand.

This information is developed into a model baseline from which alternative scenarios can be compared. Without the baseline, it is difficult to evaluate the costs and benefits of each alternative versus the status quo.

It is important to analyze and validate baseline information against information available from





alternate and independent sources within the company. It is not uncommon for databases or database inquiries to yield incomplete results that would potentially skew the analysis.

Cost information should be compared against source documents, as well as the general ledger or profit-and-loss statements. Volume information from production or distribution should be compared with volume information from purchasing or sales. Graphical representations of network flows are useful to identify erroneous information that could be in the data. Stakeholders who would be affected by any changes in the distribution network will also want to review the baseline information to make sure that it represents the world as they know it.

Developing alternatives

Once the data has been collected and validated, the next step is to develop alternatives and operating methods. The inputs used to determine alternatives are site visits, future requirements, database analyses, and customer service surveys. The methods used for creation of the alternatives will vary. The main factors influencing site location are listed below.

Modeling the annual operating cost

The real value in network planning is the knowledge gained from understanding the workings of a company's distribution system and applying imagination to the model in ways that will really benefit the distribution network. Facility alternatives can be close in cost, but range widely in other factors, such as service level capabilities. That makes it critical to have other criteria by which to judge the modeled costs, such as:

1. Central administrative costs and order-processing costs.
2. Cycle and safety stock carrying costs.
3. Customer order-size effects.
4. Inter-warehouse transfer cost.
5. Negotiated reduction in warehousing and delivery costs.

There are several different approaches to network modeling (see sidebar on page 39). Regardless of which modeling method is used, the overall approach should closely resemble the following steps:

- **Validate the existing network.** Run a computer model to simulate the existing cost. Compare this cost with actual cost.
- **Run alternative networks.** Once the model is validated, run alternative networks for present volumes and forecasted volumes.
- **Summarize runs and rank.** Create a table to summarize costs by alternative. The table should list individual distribution center costs.
- **Summarize all annual costs and service factors.** Create a table that shows, by alternative, all cost and service factors.
- **Perform a sensitivity analysis.** This is based on the idea of setting up runs that fluctuate some components of the data. One might be a cost that is uncertain or has potential to change. By modifying this one parameter, the effect on the run can be determined.
- **Determine all investment costs associated with each alternative.** Look, for instance, at the costs of new warehouse equipment required to save space, expansion, and construction costs, or at any building modifications such as adding dock doors.

Determining cost: The economic analysis

An economic analysis compares the benefits of a recommended network plan with the implementation cost. To perform this analysis, determine all the investments and savings associated with each alternative.

- Cost considerations include:
- a) Personnel relocation
 - b) Stock relocation (movement cost, model should have shown quantity)
 - c) Computer relocation
 - d) Taxes
 - e) Equipment relocation
 - f) Building components
 - g) Inventory considerations

Bases for Model Alternatives	
Factor	Explanation
Supplier and Market	How quickly suppliers reach your sites (delivery days); volume, certainty and variability of supply lead times; international border issues.
Market	How quickly your sites can reach markets (delivery days or hours); volume, certainty, and variability of supply.
Transportation	Highway access, parcel hub locations, water and rail access, weather, restrictions, congestion, and road limitations; transportation penalties, premiums, or benefits.
Government and Utilities	Taxes, incentive programs, planning and zoning, energy cost.
Labor	Unions, right-to-work laws, wages, skills available, holiday observances.
Real Estate	Availability, cost per square foot; site restrictions; proximity to markets.
Inventory	Effect of inventory placement (minimum levels, optimal (incorporation of carrying costs and handling, regional consolidation centers).
Final Mile	White glove, multi-stop.

- h) Operating costs
- i) Severance
- j) Existing contracts
- k) Sale of existing facilities
- l) MHE or automation considerations
- m) Change in management

The result of this evaluation should be the ROI of each alternative compared to the initial baseline of the status quo. Once you have the economic analysis, perform a sensitivity analysis that fluctuates various costs and savings to see which alternatives are the most stable.

It is also a best practice to perform a qualitative analysis that looks at risk of factors such as customer service, ease of implementation, cultural considerations, profitability, and cash impact. These should be rated and presented as a topic for discussion.

Finally, once a conclusion has been reached, draw up a time-phased implementation schedule that lists the major steps involved in transferring the distribution network from the existing system to the future system.

Success is not simple: It is a process

The output of a supply chain optimization project is a new plan for the network. A good supply chain network plan relies on a defined set of requirements. It should not be composed simply of ideas, thoughts, or possibilities. Possible requirements should be defined, analyzed, evaluated, and validated. They

should result in the development of a specific set of strategic requirements. Normally, the planning horizon for such a plan is stated in years, with a five year plan being the most typical.

An effective network plan is also action-oriented and time-phased. Where possible, the plan should set forth very specific actions needed to meet requirements, rather than simply state the alternative actions available. Future sales volumes, inventory levels, transportation costs, and warehousing costs all come into play.

To get company leadership's support for the plan, a detailed written document and maps should accompany the recommended action to describe and illustrate how the network will be implemented and how it will operate. The result should illustrate which strategy is best for the company because it maximizes profits to stakeholders.

If the plan answers the questions senior leadership team requested at the outset, and your company is prepared for this to become a process and not a project, you may be on your way to optimization success. And, the next time you admire a company's seamless, cost-effective and customer responsive supply chain, think of the detailed network analysis behind it.

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Network Modeling

There are three categories of network models.

Centroid analysis calculates the weighted center of customer demand by using map coordinates and customer volume. It was one of the first methods used to determine new site locations, but it is inadequate when compared with today's modeling techniques. Centroid analysis can be done on paper and assumes things like transportation costs are proportional to distance. It ignores capacity constraints, service requirements, and differences in transportation and facility processing costs.

Optimization models come in a wide variety of complexity and sophistication, with prices to match. They are typically linear or mixed-integer programs that are capable of determining an "optimal" dis-

tribution network based upon the data, assumptions, and parameters provided. Changes to any of the assumptions, parameters, or data will cause the model to yield a different result. Therefore, they are very dependent on the quality of the data and parameters and the experience of the individual performing the modeling analysis. An optimization-modeling program is more sophisticated than a Centroid analysis, but it is limited to evaluating a static range of variables. If a network can be described by summarized data, or by looking individually at one or more slices in time, then an optimization model is very effective.

Simulation models, like optimization models, come in a variety of sizes and shapes. Unlike the optimization model, which starts with a set of data and gives

a single answer, a simulation model will start with a single answer—a network alternative or scenario—and examine the impact on the scenario of a variety of kinds of data sets, over time. Simulation models are very useful for determining the impact of supply or demand variability, network constraints, and bottlenecks on the efficient operation of the network. Like optimization models, they are very dependent on the quality of the inputs and the skills of the modeler. However, they are able to better represent the volatility a company faces in the real world.

To determine the model that is right for your optimization project, a planner needs to determine how important it is to include complex variables, or if assumptions and averages can provide sufficient grounds for decision making.

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Leveraging the value of supply chain EDUCATION

BY BRIDGET MCCREA, CONTRIBUTING EDITOR

**With interest in supply chain education at an all-time high,
now is the time to use it to expand your team's skills,
knowledge, and capabilities.**

It's no secret that organizations are paying more attention to their supply chains lately. Whether their goal is to minimize risk, improve customer service, enhance visibility, gain competitive advantage, or all of the above, companies are increasingly turning to their supply chains for answers. A logical offshoot of this trend is an uptick in supply chain education. For without the right mix of fundamentals and hands-on experience, how can supply chain managers and their teams be expected to keep up with this newfound interest in what was once their "little corner" of the world?

Calling supply chain management the "Hot New MBA," a recent *Wall Street Journal* article reported that more schools are ramping up their programs and adding majors and concentrations to meet employer demand for such options. And because program graduates are in big demand right now, *WSJ* says salaries for these jobs range from the mid-50s and up into the six-figure range, depending on education and experience.

The salaries associated with supply chain careers are impressive, for sure, but the path from the classroom to the paycheck isn't always well paved or navigable. According to a new APQC survey, skills gaps can get in the way of individual achievement and corporate goals. "Despite the attention given to the need for talent development and management in the supply chain," the APQC states, "there are still unanswered questions about whether graduates with supply chain degrees are adequately prepared for jobs within the profession and whether organizations are actively seeking employees with these degrees."

In some cases, the skills gap exists because companies have yet to set up supply chain talent development programs to support new hires. In its survey of 167 supply chain professionals across 40 industries, for example, APQC found that new supply chain hires are often only somewhat prepared for the jobs they will be doing. And while organizations recognize the need for talent management programs

directed at supply chain staff, survey respondents were evenly split on whether their organizations have formal supply chain talent management programs.

When conducting its survey, APQC also found that their potential employers view recent job seekers in the field as only somewhat well prepared for their job duties. "This may be a motivation behind many of the respondents' organizations," the group states, "considering supply chain talent management to be a top priority." Some organizations are taking a more proactive approach toward developing supply chain talent coming from university programs, according to APQC, which found that most organizations offer internship opportunities and 43 percent work with universities to develop supply chain management curricula.

Public, customized, and hybrid

At Pennsylvania State University, John Langley Jr., Ph.D., says he's seeing strong interest in supply chain education reinforced by industry certifications and certificates. The latter often serve as "tangible evidence" that a formal effort was put out to enhance one's education, says Langley. Concurrently, he says more organizations are sending employees to schools like Penn State to attend either public, customized, or hybrid educational programs. At press time, for example, Langley was kicking off a three-day hybrid course for a particular company that was part-traditional learning and part-tailored to the company's specific business.

When it comes to addressing talent gaps on a current supply chain team, Langley says the hybrid educational approach works particularly well. Some courses are designed to communicate basic information and knowledge (especially to those individuals who may lack formal supply chain education) while other aspects hit on supply chain skills that can be applied on the job (such as how to achieve supply chain transformation within an organization).

"If you are managing inventory, there are tried and true ways to manage that inventory," Langley points out. "If you don't know those ways, you won't be useful as an inventory manager, plain and simple." Once an employee attains those operational skills, Langley says he or she can then play a larger role on the strategic side of supply chain management (i.e., direction setting and visioning). Ultimately, he says the companies that fill in the talent gaps on the supply chain side are those that make the commitment to ongoing education and consider that education "vital to their corporate cultures."

Assessing the options

In 1997, Nick Vyas made the jump from industrial engineer to supply chain professional. He spent the next 16 years developing his own educational foundation and network within the supply chain field. It was a luxurious timeline that most professionals simply can't afford to work on in today's business world. "The speed of change is very



fast right now,” says Vyas, senior program administrator for global supply chain management at the University of Southern California. “The professionals with the skills and the training are at an advantage and able to differentiate themselves from the rest.”

Achieving that goal requires a good balance between practical and theoretic knowledge, says Vyas, who points

“The speed of change is very fast right now. The professionals with the skills and the training are at an advantage and able to differentiate themselves from the rest.”

—Nick Vyas, senior program administrator for global supply chain management, the University of Southern California

to certifications as a good option for a front-line supervisor or entry-level manager who lacks a structural education background. “As that person starts to climb the corporate ladder,” says Vyas, “that’s where an advanced degree and additional education will come into play.” A master’s degree in supply chain, for example, helps position graduates to become future vertical leaders, department heads, or organizational leaders. “If that’s the plan, then spending the time to get that master’s degree will definitely pay off,” says Vyas.

Supply chain managers looking to get their teams up to speed while filling in talent gaps should also consider education that incorporates—or, focuses on—global supply chains. With today’s supply chains reaching around the world, the professional who can think outside of the traditional domestic borders and solve problems related to foreign trade, distribution, and logistics has become increasingly valuable for organizations. “Having that understanding of the global perspective, and a related network of contacts and resources,” Vyas points out, “allows the individual to tap into many of the possibilities that are not available to those who lack this exposure.”

Brown bags and job shadowing

Getting a team up to speed and ready to tackle the new supply chain realities should start with a skills gap assessment. The Institute for Supply Chain Management, for example, uses a gap analysis tool to figure out exactly where employee education and/or skills are falling short—rather than relying on a manager’s assessment of the problem. “In many cases, the gap that the manager identifies is just a symptom of a larger, underlying problem,” says Mary Lue Peck, ISM’s managing director. What may look like an issue with negotiating and contracts, for example, may actually be traced back to serious gaps in analytical and financial skills.

Once those gaps are accurately assessed, Peck says supply chain managers can use on-the-job training methods like mentoring and job shadowing (when someone works with another employee to learn a new skill, get hands-on knowledge of a different job role, etc.) to begin effectively addressing those issues. In many cases, these collaborative training techniques are a two-way street

when it comes to results. “The newer employees can learn from the more experienced worker,” says Peck, “and the latter can learn about technology, social media, and other ‘newer’ innovations from the mentee.”

The human bonds that form as a result of these interactions can be invaluable according to Peck, who recently worked with a company that was putting several of its supply chain employees through the group’s Cer-

tified Professional in Supply Management (CPSM) certification program. Using brown bag lunch meetings, study groups, and the related courseware, the team worked together to prepare for the certification. “They really bonded and, in this particular case, the employer’s return on investment (ROI) was covered by the retention rate,” says Peck. “They’re now pushing the strategy out to a larger group because it makes education fun and engaging.”

Enhancing learning capacity

To supply chain managers who understand the value of ongoing education for their team members, but who aren’t sure about the best way to approach it, Peck says it pays to take a holistic view at the process. Instead of randomly sending employees out to different courses and certification programs that may or may not yield a return, for example, consider where the gaps are in both quantitative and qualitative skills and then work to fill in those chasms with pertinent, quality educational opportunities.

During this process, Michele Ralston, associate director of open enrollment at Washington University’s Olin Business School in St. Louis, says companies should consider all modes of learning. With distance education gaining more ground every year, peer mentoring and tutoring still proving its effectiveness, and full-blown college programs proliferating, there’s literally no end to the number of options that are at your fingertips.

“The traditional classroom is certainly important, but the value of non-degree study and certificate programs is very high and the return on investment can be very quick,” Ralston says. “Programs like the one day or five day certificates and seminars can really bring immediate value back to the learning capacity and help supply chain managers hone their teams for success.” □

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The screenshot shows the SupplyChain247 website interface. At the top, there is a navigation bar with tabs for Transportation, Warehouse/DC, Supply Chain, and Technology. A search bar is located on the right side of the navigation bar. Below the navigation bar, the main content area is divided into several sections: Air, Intermodal, Motor, Ocean, Rail, Third Party Logistics, and Transportation Management. The Top Story section features a large image of a globe with the text 'The Top 50 Global & Top 30 Domestic 3PL's'. The Resources section includes articles such as 'The cost to transport finished goods from the plant through the warehouse facilities and...' and 'Leveraging Compressed Natural Gas (CNG) to Support Corporate...'. The Featured Companies section lists companies like Amber Road, Logility, NFI, OHL, and Saddle Creek. The Specials section features a yellow oil barrel with the word 'OIL' on it and the text 'Diesel Prices' and 'The United States relied on net imports (imports minus exports) for about 45% of the petroleum (crude oil and petroleum products) that we consumed in 2011. Just...'

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Lift Truck Fleet Management: Deploy, discover,

Optimizing a fleet is not an exact science. Although technology can help, it's often the culture on the floor that makes or breaks a fleet management program.

BY JOSH BOND, EDITOR AT LARGE

The role of the lift truck is in the midst of significant change. They're increasingly fitted with onboard sensors, designed for integration with labor management and warehouse management systems, and supported by data-driven maintenance practices. The days when a lift truck simply moved product through a facility without capturing detailed information at every step could soon seem downright laughable.

The value of precisely controlling a fleet's costs, operators, safety and performance has been proven. But the creation of a successful fleet management program is an entirely different animal when compared to other improvement projects. Upgraded conveyors will produce a consistent and immediately measurable increase in speed. A redesigned workstation will result in a specific space savings.

An effective fleet management program, on the other hand, is a process of constant discovery with little ability to pinpoint a precise goal. Fancy hardware and software might not be necessary to make some progress, but a substantial cultural shift almost certainly is.

To further complicate matters, the technology for accessing and analyzing lift truck data is evolving at a

rapid pace. From mobile computers to cloud-enabled web portals to onboard telematics, the available tools for fleet optimization can be a bit overwhelming—especially when the return on investment is hard to define.

In an effort to take some of the mystery out of fleet management, *Logistics Management* spoke to suppliers of lift trucks and third-party fleet management products to get a sense of what pitfalls and success stories their customers have experienced. Whether you're still paper-based or looking to stay on the bleeding edge, these insights might provide food for thought as you improve your fleet.

Blocking and tackling

Before any investment in hardware or software, a fleet manager should begin steering the operator culture toward accountability and consistent processes. There are some preliminary questions that might expose shortcomings, according to Mike McKean, fleet management sales and marketing manager for Toyota Material Handling USA. Are you being reactive or proactive? How are you charging batteries? Are operators allowed to do that? What's your process? Is there damage to lift trucks, product or racking? Is operator training needed?

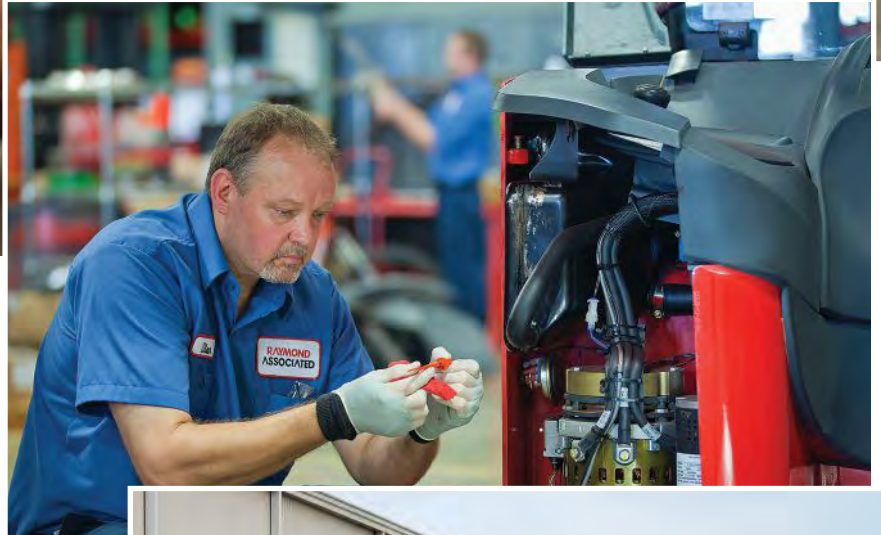
McKean suggests that a bulletin board be installed to outline the status of the fleet and any avoidable damage each month. "Create an awareness that operators are being monitored," says McKean. "It's a matter of communication. Maybe you need to have periodic operator meetings to set those expectations around compliance or consequence. This should be a part of a manager's job description, and does not require any hardware or software."

From there, an entry-level investment in impact monitoring equipment or remote hour meters will supply some basic data points. It may take some time to establish a baseline or begin any improvements, but this process cannot be rushed.

"For the people who go from no fleet management to an all-encompassing data collection methodology, it becomes too much information and they end up not doing anything," says Brian Markison, director of North American sales for UniCarriers. "Take those minor steps and get the basics down. It might lead you down paths you couldn't have predicted as you learn things about your specific application, fleets, and operators."

Phil Van Wormer is executive vice president of TotalTrax, a third-party provider of fleet management hardware and

decide



software for lift trucks. He emphasizes the importance of change management throughout the process of improving fleet management. “A lot of customers ask themselves if they are ready to deploy these technologies,” he says. “You need to be prepared to invest in that change, sponsor it and support it. Don’t expect instant gratification.”

Eventually, the answers to McKean’s questions will help answer some even bigger questions. Should I have electric or internal combustion lift trucks? Should I lease or own? How many years should I lease?

“Those questions will become easier,” says Nick Adams, business development manager for the Mitsubishi Caterpillar Forklift America fleet services group. “You’ll have the courage to go to electric knowing you will have higher up front costs, but with data proving that in the long term it will cost less.”

The same data could inform any number of fleet-related decisions, says Adams. “You might prove you can install a multi-pallet handler attachment and reduce the size of the fleet while moving the same amount of product,” he says. “It’s the same with storage density models if you’re looking at standard, narrow or very narrow aisles. Before



any project, you will have data that shows a reduced fleet or higher throughput.”

Adams sees big advances coming in the telemetry needed to reach that level of certainty, but he again stresses the basics. “You have to have the blocking and tackling down first,” Adams says. “A beautiful web portal is one thing, but if you don’t have basic processes, it’s not going to add value.”

Taking it to the next level

With the basics in check, it might be time to invest in the next layer of data collection technology. Having established an understanding and commitment to continuous improvement will increase the likelihood that this data can be used to inform sustainable change.

Given the rapid evolution of fleet management technologies, cloud-based or hosted software solutions are gaining popularity, according to Scott Craver, product manager, business and information solutions for The Raymond Corporation. This option helps the customer avoid information technology costs associated with an on-site deployment, such as server maintenance, outages and backups.

A remote system can also simplify the installation of telemetry equipment



Fleet data can help inform everything from operator training to the choice between an electric or internal combustion fleet.

because a service technician does not need to be on site to access each lift truck’s computer. Otherwise, it could take five to eight weeks of going live to collect information, load information, scan an operator’s access badges and configure the system, says Craver. Now it can be done remotely over a weekend.

From there, it’s a matter of identifying priorities and targeting them. Some might like to address battery management issues, an emerging capability of fleet management technologies.

“Typically, fleet management is about lift trucks and operators,” says Craver. “We’re starting to see the next big customer pain point, and that’s the battery.”

Associates are often responsible for the management of, for instance, a \$6,000 reach truck battery. They might be running the batteries until dry or never equalizing them. A battery sensor can monitor its temperature, water level and currents in or out. A lift truck left in the freezer could even send an email or text alert before the battery is damaged. Battery data could then be coupled with lift truck and operator data through a single portal.

Other operations might focus on the cost, duration, and details of service transactions. In retail, for instance, there is increased interest in dissecting this information, according to Pat DeSutter, director of fleet management for Yale Materials Handling. “Customers are adopting independent solutions to hold all service providers accountable, whether for lift trucks or HVAC,” he says. “They are banking a lot on their service levels to their stores and these technologies allow them to evaluate service providers in terms of actual cost as well as intangibles in service levels.”

A straight line between customer service levels and lift truck downtime



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Large fleet uses data collection to reduce major impacts

OSHA compliance initiative also resulted in lower costs and more productivity.

Based in Hatfield, Pa., Clemens Food Group has been producing pork products for more than 118 years. The company's three facilities, totaling more than 1.3 million square feet, are located in three different locations. After installing fleet management hardware and software, the company improved productivity while reducing major impact events by 80 percent.

With about 230 forklifts and approximately 1,080 operators, the company sought to reduce costs and improve operator and forklift productivity across the three locations. The company's focus areas were OSHA compliance, operator certification management, and impact detection. Clemens also needed a fleet management system that would work on forklifts from all manufacturers.

They selected a system from Crown Equipment that both collects data from lift trucks and presents it in an actionable format. Managers can now use dashboards to focus on opportunities

for improvement while avoiding wasted time deciphering mounds of data.

"The system brought a new level of efficiency to our OSHA compliance efforts," says Jeff Barnes with Clemens Food Group. "Because the system allows us to assign a PIN number to each operator, we are able to limit access to the vehicle to only those operators with the required certification. Also, by integrating the inspection checklist into the system, we were able to automate the process and ensure the operator performs the inspection with the proper attention to detail."

The fleet has experienced an 80 percent reduction in major impact events. They are now able to keep track of how and when equipment is being used and which operator is on the equipment at any given time. Managers have identified the most productive operators and the operators that may need additional training.

—Josh Bond, Editor at Large

is a concept that effective fleet management can highlight. As DeSutter puts it: "Fleet maintenance is not just a means to an end, but an integral part of their business."

Modern systems can generate a service call, know when the work order was entered, when someone is on site, when the work order is closed, as well as parts availability. This granularity helps a fleet manager define and monitor the ideal speed and efficiency of a service transaction.

The labor management connection

The initial acquisition cost of a lift truck accounts for as little as 20 percent of the costs associated with its use over time. Most of the rest is spent on the operator. A lift truck might cost \$10,000 to \$40,000, but the operator costs \$45,000 per year for three shifts, according to Van Wormer. "That's \$135,000 per year of labor for one lift truck," he says. "If fleet optimization

can trim a fleet by just one unit, you've got a return on investment within a year for that alone."

The ability to track real-time data about the movement of the vehicle, the performance of the operator and the position of inventory is of growing interest to both fleet managers and equipment suppliers. "I see fleet and labor management converging into a common platform using the same type of mobile computer device," says Markison. "We'll soon be able to overlay the fleet performance layer with the operator performance layer, which will in turn be overlaid on the WMS, whose understanding of the facility will be vastly improved."

In the past, visibility into operator performance was based primarily on hourly rates. "But if we can see that an operator was only on the lift truck 50 percent of the time, well there's an easy way to improve that individual's productivity," says Jim Gaskell,

director of Global Insite Products for Crown Equipment.

Aside from more detailed monitoring of individual performance, fleet management can lead to better overall labor standards. "Right now, the WMS only tells an operator to perform a move and only collects the amount of time between command and completion," says Gaskell. "If that's 10 minutes, that's a big visibility gap. How would you know why one operator takes 10 minutes, and another 15?"

Instead of an engineer with a stopwatch, labor standards can derive from real data as opposed to averages. Add them all up, and a picture of the optimal fleet begins to emerge. Customers are often able to reduce their fleets by 5 or 8 percent, says Gaskell, and one customer cut 15 percent.

Whether or not reductions are possible, combined fleet and labor data can reveal some surprising dynamics. "When I see operations who pay lift truck operators on an incentive basis, I see a facility that is missing the big picture and not measuring the whole process," says Toyota's McKean. "It's the wrong signal to send. Operators will be harder on the lift truck itself, won't charge effectively, and often accelerate and brake heavily. You find an array of dysfunctions while operators are incentivized to make more money."

Instead, some facilities with strong fleet management programs are applying 75 percent of the savings to the bottom line and giving 25 percent to the employees, as much as \$300 a month. "A lift truck operator now has a car payment just for being an average performer," says Craver, "as opposed to incentives based on production that encourage the abandonment of good habits."

Good habits, solid data, and the type and quantity of equipment will always have room for improvement. Throughout the establishment of a fleet management program, Gaskell offers a piece of advice: "Expect to see an improvement every month until you reach the lowest possible level. And then take it even further."

—Josh Bond is Editor at Large for Logistics Management

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Pacific Rim Report

By Patrick Burnson

Patrick Burnson is Executive Editor of *Logistics Management*. If you want to contact Patrick with feedback or a story idea, please send an e-mail to pburnson@peerlessmedia.com.



“NAFTA 2.0” still alive for U.S.-Canadian shippers

TRADE MINISTERS FROM 12 countries—including the U.S. and Canada—failed to come to an agreement at their final meeting in Singapore late last year on the Trans-Pacific Partnership (TPP). However, the world’s largest economic treaty in history is hardly dead in the water. While many of the proposed terms of the TPP are still shrouded in mystery, there’s widespread agreement that the deal has reached a “tipping point” for North American shippers.

Indeed, Canadian and American stakeholders are being urged by trade lobbyists to call on their governments to ensure the agreement includes long-term measures to deal with chokepoints in trade and the supply chain. The most urgent of these is the post-9/11 security measures between the U.S. and Canada border that are impeding the facilitation of goods and services and risking economic security. Other pressing issues include inadequate infrastructure and redundant regulations that have plagued logistics managers for decades.

James Philips, president and CEO of the Canadian-American Border Trade Alliance, calls the pending deal “NAFTA 2.0” for the fast-growing Asia Pacific Region. As the world’s largest free trade zone, the TPP would give Canada preferential trade and investment access to dynamic new markets. This represents a coveted door of opportunity that may accelerate our hemisphere’s economic recovery.

Philips will be among the speakers sharing market intelligence at the inaugural Cargo Logistics Canada (CLC) Expo in Vancouver on January 29-30, 2014. In an interview with *Logistics Management*, he notes that past trade agreements used to deal mostly just with goods, while today’s iteration encompass a broad range of regulatory and legal issues, making them a much more central part of foreign policy and domestic lawmaking.

“Last year, for example, we saw the first-ever joint U.S.-Canada Border Infrastructure Investment Plan (BIIP),” says Philips. “The development and release of this initiative fulfills a commitment made under the 2011 U.S.-Canada Beyond the Border Action Plan.”

The BIIP is an interagency and bi-national planning mechanism developed to establish a mutual understanding of recent, ongoing, and potential border infrastructure investments. It outlines the approach that the U.S. and Canada will take to coordinate plans for physical infrastructure upgrades at small and remote ports of entry.

This initiative will be updated and disseminated annually, and follows recent announcements by Canada of significant investments at inland cargo gateways like North Portal, Saskatchewan, which serves Pacific Rim trade.

At the same time, the U.S. and Canada announced a pilot project at the Port of Prince Rupert to eliminate duplicate security checks of marine cargo that

President Barack Obama and Canadian Prime Minister Stephen Harper appear to be on the same page when it comes to “version two” of NAFTA—and that can only mean good things for Pacific Rim shippers.



enters Canada, but is destined for the U.S. by rail. Under the new approach, cargo is screened only once, at its initial port of arrival, after which it is free to move across the U.S.-Canada border without the need for further inspections—embracing the principle of “screened once, accepted twice.”

As we await the eventual passage of TPP, trade experts maintain that modernization of major West Coast border crossings will reduce wait times, increase reliability of just-in-time shipments, and decrease fuel consumption and greenhouse gas emissions.

Meanwhile, President Barack Obama and Canadian Prime Minister Stephen Harper appear to be on the same page when it comes to “version two” of NAFTA—and that can only mean good things for Pacific Rim shippers. □

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