Peerless MEDIA, LLC

DECEMBER 2019

SUPPLYCHAIN MANAGEMENT REVIEW

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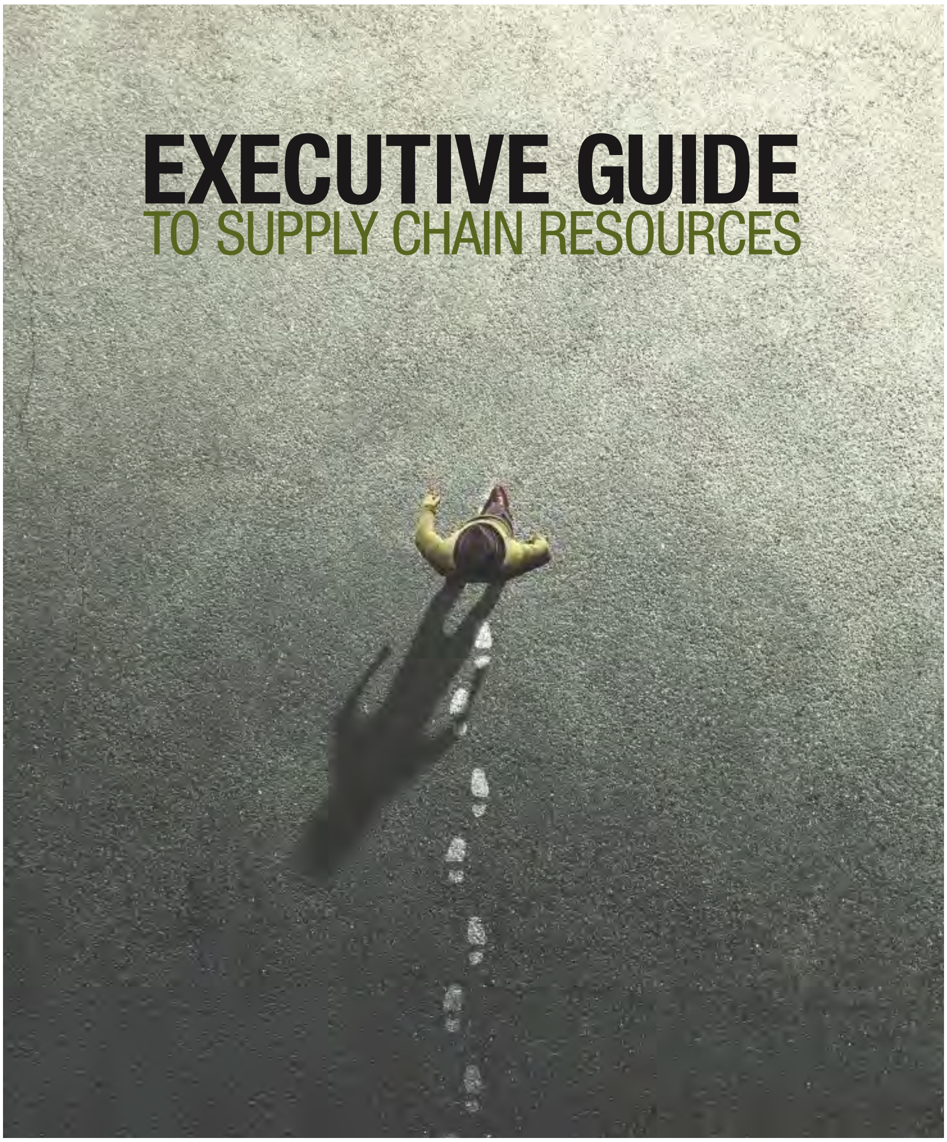

FEATURES

A resource for the year ahead

If it's December, it must be time for our annual Executive Guide to Supply Chain Resources. This is a comprehensive guide to services, products and educational opportunities targeted specifically to supply chain professionals. As with years past, we're also featuring several articles we trust will offer food for thought in your supply chain in the coming year.

We lead the issue off with our third annual look at the Council of Supply Chain Management Professionals' 2019 State of Logistics Report, authored by A.T. Kearney. Last year, the authors forecast more demand than capacity and continued high shipping prices. In contrast, 2019 has seen a significant slowdown in logistics activity, pointing to a more favorable market for shippers. We follow with executive editor Patrick Burnson's annual outlook for the economy and supply chain management in the year ahead. Burnson surveys a wide variety of published reports and brings them together in one concise outlook feature.

We round out the issue with *Supply Chain Management Review*'s Compensation and Executive Education Study, a must read for all professionals who want to compare how they're doing against their peers. Spoiler alert: Salaries were up significantly in 2019.

And, we wrap up the issue with Part II of Brooks Bentz's report on what to expect from IMO-2020, the new fuel regulations affecting the ocean shipping industry.

Bob Trebilcock, Editorial Director
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Finally, I'd like to invite you to *Supply Chain Management Review*'s second NextGen Supply Chain Technology Conference, which will be held next April 27-29 in Chicago. We'd love to have you attend and we're also looking for presenters who can speak about the technologies that will shape tomorrow's supply chains. And, if your organization is doing something notable utilizing AI, machine learning, robotics, IoT or a digital transformation project, we encourage you to submit for our second annual Supply Chain Awards. You can learn more at nextgensupplychainconference.com.

As always, the editors at *Supply Chain Management Review* wish all of our readers a successful year to come. We hope that the information and insights contained in this issue will play some part in that success.

Bob Trebilcock

SUPPLYCHAIN MANAGEMENT REVIEW

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December 2019 Volume 23, Number 7

SupplyChain MANAGEMENT REVIEW

FEATURES

COMMENTARY

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Supply Chain Management Review® (ISSN 1521-9747) is published 7 times per year (Jan/Feb, Mar/Apr, May/Jun, July/Aug, Sept/Oct, Nov, Dec) by Peerless Media LLC, 111 Speen St, Ste 200, Framingham, MA 01701. Annual subscription rates: USA $199, Canada $199, Other International $241. Single copies are available for $60.00. Send all subscription inquiries to *Supply Chain Management Review*, PO Box 677, Northbrook, IL 60065-0677 USA. Periodicals postage paid at Framingham, MA and additional mailing offices. **POSTMASTER: Send address changes to: Supply Chain Management Review, PO Box 677, Northbrook, IL 60065-0677.**

THE YEAR IN LOGISTICS: CRESTING THE HILL

After several years of explosive growth, logistics may have crested the hill, with a potential slowdown on the horizon.

BY MICHAEL ZIMMERMAN, BALIKA SONTHALIA, KORHAN ACAR AND JOSH BROGAN

After the brutal climb of 2018, with cost increases and capacity crises across all logistics sectors, the industry stabilized in 2019. Indeed, industry innovations and slower economic growth are likely to temper any additional price increases in 2020—assuming relative political stability. After cresting from a long climb, the coming year will bring both uncertainty and opportunity.

For a decade, the story of logistics has been a story of rising prices and capacity shortages. U.S. business logistics costs (hBLC) have risen every year but one since 2009 (2016 saw a 1.3% drop). Driven by exploding e-commerce volumes and robust GDP growth, demand for logistics services has continually outstripped supply across most sectors. But late in 2018, and continuing through 2019, demand softened, putting future growth in doubt. No steep decline is yet evident, so it still looks like logistics has toughed out a steep grade to finally crest a hill.

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Although the crest gives shippers a chance to catch their breath, it presents its own uncertainties and opportunities. Will trade tensions or economic slowdowns lead to substantial volume reductions? Will operators continue to cut capacity and bring markets back in balance? Will shippers retaliate, clawing back on carriers' rate increases—or will they use this opportunity to set more sustainable relationships for the future? And as always, where will accelerating technological change transform parts of the industry next year, as opposed to improving it in small increments?

FIGURE 1

In 2018, all subsegments of USBLC costs increased to the highest level since 2014

Transportation costs	2018 $BILLION	YoY 18/17	5-YEAR CAGR
• Full truckload	296.1	7.6%	3.6%
• Less-than-truckload	71.8	8.3%	3.5%
• Private or dedicated	300.9	13.1%	7.1%
Motor carriers	668.8	10.1%	5.1%
Parcel	104.9	8.7%	8.0%
• Carload	61.4	7.2%	-0.6%
• Intermodal	27.0	28.7%	8.1%
Rail	88.4	12.9%	1.6%
Air freight (includes domestic, import, export, cargo, and express)	76.5	9.2%	3.8%
Water (includes domestic, import, and export)	45.7	12.8%	1.5%
Pipeline	53.0	12.7%	12.7%
SUBTOTAL	**1037.4**	**10.4%**	**5.1%**
Inventory carrying costs			
• Storage	153.1	3.2%	3.0%
• Financial cost (WACC x total business inventory)	192.5	26.0%	3.0%
• Other (obsolescence, shrinkage, insurance, handling, others)	148.1	14.8%	3.0%
SUBTOTAL	**493.7**	**14.8%**	**3.0%**
Other costs			
• Carriers' support activities	52.3	10.3%	4.5%
• Shippers' administrative costs	52.1	2.8%	5.3%
SUBTOTAL	**104.4**	**6.4%**	**4.9%**
TOTAL US BUSINESS LOGISTICS COSTS	**1,635.46**	**11.4%**	**4.4%**

Notes: **USBLC** is United States business logistics costs.
YoY is year-on-year. **WACC** is weighted average cost of capital.

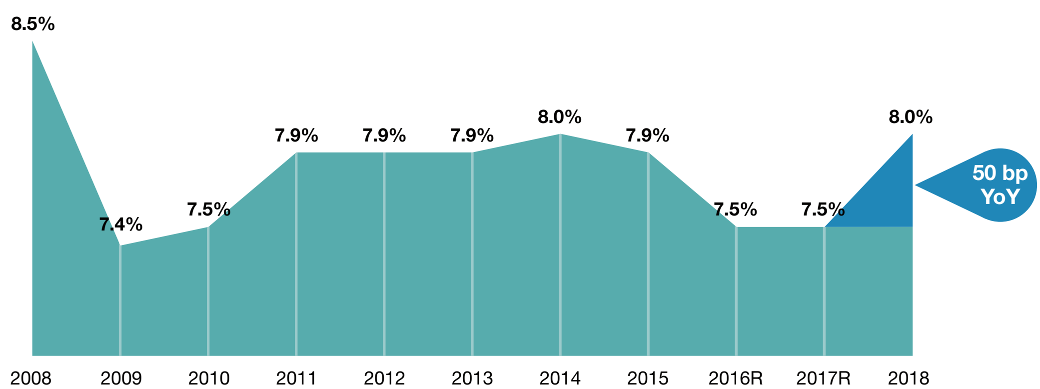
Source: CSCMP's 2019 State of Logistics Report

The data: 2018's cost increases

The latest official USBLC calculation—by A.T. Kearney and the Council of Supply Chain Management Professionals (CSCMP)—is for 2018, and shows that costs again rose, by 11.4%. All sub-segments of USBLC costs increased to their highest levels since 2014. Inventory led the way with a 14.8% overall cost increase. Certain transportation modes, such as intermodal and private fleets, also saw big jumps (see Figure 1).

FIGURE 2

USBLC rose 11.4% to reach $1.64 trillion, or 8.0% of 2018's $20.5 trillion GDP



Notes: **USBLC** is United States business logistics costs. **Bp** is basis points. **YoY** is year-on-year.

Source: CSCMP's 2019 State of Logistics Report

At $1.64 trillion, USBLC represented 8.0% of 2018's $20.5 trillion GDP, a jump of 50 basis points over 2017. Thanks in part to the rise of e-commerce, logistics is a significant portion of the U.S. economy (see Figure 2).

Cresting the hill

Yet in 2019, that economy appears to be softening. According to IMF predictions, U.S. GDP growth will slow from 2.9% in 2018 to 2.4% in 2019 and 2.1% in 2020. The consumer confidence index and consumer spending both fell in the second half of 2018, rebounded in early 2019, but showed signs of weakness in the fall of 2019. After raising rates four times in 2018, and signaling its willingness to move them even higher, the Federal Reserve cut interest rates three times in the second half of 2019.

A slowing economy means lower demand for logistics services, which loosens capacity for shippers. But falling volumes cause most carriers to struggle, especially as the labor market remains tight. The October 2019 unemployment rate was 3.6%, 0.1 points lower than the previous year—a condition that sustains rising labor costs and headwinds in finding and retaining workers.

Trade uncertainty has driven both outlooks and actions in 2019. Pessimism about trade tensions with China contributes to many of the expectations of a slowing economy. Meanwhile, many retailers appear to have stocked up again on imports from China in anticipation of tariffs—an oversupply that would dampen demand for logistics services moving forward.

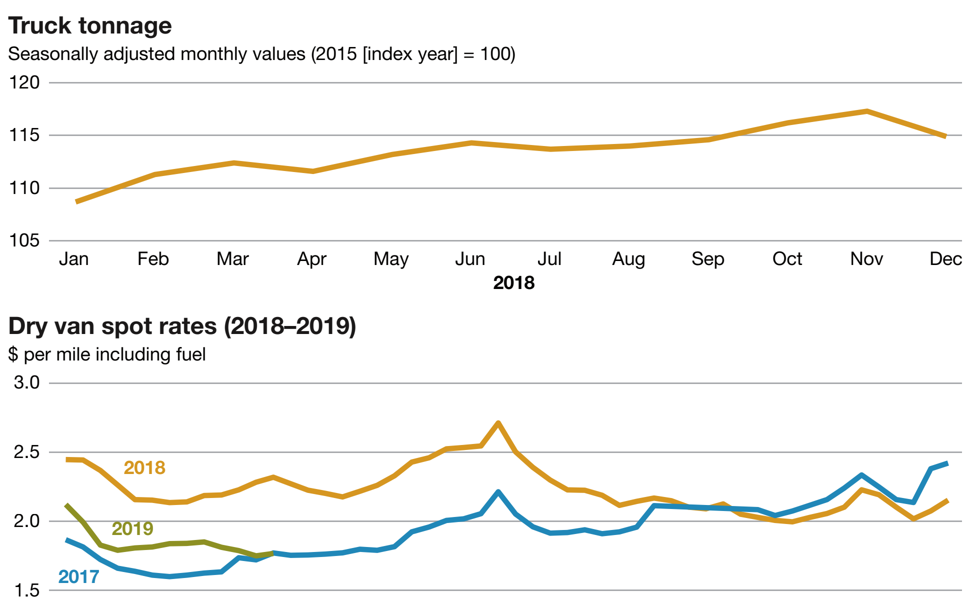
over the previous year. As a result, carriers are making rate concessions of 4% to 8% compared to 2018.

One likely reason is trade tensions. Companies built inventory well ahead of the holiday season in anticipation of additional tariffs. Keen observers point out that declining trucking volumes are considered an early symptom of economic shrinkage and argue that this is a leading indicator of a coming economic recession.

The situation marks a stark reversal from 2018, when capacity was tight and rates were rising (see Figure 3). Shippers across nearly all industries exceeded their logistics budgets. Some made wise strategic investments such as implementing additional captive fleets or becoming shippers of choice to make their freight more desirable to carriers. But for all shippers, 2018 remained an incredibly challenging year.

FIGURE 3

Excess demand, tight capacity, and high rates delivered gain for carriers and pain for shippers



Sources: Bureau of Transportation statistics; A.T. Kearney analysis

Fast-changing sectors

Some logistics sectors experienced a particularly lively year in 2019. These include:

Motor carriers

The trucking market has unquestionably tilted in favor of shippers. The first 10 months of 2019 showed year-on-year volume decline while equipment capacity has increased—with a gain of 30,000 tractors, about 4%,

In retrospect, we can see the big picture: Strong consumer demand and fears of tariffs boosted volumes early in 2018, with a subsequent drop-off. Indeed, the load-to-truck ratio fell 62% between June 2018 and March 2019.

When capacity was tight, carriers exercised market power. They increased rates to achieve profitability while citing an inflationary driver cost environment. To improve efficiency, they invested in in-cab telematics and advanced predictive analytics. But as demand has crested, revenues and profits have fallen.

Heading into 2020, the market continues to soften. The Morgan Stanley FTL Index is significantly underperforming its 10-year average. Carriers are blaming an oversupply of truckload capacity for greater-than-expected pressure on earnings. Some carriers are accepting lower rates to try to ride out the slowdown rather than exit capacity. A.T. Kearney expects that 2019 best-practice sourced contracted rates will drop at least 4% to 8% from 2018 levels, with better capacity assurance.

This continued market rate softening assures a down year for carriers and a strengthened hand for shippers. How will shippers play that hand? Some may seek double-digit savings when sourcing. But others may seek a cost–service–commitment balance to set outcomes. For example, collaborative optimization technology for the sourcing process can manage complex tradeoffs.

FIGURE 4

Parcel and last mile see relentless competition

Sources: US Census Bureau Quarterly E-Commerce Report; A.T. Kearney analysis

Last mile

E-commerce shipments continue to fuel consistent growth in parcel delivery (see Figure 4). The challenges and innovations of last-mile delivery are by now well known. The parcel sector crested a hill in 2019 like the rest of the industry, in that conditions stabilized a bit, with few headline-making events. But the year has been marked by intense competition, especially from Amazon.

On the parcel side, FedEx announced that base rates will increase 4.9% in 2020 (although impacts could vary depending on weight and zone profiles). That's the same increase as last year—but FedEx also continued to significantly hike accessorial pricing. Additional handling and oversize charges will increase from 11.1% to 33.3%, extended delivery area surcharges will increase from 4.7% to 27.85% and changes in extended area zip codes were implemented to increase coverage.

UPS will likely follow FedEx on price increases, but it has also come up with a new pricing model—UPS Simple Rate—for two-day, three-day and ground networks. According to UPS, predictable nationwide flat rates that are simple, fast and transparent will provide shippers with more convenience, choice and control. This flat pricing innovation—FedEx also has a One Rate service—is clearly the result of competition from Amazon and USPS.

As last mile increasingly gets tied to order fulfillment with faster delivery expectations, FedEx and UPS continue to make significant investments in their networks to answer the Amazon effect in compressed delivery windows. FedEx is investing $1.5 billion to modernize its Memphis hub by 2025. UPS announced a plan to enhance its Dallas, Phoenix, Salt Lake City, Indianapolis and Atlanta facilities to super hubs.

UPS and FedEx are also responding to Amazon by increasing to seven-day-a-week operations, as well as operating official additional sorts throughout the year to compress lead times. There are conflicting messages from UPS and FedEx on relationships with USPS: UPS states that USPS will be key to its seven-day delivery model, while FedEx is planning to convert more of its SmartPost service into its ground network to improve delivery densities. Meanwhile, regional carriers are joining the race for speed as they extend their reach in respective geographies. For example, OnTrac can now reach many of the western states in one day, as it continues to build capabilities.

As both shippers and carriers continue to make investments to respond to Amazon, shippers are increasingly realizing that compared to the costly option of the "Amazon chase," there's value in needs-based segmentation, and that adjustments in freight recovery models are becoming a requirement.

Warehousing

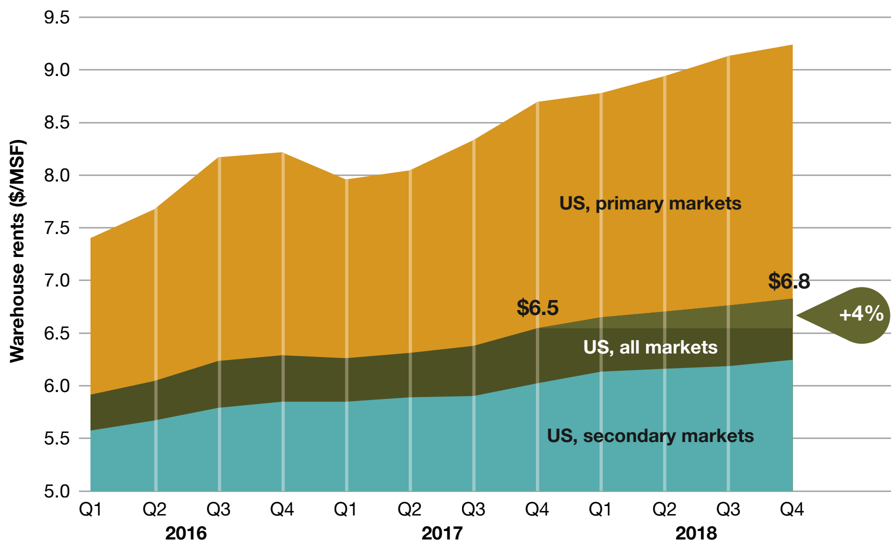
Warehouse space remains a hot commodity. A historic low industrial vacancy rate of 5% is virtually unchanged over

the past year. For the year 2018, warehouse rents in general increased by 4.0% (see Figure 5). But looking specifically at logistics-related warehouse and distribution space for Q2 2019, we see a 7.0% YOY increase to $5.84 per square foot. Project delays and postponements continue to slow development activities, keeping net absorption slightly lower than last year, with tenants delaying their occupancy in leases.

The continued demand has come from shippers seeking to meet consumer imperatives for speedy deliveries, causing more forward deployment of inventory. The stresses of 2018–2019 may also have resulted from companies stocking up on products in anticipation of higher tariffs—if so, the murky future of global trade could have hard to anticipate effects on demand for warehouse space.

FIGURE 5

Warehouse rents continue to increase



Note: MSF is million square feet.

Source: Sources: Cushman & Wakefield; A.T. Kearney analysis

The warehouse development pipeline is holding strong. With large blocks of contiguous space in existing buildings remaining scarce, many companies are preleasing (signing a lease before the space becomes available)—indeed the preleasing rate for Q2 2019 was 57%, up from 43% in Q1, and the second-highest in the past three years. Despite the increase in new projects being delivered, new projects are also breaking ground to keep a steady pipeline, with 259.3 million square feet under construction.

As of Q2 2019, third-party logistics (3PL) has surpassed logistics and distribution as the leading sector for industrial leasing. This could be the result of some retailers responding to the warehouse capacity crunch by implementing more store-based distribution solutions, and other companies responding to complex warehousing dynamics by asking 3PLs to handle it for them. Leasing activity is the strongest in the range of 100,000 to 250,000 square feet. Given rent increases in most U.S. markets, tenants are pushing for early renewal options to lock in rates. We expect leasing momentum to remain strong going forward, which will further push rents higher.

Other sectors

Rail

After a successful 2018, railroads continued to improve profitability through 2019. Railroads are achieving record-low operating ratios thanks to expanded rollout of Precision Railroading concepts, which are driving strong productivity gains across key metrics including train and engine, labor and equipment.

The sector is showing weakness in volumes, particularly in 2019's third quarter when the majority of business segments experienced declines. Intermodal volumes have led declines across several railroads, mirroring the weakness seen in the trucking market. Indeed, trucking carriers have successfully targeted intermodal volumes with lower rates and increased capacity, reversing some of railroads' gains in intermodal when conditions were the opposite in 2018. Looking forward, uncertainty in automotive production and sales, road truck capacity and low natural gas prices all present risks around core railroad markets.

Despite declines in total revenues, efficiency gains are nevertheless driving continued profitability—and railroad buyback programs are supporting improved earnings-per-share performance. Indeed, railroads' success at reducing operating ratios by creating efficiencies is causing them to look more aggressively at technology and automation that could accelerate those gains. They are also applying technology to improve safety via automated and real-time (or near-real-time) inspections and monitoring.

Water and ports

Ocean shipping is particularly affected by geopolitical trade tensions. Looming tariffs led to an extraordinary 13% spike in the fourth quarter of 2018—but that was the result of shippers pulling forward inventory, and 2019 volumes suffered accordingly. At the port of Los Angeles, import and export volumes both dropped by more than 19% in October 2019.

On the capacity side, past mergers allowed ocean carriers in 2018 to exhibit more discipline in resisting price wars. The result was record-high rates, although higher-than-expected costs dampened profitability.

A legal development worth watching in the upcoming year is final resolution of a lawsuit by the operator of the Port of Portland, Oregon, against the International Longshore and Warehouse Union (ILWU). The union was accused of unfair labor practices that resulted in the shutdown of Portland's container operations. In November 2019, a jury found against the union to the tune of $97 million. The court has delayed entering judgment, and the case may be appealed, but if upheld, it would be a profound defeat for unions, with implications for the power dynamics in major U.S. ports.

IMO2020 is moving ahead with imposition of low-sulfur diesel requirements for ocean operators. Diesel cost variability would have the potential to impact not only global shipping, but also rail and road shipments that are also hauled by diesel engines. However, refineries appear ready to take on the new demand, and diesel specialist Breakthrough predicted limited spikes to diesel pricing as a result of the increased demand the regulation imposes.

Going forward, technological platforms such as TradeLens and NYSHEX offer the promise of reducing costs and increasing transparency. But any such gains may be overwhelmed by the industry's tremendous uncertainties.

Air freight

After 2018's weaker-than-expected growth, 2019 air freight volumes are declining more rapidly than expected. According to the International Air Transport Association (IATA), September 2019 demand decreased by 4.5% compared to the previous year—the 11th consecutive month of year-on-year decline. That's the longest set of declines since the 2008 global financial crisis.

IATA is optimistic that the decline occurred in late 2018 and early 2019, with a plateau since then that could soon return to positive growth. Certainly airfreight is poised to capitalize on the increasing need for speed in e-commerce delivery. Furthermore, the industry continues to build capacity, and is finally making meaningful strides in digitization, which could reduce costs going forward.

Nevertheless, the numbers suggest continued weaker-than-expected demand. The trend is likely fueled by intensifying trade tensions between the U.S. and China, and South Korea and Japan, plus weakness in key drivers of economic growth and global trade—and it could well lead to lower prices and declining profitability into 2020.

Third-party logistics

The demand for third-party logistics (3PL) services is expected to grow through 2022, largely because retail shippers want 3PLs to help them differentiate on speed and innovation, while industrial shippers want 3PLs to deliver a seamless and cost-effective supply chain. 3PLs are becoming increasingly strategic, especially in domestic transportation and value-added warehousing. Companies are seeking to partner with 3PLs on end-to-end supply chain solutions, as in the partnership between Walgreens and FedEx.

Rising demand and expectations create challenges. To succeed, 3PLs must bet correctly on technology, out-compete tech-savvy start-ups seeking to carve away pieces of their business, and repair the mistrust that has characterized past shipper-3PL relationships. But such challenges are the nature of the industry, which should on the whole thrive amid a complex environment requiring 3PL skills.

Trends

Logistics remains an industry on the cusp of profound change. With ever-more-demanding consumers, and ever-more-enticing technological promise, several potential innovations demand continued attention.

- Incipient technological advances—including artificial intelligence (AI), machine learning (ML), augmented reality (AR), virtual reality (VR), robotics, the 5G mobile broadband standard and blockchain—offer the potential to drastically reduce costs even if current adoption looks more like focused pilots than rapid adoption.
- Other maturing technologies—including the "uberization" of freight, autonomous vehicles and battery- or hydrogen-powered trucks—may be close to implementation that would disrupt traditional business models.
- Many of these changes require not only a technological advance but also a networked acceptance. For example, blockchain solutions will require wide participation to succeed, and alternative fuels will take off only with nationwide refueling infrastructure. The timing of such tipping points is particularly hard to predict.

In short, change, especially technological change, never happens in a straight line. After years of rapid-fire developments, 2019 was relatively quiet. Again, it's as if the industry has crested a hill. This vantage point offers stunning vistas, and a great number of paths to alternate, worthy destinations.

GLOBAL SUPPLY CHAINS TRUST IN A "STABILIZED" ECONOMY

Weak business confidence combined with low unemployment and moderate inflation expectations result in more subdued profitability predictions.

BY PATRICK BURNSON

Even though industrial production and investment slowed more than expected in 2019, consumer spending has held up global growth.

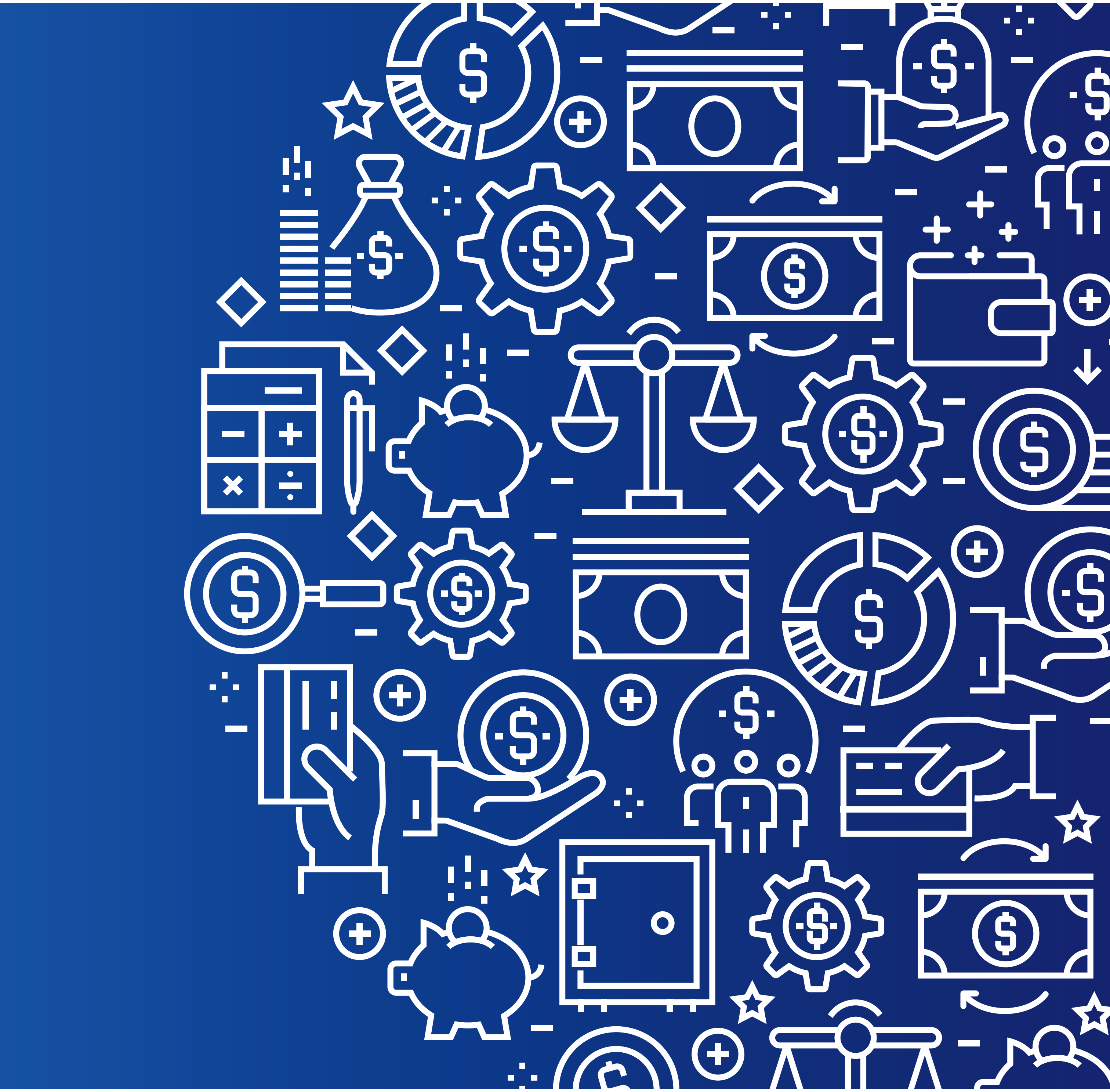
The latest IHS Markit Business Outlook survey signals that U.S. private sector firms are less optimistic toward the outlook for business activity over the coming 12 months than in June.

According to economists, the net balance of firms expecting a rise in output has dropped from +16% in June to +10% in October. That's the lowest for three years. The net balance of firms forecasting growth is also below the global (+14%) and developed market (+12%) averages.

Both manufacturing and service sector firms expressed a lower level of positive sentiment toward future output than earlier in the year.

Confidence is generally linked to new export opportunities, with some companies planning on expanding their reach following ongoing trade tensions. At the same time, some private sector firms are suggesting that they have attracted new clients as more customers switch to domestically produced goods.

Patrick Burnson is the executive editor of Supply Chain Management Review



Inventory unleashed

Companies are also predicting that greater marketing activity and the release of new products and services will boost sales over the next 12 months.

That said, several key factors are expected to weigh on growth. As has been highlighted in previous survey periods, the ongoing impact of tariffs and higher operational costs are seen as threats to the outlook, with many also stating that the uncertainty surrounding future trade policy is likely to limit client demand.

Meanwhile, difficulties in finding skilled and reliable talent, and the upcoming election, are also cited as factors that may weigh on performance over the next year.

"Last October, U.S. private sector firms were expressing a more cautious level of optimism toward output over the coming year, with the net balance of companies predicting growth dropping to a three-year low," says IHS Markit economist, Siân Jones.

He adds that global trade tensions, an upcoming election and tight labor market conditions weighed heavy on business confidence. "Reflecting weaker forecasts for overall activity, firms are less optimistic regarding future job creation, with many noting that a shortage of skilled labor was reducing the ability to fill long-held vacancies," Jones notes.

Meanwhile, inflation expectations at private sector companies remain subdued, with smaller proportions of firms predicting increases in cost burdens and selling prices. "That said, manufacturers are more confident of raising their output charges, with the respective net balance picking up for the first time in a year," concludes Jones.

"OK Boomer"

Alongside a weaker degree of optimism toward output, the net balance of U.S. private sector firms who foresee a rise in hiring over the next year has slipped to the lowest since February 2016 (+5%), according to IHS Markit.

At the same time, the reduced proportion of firms predicting an increase in employment is reportedly due to difficulties in finding skilled staff amid tight labor market conditions.

In line with weaker job creation expectations, U.S. private sector firms are also less confident of a rise in capital spending over the next year. The net balance of companies who forecast an increase in investment (+6%) fell from that seen in June (+10%) but is in line with the developed market average.

Manufacturers and service providers revised down their expectations regarding future rises in both staff and non-staff costs last October, despite ongoing reports of higher operational costs due to tariffs. The net balance of firms forecasting a rise in non-staff costs (+4%) is the lowest since February 2017.

"Manufacturing and service sector firms both expect to raise their selling prices over the next year, albeit to varying degrees," reports IHS Markit.

The net balance of manufacturers predicting a rise in output charges last October (+17%) picked up from that seen in June (+14%), whereas service providers have become less confident of an increase in selling prices (net balance of +3%).

Profitability forecasts among U.S. private sector firms are notably lower than those seen a year ago, with the net balance of companies expecting a rise in profits (+8%) having fallen steadily over the course of 2019 from +31% in October 2018.

The headlines for 2020 can seem full of bad news for multinational executives, maintains Ryan Connelly, a senior analyst for global economics at DuckerFrontier (formerly the Frontier Strategy Group).

He's the author of the firm's "Global Outlook for 2020" that notes that global growth forecasts have fallen steadily since Q4 2018.

"This was far lower than expected," says Connelly. "As a result, firm-level output is sliding, inventories are rising and global inflation is weakening."

He adds that "myriad" trade and disruptions—Brexit and U.S. trade tensions chief among them—that unsettled multinationals in 2019 are expected to continue.

"The risk of a global slowdown is elevated as economic weakness persists in China and Western Europe and the uncertainty surrounding U.S. President Donald Trump holds back investment growth," says Connelly.

And while it may be true that executives will enter strategic planning season for 2020 with less certainty on the future demand and regulatory environments than at any point in the past decade, the headlines don't tell the full story.

Overcoming hurdles in global distribution

Supply chain managers seeking to expand their distribution networks will have to be especially vigilant in 2020, says Mark Dohnalek, president and CEO of Pivot International, a Kansas-based global product development, engineering and manufacturing firm. "Choosing the right partners for your supply chain in marketing, sales, delivery, quality controls, Customs compliance and meeting regulation standards is imperative to ensure success next year," he says. "The overseas road is filled with bumps, curves and unexpected turns." He shared a checklist of solutions for common product development challenges.

1. Supply chain partner selection. Don't take shortcuts in doing your homework. Take the time to research their experience, approach to agility, and most importantly, check references on reliability. The right partners in your supply chain will make it possible for you to minimize costs, reduce waste and produce a multitude of other competitive advantages. As we know, every supply chain is inherently variable. When aspects of your business are no longer limited to the United States, unpredictability can escalate. Natural disasters, geopolitical turbulence and even minor transportation difficulties can affect global distribution, so make sure you are working with an experienced, international sourcing partner who has capabilities for managing and leading lead risk-reduction plans.

2. Currency fluctuations. Seem simple? It can be but only if you are prepared with a skilled team to manage pricing and costs as they oscillate. Exchange rates continually fluctuate due to supply and demand. Just as your production and deliverable timelines will change based on sourcing, staffing and responding to unexpected challenges—the exchange rate will too and that always needs to be taken into consideration when you set up your global marketing and distribution models. Make sure you have an expert continually monitoring currency fluctuations and they are integrated into your company's enterprise risk-management plan before embarking on overseas distribution.

3. Preservation of intellectual property. Intellectual property rights are less straightforward in other countries. IP infringement can occur through a wide array of actions and have the potential of harming your branding and business. For example, in the IT sector, it has been reported that 57% of personal computer users surveyed from 33 countries have pirated software. Take all necessary precautions in terms of protecting your innovations before considering international markets, which should include applications to individual countries' intellectual property offices through the World Intellectual Property Organization (WIPO).

4. Compliance with international regulations and standards. Quality standards and rules regarding imports, exports, safety, packaging, labeling, differ around the world. Know what is required in each country you are planning to sell your products. Certification systems vary from ISO: 9001 and ISO: 13485 to TUV, UL, CE, FCC—it is essential your team is uniquely qualified to assure low certification costs and properly executed lead-times.

5. Take the time to find the right supply chain partners. They should have step-by-step practices in place that occur at every stage of the production cycle.

"The news will generate a lot of noise about the immediate negatives, but multinationals can take advantage of pockets of opportunity in 2020 as they prepare for stronger growth going into 2021," observes Connelly.

Emerging market upside

DuckerFrontier analysts believe that the global economy will stabilize in 2020 from the volatility of the previous two years. Their "base-case" forecast calls for an acceleration in global growth to 2.8%, up from 2.7% in 2019, driven by a strong rebound in many emerging markets outside of China and stable consumer spending growth.

"Firms should approach 2020 cautiously because there is a high amount of uncertainty in the global outlook and there are significant risks to the downside, but there are also plenty of bright spots," says Connelly.

Many large emerging markets that suffered slowdowns in 2019 are rebounding. Consequently, investment in Latin America (LATAM), the Commonwealth of Independent States region and the Middle East and North Africa should also recover.

The Russian fiscal spending program, for example, will boost investment in 2020 with a focus on infrastructure and health. Investment will rebound in most major LATAM markets and even accelerate in Brazil following the passage of pension reform in 2019.

DuckerFrontier contends that the ongoing U.S.-China trade war, though a concern for developed markets, has actually created some positive spillover effects for LATAM, emerging Asia Pacific and Sub-Saharan Africa that will support local investment and exports.

Stable consumer spending

Even though industrial production and investment slowed more than expected in 2019, consumer spending has held up global growth.

Analysts expect that to continue in 2020, especially as central banks and governments step in with monetary and fiscal easing to support consumer demand. "The U.S. Federal Reserve ended a cycle of policy rate hikes when it cut interest rates in July 2019, and will make more cuts as needed," says Connelly.

He further maintains that China will continue to fine-tune policy support to hit its GDP targets, while the Central Bank is getting ready to implement new policy support to offset a domestic slowdown caused by weak external demand.

"Easier monetary and fiscal policy across these major markets has created the space that smaller markets need to ease their own domestic monetary policy," he says.

A recent Aberdeen Group Survey finds that as a result of a further boost to consumer spending growth, labor markets in North America will continue to add new jobs and see real wage increases while many Western European workers have already locked in wage gains for 2020 during union negotiations.

The negative effects of lower-than-expected growth in 2018—sliding output and rising inventories—will gradually reverse in 2020, the Aberdeen study states.

The manufacturing slowdown that has weighed on global activity in 2019 is expected to fade as firms adjust their production accordingly. Falling prices—a result of discounting and weaker currencies—will help stabilize world trade volume growth heading into 2020.

Although prices may remain weak in the short term, lower prices will create demand for export goods, helping clear out inventories and driving future demand for export goods. As inventories clear and weaker prices lead to a rebound in demand, the growth outlook will gradually improve across 2020 and pave the way for a stronger recovery in 2021.

While multinational companies can and should take advantage of these pockets of opportunity in 2020, they should also lay their growth plans for the end of the year into 2021.

"A stabilizing global economy in 2020 will pave the way for a manufacturing and demand rebound the following year, so executives should use 2020 to prepare their plans for growth," analysts for Aberdeen assert.

Finally, Dohnalek advises managers to take the time to find the right supply chain partners who have "step-by-step" practices in place that occur at every stage of the production cycle. "This will lead companies to be profitable but understanding what to do and how to do it is essential," he concludes.

—Patrick Burnson is the executive editor of Supply Chain Management Review

WHAT'S YOUR WORTH?

As demand for experienced, educated supply chain professionals grows, many of this year's salary survey respondents are enjoying six-figure salaries, but also dealing with the new demands of running global supply chains.

BY BRIDGET McCREA, CONTRIBUTING EDITOR

The national unemployment rate is at a 50 year low, senior-level recruits are particularly elusive and supply chain has become a corporate imperative for companies across nearly all industries. This "perfect storm" is driving continued pay increases for professionals who can analyze, coordinate and orchestrate their organizations' supply chains.

Currently at 3.5%, the national unemployment rate hardly applies to the company that's looking for logistics talent in the management, senior-level and C-suite categories. "If someone has a four-year college degree or more, from what I'm seeing the real unemployment rate is more like 2%," Ajilon's Tisha Danehl told *Logistics Management*, our sister publication, last June, noting that job experience can also drive those percentages down. "If your criteria for a new hire is three-plus years of experience, then you're definitely getting into the 2% realm versus 3.5%."

Bridget McCrea is a contributing editor to Supply Chain Management Review

Put simply: Supply chain professionals at the senior management level are in big demand right now. Their salaries continue to go up year-over-year without fail, which makes finding new ones very difficult in this labor market. This year's *SCMR* salary survey supports all of these points and uncovers the current salaries and overall compensation for supply chain professionals; their current job/overall career satisfaction; and their education levels and participation in career-related education.

Peerless Media Group conducted this year's Compensation and Executive Education Study in May of 2019. An e-mail invitation was sent to subscribers of *SCMR* asking for their participation. Based on 199 qualified respondents, the results include a margin of error of +/- 7.1% (i.e., if the entire population responded, results may vary by that amount).

How much do you make?

On average, supply chain professionals make $137,840 a year. About 7% are making $300,000 or more and 11% earn less than $60,000 per year. Their median annual salary is $110,000. According to the survey, 66% of these supply chain professionals indicated that their salary level has increased in the past year, while 27% say it stayed the same and only 7% say their salary has decreased. Of those professionals who saw salary bumps this year, most earned an average of 8% more than they did in 2018. Respondents who experienced salary decreases saw their paychecks decrease by an average of 12%.

Dividing up the respondents by age, 67% are 45 years old to 64 years old, 14% are 35-44 and 9% are 26-34. Examining salary levels by age, the highest earners are aged 55 to 64, with an average salary of $171,655. Those ages 45-54 earned an average of $141,225 and professionals 65 and up earned an average of $123,750. Professionals aged 35-44 earned an average of $117,400 and those 35 and under made an average of $80,810. These numbers reveal a direct correlation between age and salary levels, with veteran professionals earning more than their younger counterparts. Most respondents (60%) have fewer than five direct reports, while 26% have between five and nine employees working under them. Forty percent say they have fewer than five indirect reports, while 19% have between five and nine indirect staff members on their teams.

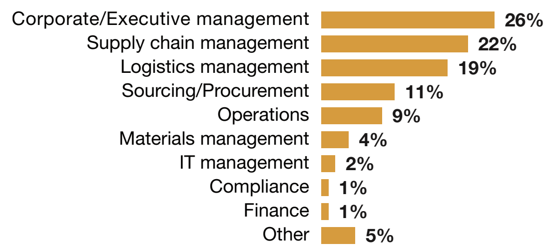
Where do you work?

Of those professionals surveyed, 26% work in corporate management, 22% are in supply chain management and 19% work in logistics management. Other key job titles include sourcing and procurement (11%), operations (9%) and materials management (4%). The bulk (45%) of all respondents work in manufacturing, with 11% employed by wholesalers and 11% by third-party logistics firms (3PLs). Another 7% are in the business of transportation or warehousing; 5% are retailers; and 4% are e-tailers (or work in e-commerce).

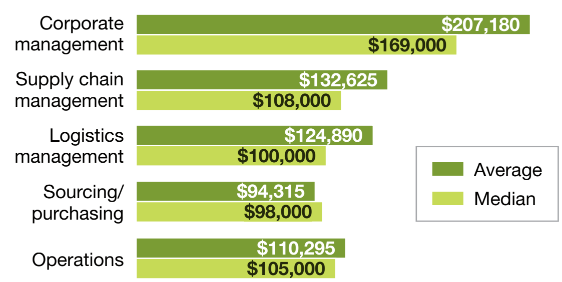
Of the total survey respondents, 83% were male and 17% were female, with the latter taking home an average salary of $148,870 and the former earning $107,960. The industry's highest earners work in corporate management and earn an average of $207,180 annually. They are followed by supply chain managers ($132,625), logistics managers ($124,890) and operations managers ($110,295).

FIGURE 1

Primary job function



Salary by primary job function



Source: Peerless Research Group (PRG)

Looking at salary levels in relation to scope of responsibilities, corporate professionals earn $162,470 while division executives make $162,720. Those with departmental responsibility earn an average of $86,560.

Salaries commensurate with experience

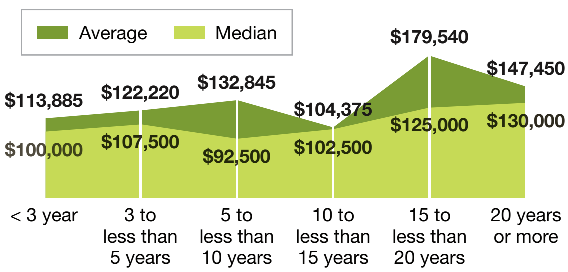
In comparing their current salaries versus the number of years they've worked for their current employers, those who have been with the same company for 15 years to 19 years reported the highest salary, with an average of $179,540 per year. Those who have been with their companies for 20 years or more earn an average of $147,450, while professionals there for five years to nine years take home an average salary of $132,865. The lowest annual salary level ($104,375) was reported by professionals who worked for their current companies for 10 years to 14 years.

FIGURE 2

Years with present employer

< 3 year	3 to less than 5 years	5 to less than 10 years	10 to less than 15 years	15 to less than 20 years	20 years or more
34%	14%	13%	13%	13%	13%

Salary by number of years with present employer



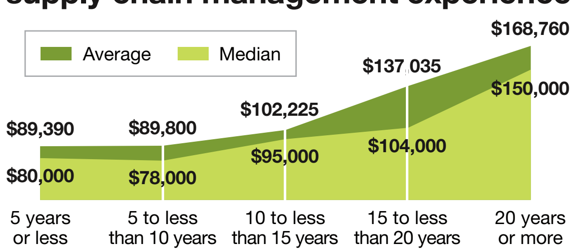
Source: Peerless Research Group (PRG)

FIGURE 3

Years of supply chain management experience

Less than 5 years	5 to less than 10 years	10 to less than 15 years	15 to less than 20 years	20 years or more
9%	11%	16%	12%	52%

Salary by years of logistics/ supply chain management experience



Source: Peerless Research Group (PRG)

Respondents also reported their income based on their years of experience, and naturally those with more experience earned higher salaries. Professionals with 20+ years of experience in the field reported an average annual salary of $168,760, while those with 15 years to 19 years under their belts reported an average salary of $137,035. Those with 10 years to 14 years of experience earned $102,225 a year on average.

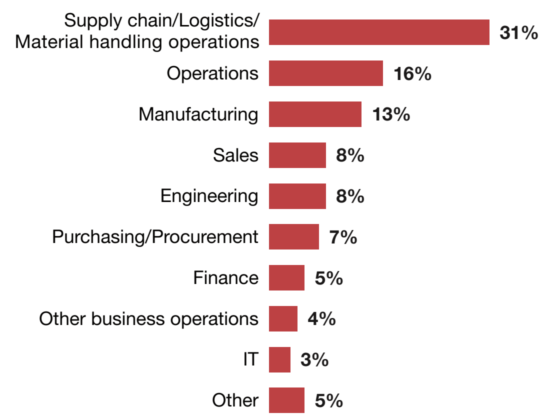
Of the nearly 200 professionals surveyed, 31% started their careers working in some capacity within the supply chain, logistics or materials handling operations field. Another 16% started in operations, 13% in manufacturing and 8% in sales.

The ever-expanding job description

To say that the role of the supply chain manager has expanded over the last 5 years to 10 years would be an understatement. According to the survey, 70% of the professionals surveyed are involved with transportation and logistics; 57% with warehousing, distribution, order fulfillment and supplier relationships; and 55% with planning. Other core tasks that supply chain professionals handle include sourcing/ purchasing (51%), inventory control (51%), customer relationships (43%) and risk management (34%).

FIGURE 4

In what field/area did you begin your career?

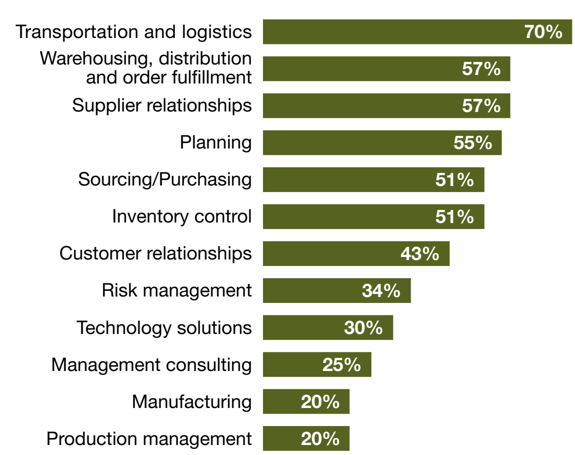


Source: Peerless Research Group (PRG)

When asked what they're expected to do now versus only five years ago, survey respondents said: "do more with less;" "accelerated turnaround times;" and "play a more important role in the company."

FIGURE 5

Activities involved with

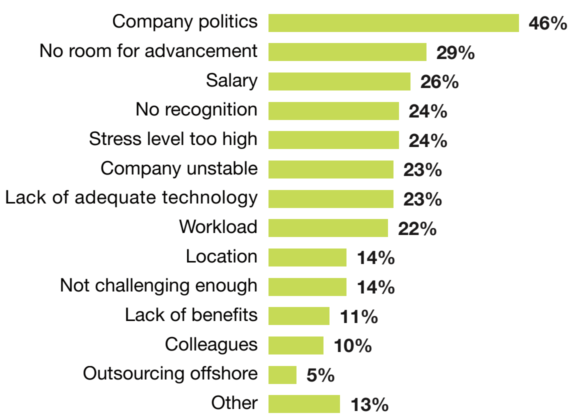


Source: Peerless Research Group (PRG)

Asked whether they are happy in their current positions, 39% of professionals say they are always open to better opportunities, while 29% are happy where they are and 19% say they are passively looking. Only 13% say they are actively looking for new positions. Those who are happy in their current positions reported the second highest salary, an average of $156,300. Surprisingly, those looking for another position reported the highest income ($168,170)— meaning their salary won't keep them there.

FIGURE 6

Factors that most greatly affect dissatisfaction with current job



Source: Peerless Research Group (PRG)

That said, professionals claim that salary is the most influential factor (60%) in their employer selection, with 55% saying that their relationship with their boss determines their satisfaction at their current job. Another 50% say their relationship with colleagues and 49% of professionals say location leads to the most job satisfaction.

When asked which factors create dissatisfaction with their current roles, 46% of respondents said company politics, followed by 29% who said no room for advancement. Another 26% said salary is a contributing factor to job dissatisfaction. Unstable companies, lack of adequate technology and heavy workloads also drive down satisfaction in this sector.

The education-salary connection

According to the survey, 40% of professionals have a business degree outside of supply chain, and another 27% hold a degree like engineering, accounting or operations management. Another 13% have liberal arts degrees and 12% earned a logistics or supply chain degree.

In terms of formal supply chain management education, 48% have it and 52% do not. This is significant when it comes to salary. Those who have a formal supply chain education had an average salary of $155,930, compared to $120,965 for those who lack specific education. This represents about a $35,000 annual salary gap.

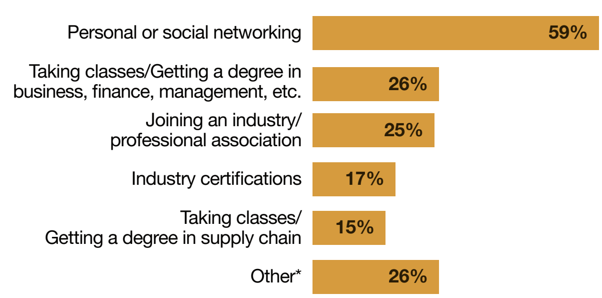
The survey found that 52% of respondents have taken some kind of professional or continuing education course in the last year, while 48% have not. Those who have taken such courses reported $141,710 in annual salary while those who didn't made $110,000, representing yet another significant gap in salary potentially driven by educational experience (or a lack thereof).

Asked to reveal their top career-advancement strategies, the majority of respondents (59%) say personal or social networking, while 26% say taking classes or getting a degree in a related field (e.g., finance or business) would lead to career advancement. Another 25% feel that joining an industry or professional association works well; 17% believe industry certifications are most important; and another 15% say taking supply chain specific classes or getting a supply chain-specific degree.

According to the survey, 61% of professionals plan to take a supply chain-related class in the next 12 months, while 39% have no such plans. Of those that will take a class, 46% say they think the class/program will lead to a better salary. Asked which industry organizations they belong to, 34% are CSCMP members, 28% belong to ASCM and 25% are members of ISM.

FIGURE 7

Steps considered most important in advancing career

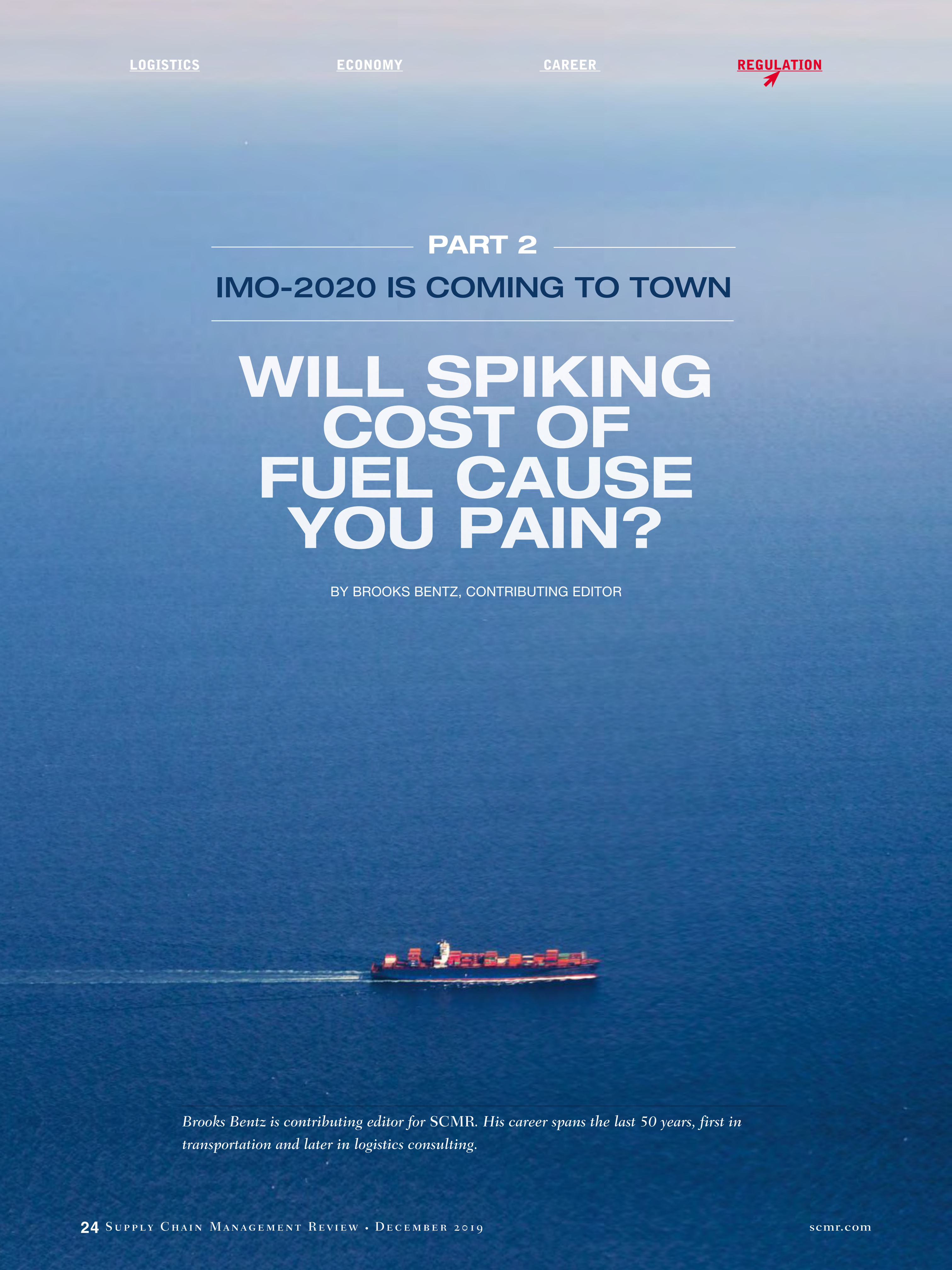


*Includes: Experience, Dedication/Hard work, Performance

Source: Peerless Research Group (PRG)

In the interest of cultivating the next generation of supply chain professionals, 89% of survey respondents say they would recommend the field to their sons, daughters or friends. And while 84% are seeing (or, expect to see) younger managers enter the supply chain workforce, some say there's still work to be done to ensure a good pipeline of young professionals in the future. "It is a tough job with a lot of pressure," says one respondent. "Today's generation looks to avoid these pressures."

—Bridget McCrea is a contributing editor to Supply Chain Management Review



PART 2

IMO-2020 IS COMING TO TOWN

WILL SPIKING COST OF FUEL CAUSE YOU PAIN?

BY BROOKS BENTZ, CONTRIBUTING EDITOR

Brooks Bentz is contributing editor for SCMR. *His career spans the last 50 years, first in transportation and later in logistics consulting.*

Editors Note: This is Part 2 of a two-part series by Brooks Bentz on the impact of new fuel regulations that take effect on January 2020. Part I ran in the November 2019 issue of *Supply Chain Management Review*.

When the new IMO fuel regulations take effect on January 1, 2020, one of the challenges will be producing compliant blends in sufficient quantities that are consistent enough to function in an vessel seeking to refuel.

As we noted last month in Part 1, there are key indicators that a shift is already underway, and that there is at least some recognition fuel availability may be problematic as the deadline approaches and implementation commences.

A reasonable hypothesis is this: All responsible marine vessel operators will be compliant with the IMO-2020 regulations. Some will convert (as some already have) to distillate fuels. Some (estimates say less than 5%) will install scrubbers. Some will resort to HFO/low sulfur blends. Some will replace aging vessels with LNG-fueled ships. The net effect will be a surge in demand for distillate fuels as both a source for burning directly and for blending. Refining capacity will not keep up with demand, leading to rising prices for diesel fuel in major markets, like North America.

Some sources have speculated this could spike diesel fuel costs 20% to 50%, with the most draconian saying up to 100%. This may also affect availability in certain markets. Remember, we're talking about tapping an additional 240 million to 250 million gallons per day from the pool of available fuel.

Will the impact be this profound? Nobody knows for sure and few are willing to speculate with any degree of precision. "One of the biggest shake-ups in the product markets is right around the corner—the IMO-2020 regulation bans high sulfur fuel oil [HSFO] from the bunker pool," the International Energy Agency stated in a recent report. "Although the shipping and refining industries have been preparing for the new rules for several years, there have been fears of shortfalls when the rules come into effect."[13]

"Rarely (do) you see such a potentially massive disruption," said John Kartsonas, managing partner of Breakwave Advisors. "Delays, a reduced active fleet supply, slow steaming and port congestion can push freight rates to decade highs and beyond."

Regardless of the magnitude of change and the ripple effect it will have along the supply chain, it should be viewed seriously by those who use diesel fuel domestically—truck lines, railways and barge lines—and equally so by those who buy transportation services from these carriers.

North American domestic impact

If I'm a North American freight carrier or domestic shipper of truck, rail, intermodal or barge freight, should this really matter to me?

It should command your attention: Predictions are that the wholesale conversion of the ocean-going vessel fleet will significantly increase the demand and competition for fuels used by all modes, with a consequential rise in price, as noted above, and possible constriction of availability.

We were curious about how shippers viewed IMO-2020: Was it high on their radar or buried in the back-scatter? *SCMR* partnered with Breakthrough, a leading transportation energy management firm, in creating a simple survey to assess the attitudes and readiness of shippers to cope with the impending changes:

1. *How would you rate your awareness/knowledge level of the planned commercial maritime emissions regulations that will commence on January 1, 2020?*

2. *Has your organization conducted analysis on the potential impact on domestic transportation costs when these regulations take effect?*

3. *What is the extent of the potential impact on domestic transportation costs you expect?*

4. *What do you expect the impact will be from Q4 2019 to Q1 2020 for the over-the-road diesel price per gallon increase as a result of these regulations?*

5. *Has your organization considered a strategic approach to mitigating the impact of these regulations?*

More than 90% of the respondents had little or no awareness or knowledge of IMO and the impending regulations, and 80% have done no analysis or forecasting relating to impact on their domestic transportation cost. While the IMO sulfur cap was announced more than 10 years ago, vessel operators said little or nothing to their customers until recently (Q4 of 2018). This gave a false sense of security, even to those who have

[13] **Source:** International Energy Agency (IEA), "Oil 2019"

been actively monitoring progress.

Our going-in presumption was, for North American-centric shippers (meaning those spending the bulk of their transportation dollars on truck, rail and barge freight), the level of awareness was not high and the impact not viewed as either relevant or of great magnitude. This is largely because the news focus was aimed solely at the impact on ship owners and operators, without considering the impact across the broader supply chain.

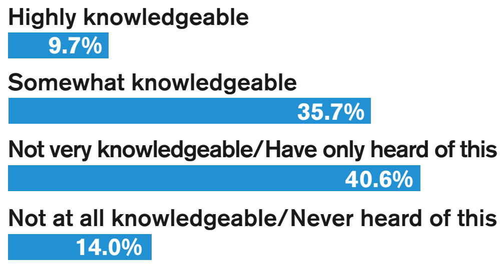
Bolstering the survey, we interviewed a cross-section of senior-level executives from the ocean, rail, truck and shipper communities, as well as several from the refining and energy markets. A consistent theme was respondents were "generally aware" of the new IMO-2020 regulations, but hadn't done any significant analysis to assess the effect on their business.

BNSF Railway burns more fuel than anyone in North America except the U.S. Navy. Railroad veteran Matt Rose, recently retired chairman of BNSF, shepherded the railroad through a drastic rise in fuel costs over the past 20 years. "Fuel went from about $770 million in 2000 to a peak of $4.6 billion," he said. "At one point, fuel was 10% of operating

SURVEY RESULTS[14]

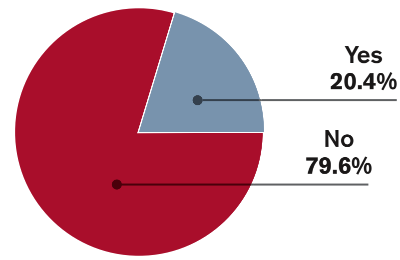
QUESTION 1

How would you rate your awareness/ knowledge level of the planned commercial maritime emissions regulations that will commence on January 1, 2020?



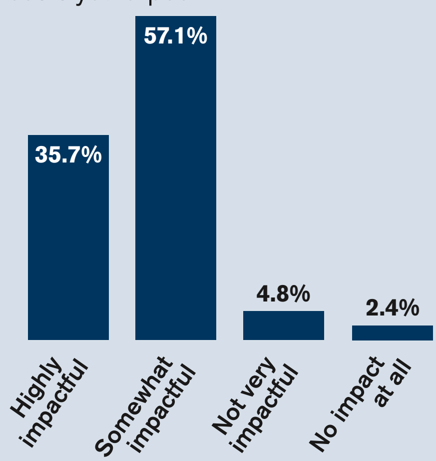
QUESTION 2

Has your organization conducted analysis on the potential impact on domestic transportation costs when these regulations take effect?



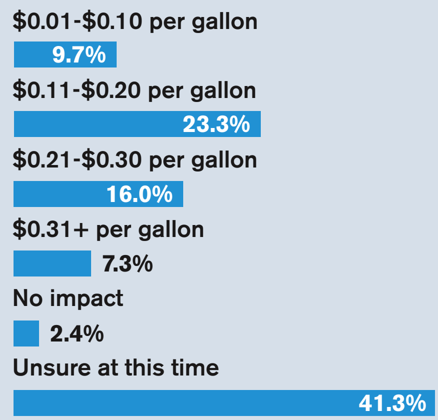
QUESTION 3

What is the extent of the potential impact on domestic transportation costs you expect?



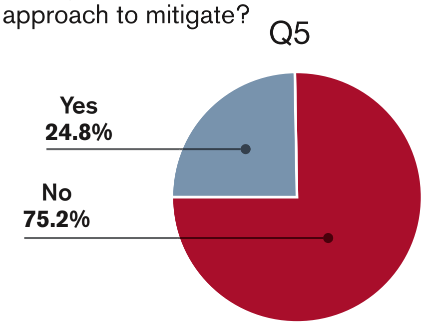
QUESTION 4

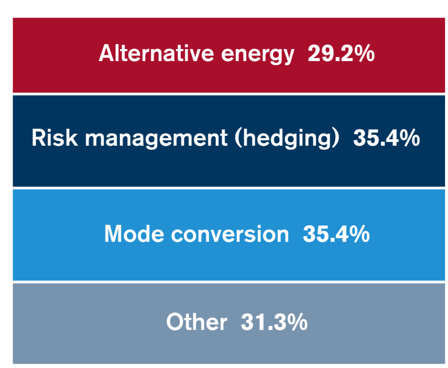
What do you expect the impact will be from Q4 2019 to Q1 2020 for the over-the-road diesel price per gallon increase as a result of these regulations?



QUESTION 5

Have you considered a strategic approach to mitigate?





cost, and at its peak it equaled labor cost at 32%. Railroads will have to make choices on fuel for the longer term. Going to LNG is

billions of dollars in infrastructure and equipment cost. The net price of fuel would have to go up $0.75 to $1.00 per gallon before it

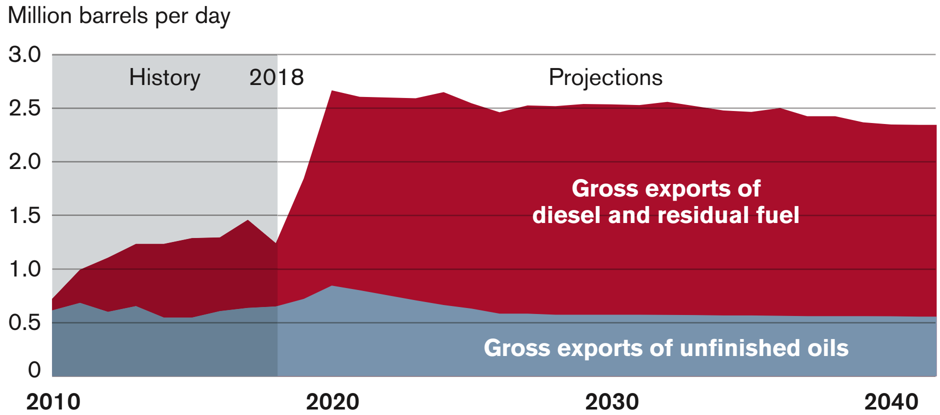
[14] **Source:** Survey developed jointly by *SCMR* and Breakthrough

would drive a major shift."

While a 50% increase in the cost of diesel would achieve this, the timing and capital to convert would be large in scale and likely need to extend to most, if not all, the Class I railroads, due to interoperability of equipment.

Derek Leathers runs one of the nation's largest motor carriers. As CEO of Werner Enterprises, Leathers has his eye on the ball. "We very much have this on our roadmap and have discussed at the Board level. It will put more demand on refining capacity, which will have more impact in our space. Diesel will have more homes to go to, so our best response is to push the envelope on MPG." He said: "The reaction of many shippers is it's closer to another version of 'the sky is falling.' But, as a trucker, we're ahead of this."

U.S. DIESEL, RESIDUAL FUEL AND UNFINISHED OILS TRADE[15]



Source: *U.S. Energy Information Administration*, AEO2019 Reference Case

One of the oft-overlooked outcomes of this major energy shift, in addition to the rising demand for distillates, is the anticipated increase in U.S. exports, predominantly to Europe, in meeting their requirements for producing low-sulfur fuel. As Ted Prince, former K-Line executive and co-founder/COO of TigerCool Express says: "Domestic production is also part of the global market. The U.S. exports to other areas, such as the EU, so there's a potential for a 20% to 50% increase in the demand for diesel." This will further affect supply and price.

U.S. refining capacity has remained relatively static for the past 10 years, increasing slightly from 17.6 million barrels per day in 2010 to 18.8 million barrels per day in 2019, according to the U. S. Energy Information Administration. Utilization has also remained basically static, hovering around 90% for the past 5 years.

Disruptions can be expected, such as the recent closing of the largest refinery on the East Coast, Philadelphia Energy Solutions' 335,000 bbl/d facility in Philadelphia, after a large explosion in June of this year. "With major refinery capital projects requiring notionally five years for engineering, permitting and construction, it is too late for a refiner to initiate a capital project aimed at capitalizing on market changes driven by IMO-2020.[16]" This begs the question around availability, if exports spike upward and capacity is static, what happens to supply and price?

The inevitable outcome will be substantive pressure between supply and demand, destined to increase prices on domestic fuel. How are shippers going to react and what are they doing? The survey results indicate not much, if anything at all, beyond wait-and-see.

Domingo Amunategui, vice president of supply chain for building materials producer Arauco North America, says: "We're following the main headlines, and we're talking about this issue. It's one of the variables creating volatility, and this is just adding to the mix. Our use of leading-edge fuel management technology gives us good visibility to the true cost of fuel. Knowing we have the right fuel recovery program is very helpful enabling us to focus on maximizing the efficiency of moving freight and reducing empty miles."

According to Michelle Livingstone, vice president of transportation at The Home Depot: "We've taken proactive steps to mitigate the impact on our business and our ocean carriers under the new IMO-2020 regulations, as well as making sure we're paying our appropriate share. On the domestic side, we're watching it closely until better data becomes available."

Domingo added that uncertainty is the most often used word to describe the present environment, which rings true. "It is so complex, with so many variables."

The deadline is quickly approaching, and while some carriers have already converted to compliant fuel, others

[15] **Source:** U.S. Energy Information Administration, AEO2019 Reference Case

are stockpiling reserves. There are also expectations that other carriers will start shifting to compliant fuel as early as October, so getting smart about IMO-2020 now and planning for the future is a sound strategy.

Scenario visioning

Consider this possible scenario: When IMO-2020 regulations take effect on January 1, the bulk of the ocean vessel operators will comply with the new rules and convert to blends (HFO/ULS/VLSFO) or middle-distillate fuels, such as diesel. Because less than 2% of the current fleet operates on alternative fuels (e.g., LNG) and current estimates say only about 2,000 vessels (3% to 4%) will have scrubbers (open- or closed-loop) installed by 2020, this leaves roughly 48,000 ships (about 94%) that will not meet the new standards without changing their fuel source.

According to Charles Kemp of Baker & O'Brien, one of the leading authorities on the energy industry, there are a number of key challenges facing the producers and users of fuel. "There is no magical instant fix," he says. "There is insufficient fundamental analysis that supports the asserted positions of expected supply and pricing," which leaves a large gulf between where we are today and what's likely to unfold.

Kemp questions the mechanism for the market to fix it. "There are not enough capital projects underway that will consume all the high-sulfur fuel oil that is being produced today," he said. "It appears that the refining industry globally does not have the expansion plans in place to build the very expensive equipment necessary for upgrading high sulfur fuel oil. At roughly 3 million bbl/day output of high sulfur fuel oil, upgrading this volume would require the equivalent of 60 coking units being built. We may be heading into an infeasible dilemma. Heavy oil refining margins have not been good enough to justify an investment of $1 billion each to build these new coking units. Plus, the time required to build a new coker is three to five years."

Kemp's conclusion in terms of impact on domestic transportation is simple: "Because on-road diesel has almost zero percent sulfur, it will be used as a sulfur diluent in bunker fuel. Because diesel is already priced higher than other refinery products, it will force other high-sulfur blending stocks to be priced much lower. Ultimately, if the IMO-2020 regulation is enforced globally, this divergence in prices will not be resolved until adequate ship scrubbers are in place or significant new refinery capacity is built."

Because scrubbers are in place on a very small percentage of the global fleet presently and the capacity for adding scrubbers is limited by fleet availability and yard capacity to conduct the work, there is a large-scale conundrum. "While some ship owners have installed cleaning systems, others see them as potentially high risk as some ports have already banned or restricted scrubbers that pump waste water into the sea, and more may follow suit." [17]

Compliance with IMO-2020 regulations will be accomplished across a spectrum of alternatives. As shown in the table below, Baker & O'Brien estimated multiple paths from the global consumption of 3.2 million barrels per day of high-sulfur bunker fuel (HSB) to the equivalent demand of 3.4 million barrels per day of low-sulfur bunker fuel (LSB).

Managing compliance will be an elemental part of enforcing the IMO-2020 regulations. This will involve port authorities, Coast Guard services and other governmental agencies. Technology has already been developed, such as "sniffer drones," to aid the agencies tasked with compliance and enforcement. The majority opinion, across a broad spectrum of sources, says compliance will be at a very high level from the outset among all responsible carriers.

Non-compliance will prove problematic. According to Hellenic Shipping News: "The final choice for the shipping industry is not to comply with the regulation. This non-compliance may be intentional, while there may be a segment that has tried to unsuccessfully procure a compliant fuel, in which case they receive a waiver. We do think that compliance will be strong, with ship owners not wanting to risk fines from flag states or imprisonment of ship's officers. Furthermore, breaching the regulation would class the vessel as unseaworthy and therefore, uninsurable."[19]

Uninsurable vessels become inoperable until the defect is cured.

An ounce of prevention may be worth a ton of fuel

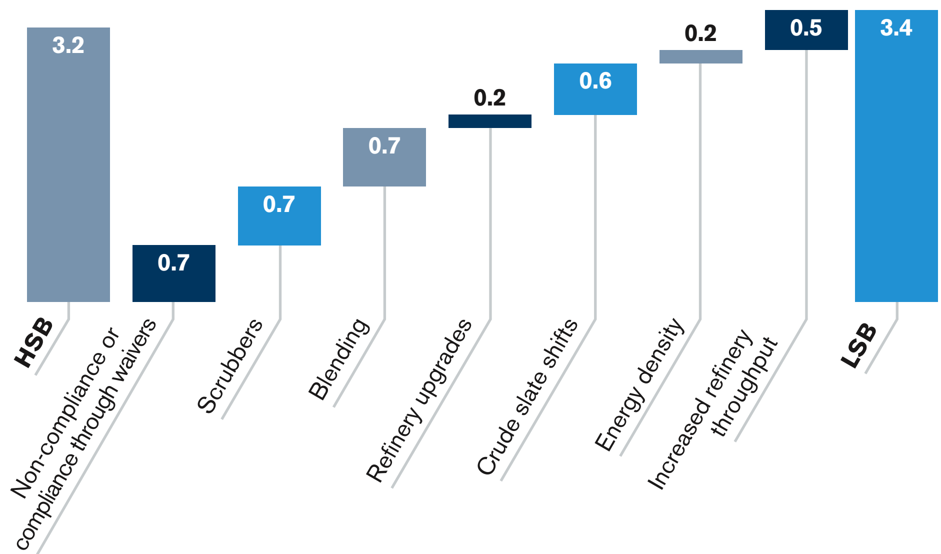
IMO-2020 will diversify the fuel portfolio and intensify the maritime industry's focus on fuel efficiency. Informed shippers that understand the impact of such trade-lane factors as vessel speed, size and utilization will have a better ability to manage and control reimbursement costs.

[16] **Source:** *Ship & Bunker*, July 8, 2019

Shippers actively managing their fuel spend, regardless of mode, will achieve a stronger competitive position than their peers, who are slower to adapt to changing market conditions. Taking things at face value, responsible shippers will plan for a potentially radical shift in the cost of moving product inbound from vendors and suppliers and outbound to customers.

ROUTES TO COMPLIANCE[18]

MMB/D



So what can be done in the face of a sea change in the way fuel is manufactured, sold and utilized? Best-in-class shippers will do some or all of the following:

- Optimize their transportation networks to improve supply chain performance and reduce operating costs. What does that really mean?

- All transportation networks have latent inefficiency in them, which is largely driven by the way capacity is sourced and utilized. The traditional method largely revolves around annual "bids" that purport to get the best deal in terms of cost to serve. This seldom (i.e., never) works as intended. Transportation networks are simply too fluid, with too many variables—new vendors and customers coming on board, older vendors and customers leaving, carriers going and coming as market conditions shift, changes in shipper networks as DCs are added, closed or relocated, etc. This leads to a frustrating experience for all concerned.

- Use advanced sourcing techniques and robust optimization technology. This can help solve the problem by making use of the power of the overlapping networks of shipper freight and carrier capacity, which drives out empty miles and makes both carrier and shipper networks more efficient, which in turn requires less fuel.

- Annual events are only part of the answer, having become much less effective as networks become progressively more dynamic. Continually tuning the network through data-driven compliance management and mini-events during the cycle help to maintain the efficacy of service and network performance.

- Be supportive and engage with carriers that have embraced the future and have moved—or are moving—to alternative fuels, such as LNG, as well as taking advantage of lower Fuel Surcharge costs offered by such carriers.

- Take a more proactive role in managing fuel. "IMO-2020 is a transformative market event because it represents an entire industry's fuel management practices being challenged by emissions policy. Stakeholders affected by this change should be bearing in mind that other modes of freight transportation may produce fewer sulfur oxide emissions but produce substantially more greenhouse gases per freight ton-mile than maritime freight does. Moving forward, more challenges and costs will arise from the need to move freight with fewer emissions. This movement will further incent shippers to obtain transparency of fuel cost, consumption, and emissions. Data-driven approaches to fuel management enable supply chain efficiencies,

[17] **Source:** *Captain Maritime News*, July 8, 2019
[18] **Source:** Baker & O'Brien
[19] **Source:** *Hellenic Shipping News Worldwide*, July 19, 2019

especially as the portfolio of energy options for commercial transport continues to grow."[20]

• Most shippers act as bystanders in the fuel management process, content with negotiating a fuel surcharge (FSC) formula with their service providers based on the DOE Fuel Price Index. Fuel is now simply too important to be handled in such a fashion, in some cases running close to 30% or more of total cost of moving freight.

- The DOE Fuel Price Index is an anachronistic hold-over from the Interstate Commerce Commission (ICC) from pre-deregulation days. It is fundamentally flawed in several respects:

• it is a weekly national average, which does not account for daily price fluctuations;

• there are wide variations in fuel taxes around the country (e.g., $0.80 per gallon in CA v. $0.20 in TX), which are not reflected in the DOE Index;

• it is based on retail cost of fuel at the pump, when most well-managed carriers are purchasing fuel at or close to wholesale, with a spread between wholesale and retail that can range from the low 30s in cents per gallon to the high 60s in center per gallon; and

• it creates a profit-center for carriers on fuel, which muddies the water on understanding where margin for hauling freight lies, with some in the freight rates and some in the FSC.

The FSC was authorized as a pass-through of an uncontrollable cost by the ICC during the regulatory era. The FSC was never conceived as being a separate profit center

- Push the MPG envelope. Tractor power is getting rapidly and progressively more fuel-efficient, in some cases approaching or even exceeding 10 mpg. Both carriers and shippers will need to continually drive greater efficiency as fuel costs rise.

There is game-changing technology in the market today for obtaining greater transparency, removing distortion and establishing fairness. Exploration and evaluation of alternative business models is key element of critical thinking when dealing with potentially major market-changing events.

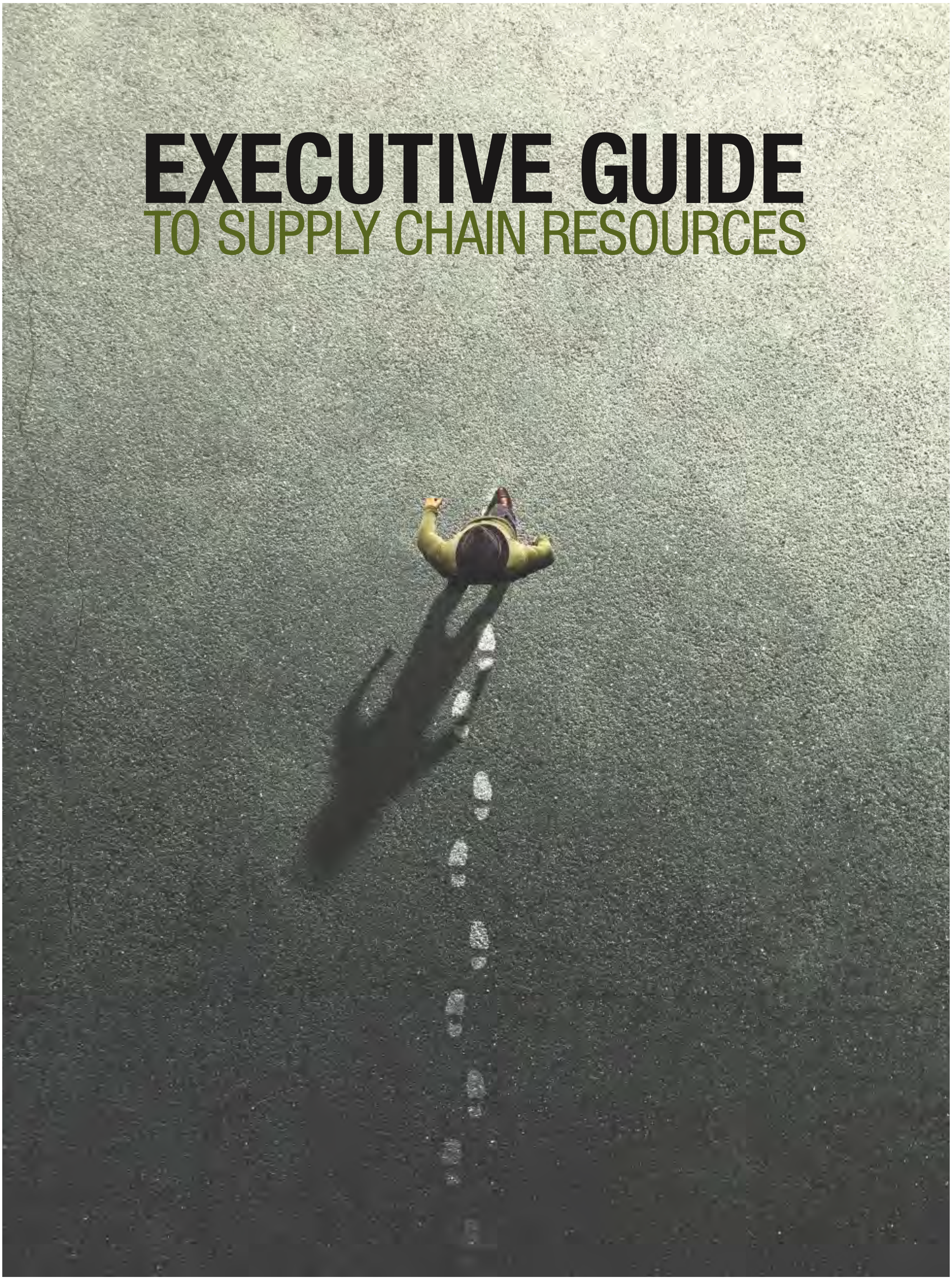
While shippers will not have influence or control over what happens with fuel markets, they can take steps to plan for the evolving eventualities and be prepared as the ground shifts under them.

We will continue monitoring and reporting on the developments in this impending series of transformational events.

GLOSSARY

AGO	Atmospheric Gas Oil	Heavy distillate from an atmospheric distillation unit
ECA	Emission Control Area	Near coastal areas with tighter fuel specifications
FCC	Fluidized Catlytic Cracker	Cracks VGO and other intermediates into lighter components
HDT/HDS	Hydrotreater/Hydro-Desulfurizer	A refinery unit that removes sulfur
HSB/LSB	High/Low Sulfur Bunker	Heavy ship fuel with maximum 3.5%/0.5% sulfur
HSFO	High Sulfur Fuel Oil	Heavy fuel for any use with maximum 3.5% sulfur
IMO	International Maritime Organization	United Nations organization, no direct police power
LCO	Light Cycle Oil	Diesel range stream from FCC
LSVGO	Low Sulfur Vacuum Gas Oil	Virgin or hydro-treated VGO to cracking units
LVGO	Light Vacuum Gas Oil	VGO to diesel or cracking units, sulfur depends on crude
MARPOL	Marine Pollution	Related to IMO oversight
MCB	Main Column Bottoms	Heaviest, poor quality stream from FCC
MGO	Marine Gas Oil	Fuel for ships that is lighter than residual fuel
NYMEX	New York Mercantile	Market which trades ULSD futures
ULSD	Ultra Low Sulfur Diesel	Diesel with less than 15 ppm sulfur (10 ppm in Europe)
USGC	United States Gulf Coast	Location of many complex refineries
VLSFO	Very Low Sulfur Fuel Oil	Meeting 0.5% maximum sulfur specifications
VGO	Vacuum Gas Oil	A heavy distillate stream from vacuum distillation column

[20] **Source:** Matt Muenster, senior manager, applied knowledge, Breakthrough, July 9, 2019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www.hyster.com

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www.hceamericas.com

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www.ascm.org

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Stanford University
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mays.tamu.edu

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University of Wisconsin-Madison
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FINANCIAL SERVICES

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cscmp.org

Forklift Academy
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www.forkliftacademy.com

Institute for Supply Management
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International Society of Logistics
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IQPC
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ISM (Institute for Supply Management)
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Material Handling Industry
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Suite 201
Charlotte, North Carolina 28217
704-676-1190
Fax: 704-676-1199
www.mhi.org

NITL (National Industrial Transportation League)
703-524-5011

SIG (Sourcing Interests Group)
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www.sig.org

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www.ibm.com/solutions/alliance/us/en/index/scm.html

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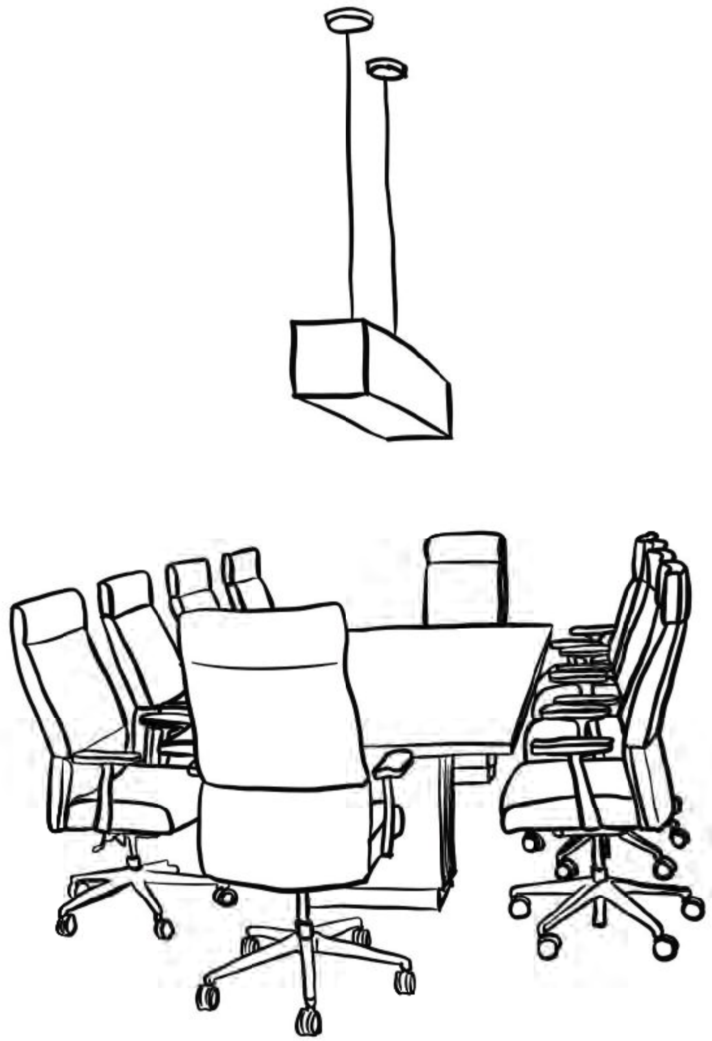

The following Company Profiles offer important insight from top-level companies. Read through these pages and see all of the new opportunities that are being offered to help improve your company's supply chain and keep costs in check.

SUPPLYCHAIN MANAGEMENT REVIEW

The Association for Supply Chain Management

The Association for Supply Chain Management (ASCM) is the global leader in supply chain organizational transformation, innovation and leadership.

As the largest non-profit association for supply chain, ASCM is an unbiased partner, connecting companies around the world to the newest thought leadership on all aspects of supply chain. ASCM is driving innovation in the industry with new products, services and partnerships that enable companies to further optimize their supply chains, secure their competitive advantage and positively impact their bottom lines through:

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ASCM is empowering the next generation of supply chain leaders.
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ASCM is helping corporations optimize supply chain to drive business results.
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ASCM is investing in innovation to propel supply chain forward.
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LITCO INTERNATIONAL, INC.

Litco's INCA Engineered Molded Wood™ Pallets

Litco's pallets are designed for extreme product protection. They are ideal for use in one-way domestic and export shipping applications. Performance testing at Virginia Tech's, Center for Unit Load Design, has proven engineered molded wood pallets to outperform many other options.

The product line is the first, and only, of its kind to be Cradle to Cradle Certified™ for sustainability by McDonough Braungart Design Chemistry (MBDC, LLC). Litco's Inca products are also USDA Certified Bio-Based for using plant-based renewable materials.

Founded in 1962, Litco International, Inc. has purposely built our good reputation on what we promise and what we deliver.

What we promise

That our engineered molded wood pallet solutions reduce costs. They accomplish this by helping to prevent product damage and improving the environmental impact of packaging materials throughout the supply chain.

What we deliver

- High strength and lead-edge impact resistance
- Safe load ratings up to 2500 lbs. dynamic, and 7500 lbs. static, per ASTM Standard D1185
- High pallet stiffness that eliminates over-designed packaging due to load bridging and vibration stresses
- IPPC-ISPM 15 heat-treat compliant— sanitized, no pests and a high resistance to mold
- Available at a surprisingly low cost

For more information and a free sample contact us at https://www.litco.com/molded-wood-pallets/

Or, call one of our product specialists at 1-866-412-0805.

LITCO
Carry on.

Litco International, Inc.
One Litco Drive
Vienna, Ohio 44473

Picking the right shipping partner should be CLEARLY VISIBLE.

Today, staying competitive is more important, yet harder, than ever before. Having the right supply chain partner is crucial. It will allow you to offer better, faster service to customers and ideally give you better pricing on shipping, plus more transparency into where things are, and the real costs of your business operating expenses—in real time.

TO GET THE RIGHT ANSWERS, ASK THE RIGHT QUESTIONS

If you don't currently have a shipping partner supplier, you have to ask yourself:

- Do you need one?
- Do you have full transparency into your analytics and data?
- Do you need to outsource your entire chain, or just parts of it?

If you do have shipping partner, do you know when you should switch:

- Are there service disruptions and/or failures?
- Have costs spiraled and invoices are confusing?
- Are they failing to scale with you?

If any of those have occurred, particularly during a critical demand period, like Q4, you should be looking elsewhere.

GETTING IT RIGHT REQUIRES RESEARCH ON YOUR PART—AND A POTENTIAL PARTNER'S

A good partner will take the time to understand your company's needs and have experience in your industry. Find out if they fit, and what they believe, because different partners have different philosophies.

At Visible, ours is simple. We have always believed small and medium-sized companies should be able to choose reliable supply chains that work as efficiently, and economically, as the mega corporations. They should be able to partner with a 3PL that gives them the same attentive, dependable service; the same, or better, delivery speeds; the same massive economies of scale and the same transparency.

THE VISIBLE DIFFERENCE

Since starting with a single warehouse in 1992, we've diversified into everything we needed to live this philosophy. We have grown to offer packaging, fulfillment, shipping, warehousing and logistics. Now, supply chain operations that were once just seen as expenses, have become key competitive advantages for over 25,000 Visible clients all over the U.S. We help our clients be more responsive to their customers—providing faster shipping, of more efficient packages, with greater transparency, to more of the world, for less than they thought possible.

MUTUAL SUCCESS IS THE ONLY SUCCESS

We always knew the only way we would succeed would be through our customers' success. By helping them compete better in their spaces, and offering reliability at every turn, we have been propelled to become one of the country's leaders in the supply chain management space. With growth, and customer satisfaction, acknowledged by Inc. Magazine, Pitney Bowes, Ernst & Young and many other industry observers, our favorite accolades still come from our own clients.Start your research now, and find out how we can make your business more competitive.

VISIBLE has grown organically and through the acquisition of others at the top of their fields, now all under the Visible umbrella of services.

- **ProStar Logistics & Fulfillment**
- **ABS Packaging**
- **Parcel Partners**
- **Integracore**

VISIBLE SUPPLY CHAIN MGMT

Contact us for a **FREE** audit.

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A SPECIAL SUPPLEMENT TO:
SUPPLYCHAIN MANAGEMENT REVIEW

2020 Trade Update: MORE COMPLEXITY IN COMPLIANCE

Most countries impose legal control on the export of goods from their jurisdictions, while international trade agreements often include additional regulations. However, failing to observe new laws and sanctions can have severe consequences for importers as well.

BY **PATRICK BURNSON**,
EXECUTIVE EDITOR

When the Trump administration announced last month that it had secured a partial deal with Chinese negotiators to push pause on the escalating trade war, our nation's leading retailers were among the first to praise the move.

"Retailers are encouraged by the progress made between the United States and China and are pleased that the administration has listened to the concerns of the business community as the trade war takes an increasing toll on the American economy," says David French, senior vice president for government relations of The National Retail Federation.

French adds that the decision to delay planned tariff hikes is welcome, but incomplete news for shippers heading into the busy holiday shopping season. "Although this is a step in the right direction, the uncertainty continues," French adds. "We urge both sides to stay at the negotiating table with the goal of lifting all tariffs and fundamentally resetting U.S.-China trade relations."

Global logistics managers in automotive, electronics and agriculture sectors are also seeking regulatory compliance tips as both sides meet to finalize a tentative trade deal, while crafting the precise language of the preliminary phase.

The same goes for the pending revitalized United States-Mexico-Canada Agreement (USMCA), says Amy Magnus, president of the National Customs Brokers and Forwarder's Association of America, Inc. (NCBFAA). "Importers navigating the entry filing process to meet the requirements of Customs and Border Protection (CBP) and other government agencies has always been challenging," she says. "We know first-hand just how devastating more tariffs will be up and down the supply chain."

Regarding the United Kingdom's planned exit from the European Union (Brexit)—which was still up in the air at press time, Beth Pride, president of BPE Global, an international trade and logistics company, advises caution. "While these international issues are being fine-tuned, shippers should stick to compliance fundamentals and track changes in the Automated Commercial Environment [ACE]," she says.

Back to basics

Irrespective of international trade agreements, Pride believes that shippers should get back to basics. This includes understanding the changing landscape of Incoterms, which is a set of rules defining the responsibilities of sellers and buyers as determined by the International Chamber of Commerce (ICC). "As always, this is essential for shippers to understand the changes that could make an impact on the price they pay for materials and products," she says.

It's also essential that shippers have correctly classified their products from both an export and

import perspective insists Pride. This includes the Harmonized Tariff Schedule (HTS), the Schedule B and the Export Control Classification Number (ECCN). "Without these, shippers will be exposed to delays and the potential for additional costs," she says.

And because HTS numbers change frequently, all of the top import classifications should be reviewed to ensure that they are still accurate. "Importers can procure product management solutions that identify when a tariff number is updated, changed or deleted to keep on top of changes to the HTS," Pride advises.

Finally, shippers should continue to review deliver duty paid (DDP) contracts to plan for possible tariff impacts," says. Pride. "This is essential to ensure that your DDP suppliers are abiding by the DDP rules and aren't invoicing you for additional duties when they're incurred," she says. "If they're asking you to pay for the Section tariffs, a different Incoterm should be used."

Best to bond

Albert Saphir, president of ABS Consulting, prefers to avoid DDP shipments

Antidumping and countervailing duties alert

Global law firm Baker McKenzie has been warning shippers that U.S. tariffs on steel, aluminum, solar panels, and numerous antidumping and countervailing duty (AD/CVD) orders on finished and raw input products have put exporters in a bind.

On one hand, sourcing and supply chain decisions have become more complex and uncertain. On the other, opportunities have grown for companies in countries that are not subject to certain tariffs or that are able to obtain exclusions from the tariffs. This increased activity in imposing duties also comes with a heightened focus on U.S. import compliance.

According to Kevin O'Brien, a partner at Baker McKenzie, shippers in the Asia-Pacific region should be aware of the scrutiny that covered imports face and, in particular, where a related entity in the U.S. acts as the importer.

Before President Trump's tariffs were imposed two years ago, the U.S. Government Accountability Office issued a report that assessed the collection of AD/CVD. The report found that $2.3 billion in duties had gone uncollected. A direct result of that report was a heightened focus by CBP on imports subject to AD/CVD orders, with dedicated teams assessing both inadvertent errors or mistakes and material false statements or omissions.

"Customs scrutinizes entries that include products that are or may be covered by AD/CVD orders," says Christine Streatfeild, also a partner at Baker McKenzie. "Customs may then issue a Customs Form 28 (request for information) and may require a detailed explanation of an importer's determination on the applicable rate or whether a product is covered by an order. So, if an importer discovers an error, such as its failure to declare a product as covered by AD/CVD, it may be able to disclose and correct the error before Customs notifies it of an investigation."

However, if Customs has already initiated an investigation, then the importer could face additional penalties that exceed the amount of the duties owed and, in some cases, reach the domestic value of the entry itself.

Under expanded statutory authority, Customs began investigating allegations that importers failed to pay AD/CVD amounts through material false statements or omissions on entry documents pursuant to the Enforce and Protect Act and the Trade Facilitation and Trade Enforcement Act of 2015.

"Meaningful internal controls and routine, periodic assessments of exports subject to AD/CV duties or other trade remedies tariffs sharply reduce the risk of enforcement actions that would otherwise impact a shipper's supply chain," says B. Thomas Peele III, a Baker McKenzie partner.

Such compliance programs for trade remedies include schedules to monitor the key times in a year when applicable AD/CVD rates may be subject to change; careful monitoring of product that will be transshipped through multiple countries, when one country is subject to AD/CVD; and assessments of the scope of AD/CVD cases by competent counsel.

–Patrick Burnson

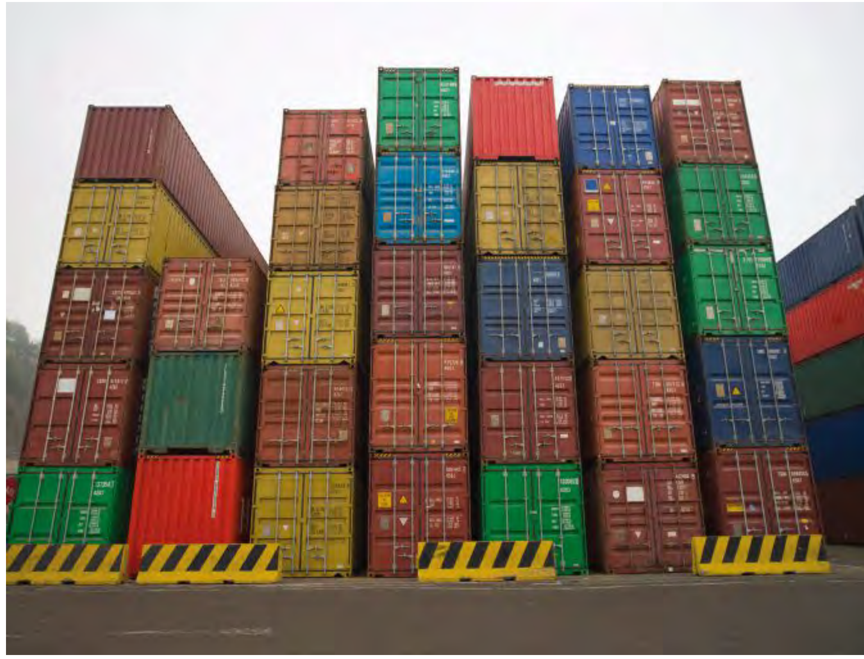
altogether, however, as he believes they entail too many problems and complications. "If the DDP contracts are legitimate all the way, negotiations between seller and buyer are no different than for any other mode of purchase," he says.

Shippers are also at risk if DDP transactions trigger CBP to conduct a review or investigation into your shipments. This could mean that cargo is opened and physically inspected. If the supplier made any errors on their declarations, Customs can tie those errors to your brand.

Of more critical concern, contends Saphir, is that shippers ensure that the correct Customs bond is in place. "The majority of importers in the United States have continuous bonds with CBP," he says. "The amount of the bonds are based on the expected annual duty liability toward CBP. Obviously, the various sanction duties now in place can considerably increase the annual duty amount owed to CBP, thus those continued bonds must be increased before CBP finds them insufficient. The importer needs to stay in close contact with their surety to monitor this."

The recent changes to duty rates are requiring shippers to increase their bond amounts. But without an understanding of how bond amounts are calculated, shippers may not be ensuring the right bond is in place. "The bond amount is based on duty, fees and taxes projected over the next 12 months," says Saphir. "The key issue is that most shippers might look to the duties paid over the past 12 months and underestimate their required bond for the next 12 months."

CBP can only look at the past 12 months, so their notices don't accurately project required bond amounts. Saphir and other consultants say that even if shippers could see further back, the state of trade is in such flux



that the past is no longer a good indicator of what's on the horizon.

If future duty payments are not projected properly, shippers may be forced to buy multiple new bonds as their duty amounts increase. As bond amounts go up the sureties—or guarantors—that issue the bonds may require collateral in order to issue bonds, adding additional cost and time and potentially delaying shipments.

Never enough preparation

When Customs comes knocking *be prepared*, insist compliance experts. Tom Gould, the former senior director of the Customs and International Trade Law firm at Sandler, Travis & Rosenberg, P.A. is a member of the U.S. Customs and Border Protection's Trade Support Network. "CBP is seeing a ton of mistakes from shippers," he says. "Whether you're trying a new strategy to save on tariffs or are using a tactic you've used in the past, you just have to be more aware that CBP is looking more closely than it has before."

Gould, who also serves on the board of the Foreign Trade Association, currently leads Flexport's trade advisory services. He recommends that a shipper's first step is to look at their data under the same light that CBP would, focusing heavily on transactional information, and putting in the necessary compliance procedures.

"Start by building a strategic approach toward the Section tariffs, analyzing the biggest figures and work your way down the list. As you go through the list, ask yourself: What products can you move out of China? Which products would be difficult to move? Which pieces of the supply chain can you partially move?"

Next, says Gould, shippers should make a priority list. "There might be specific products where a piece of machinery may be hard to move, but by understanding the origin rules for their products shippers will be in a better position to determine which part of their supply chain must be altered to change the origin country, thereby avoiding tariffs," concludes Gould.

Patrick Burnson is the executive editor of Supply Chain Management Review

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