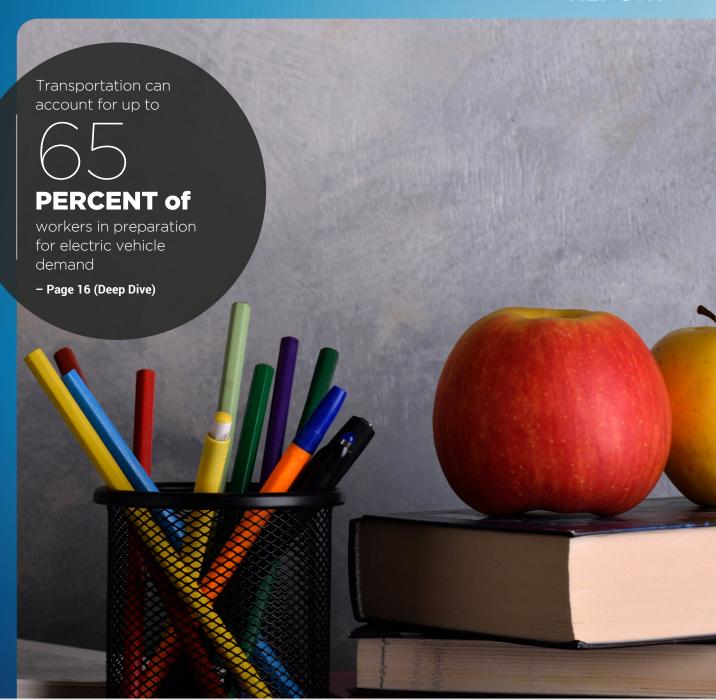
ARCHITECTURE AUGUST 2018 ARCHITECTURE

REPORT



How Dabbawalla Bags meets global, year-round school supply inventory demands

Page 6 (Feature Story)

Volkswagen to consolidate 56 plants, 80,000 workers in preparation for electric vehicle demand

- Page 10 (News and Trends)



TABLE OF CONTENTS







03 What's Inside

From payment inefficiencies to late deliveries, a weak link can have a logistical domino effect on the supply chain. This edition of the Global Payments Architecture Report considers the challenges marring global supply chains and the solutions companies are pursuing to keep processes moving smoothly.

06 Feature Story

In The Back-To-School Market, It Pays To Think Globally:

Founder Susan Givens discusses how Dabbawalla Bags works to keep its manufacturing partners afloat during periods of slower demand, and the lessons she has learned while meeting global, year-round school supply needs.

10 News and Trends

The latest developments from the supply chain ecosystem, including notable developments from Amazon, Patagonia and Volkswagen, among others.

16 Deep Dive

Rethinking Global Supply Chains

This edition of the Global Payments Architecture Report includes a data-rich look into supply chain leaders' use of APIs, digital invoicing and subscriptions for greater data insights and improved transparency.

20 About

Information about PYMNTS.com and Flywire



ACKNOWLEDGMENT

WHAT'S INSIDE

It's widely accepted

that a chain is only as strong as its weakest link. Based on the past few weeks, it appears some global supply chain links are in need of improvement.

The escalating trade war between the U.S. and China is one of the most significant disruptions to the global supply chain. Both countries have been working to impose product tariffs, creating confusion and hamstringing the flow of goods between them. The resultant chaos has delayed shipments from a Shanghai port due to changing customs clearance demands.

That same tension is also raising prices and creating frictions on funds delivery for trading partners on either end of the transaction.

Delays in payments, trade war-related or not, can be crippling for companies that are active in the global supply chain. It's a problem hitting some U.S. firms particularly hard, with more than half of those surveyed for a recent report noting their B2B invoices were uncollectible because customers had closed up shop. The survey also found it takes an average of 55 days for a U.S. business to get paid, potentially adding financial stress.

Some companies are seeing blockchain-based tools' potential to help small businesses more easily collect outstanding payments and monitor product deliveries. Several have already launched blockchain pilots or prototypes to improve payment processes, unlock approximately \$9 billion in outstanding receivables, connect merchants with producers and facilitate the creation and transmission of smart contracts to reduce fraud risk.

In fact, many companies appear to be stepping up to improve global supply chains' flow and reduce the complications they encounter.

GLOBAL SUPPLY CHAIN NEWS

From automakers to clothing companies, changing market conditions are prompting retailers to adjust their supply chain strategies. For example, German automaker Volkswagen recently announced plans to restructure its group components business into a new division. The decision was made to improve efficiency and growth in demand for electric vehicles, which have different component requirements than those with traditional internal combustion engines.

Another firm has reintroduced a legacy component back into its supply chain. Clothing company Patagonia recently <u>resumed</u> use of wool following a three-year break brought on by animal rights activists revealing footage of cruelty in its wool cultivation. After an investigation, Patagonia said its supply meets the Responsible Wool Standard, ensuring the fair and ethical treatment of sheep.

Meanwhile, a major eCommerce giant is looking for help shepherding its global delivery apparatus. Amazon reportedly **shipped** 5 billion items in 2017 through its Prime offering, and is now looking to partner with smaller businesses to improve the supply chain last mile and meet growing demand. It recently **announced** it will

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AUGUST 2018

help entrepreneurs create startups that can be used to deliver packages and expand its logistics network, providing them with access to delivery technology, training and discounts.

DEEP DIVE: RETHINKING GLOBAL SUPPLY CHAINS

Amazon's investment in a broader logistics network comes as rapid eCommerce growth in worldwide markets is putting additional strain on global supply chain infrastructure. Related revenue in the U.S. alone is expected to surpass \$506 billion this year, potentially exceeding \$712 billion by 2022. This month's Global Payments Architecture ReportTM includes a Deep Dive (p. 16) into the technological changes coming to global supply chains, including the emerging need to integrate digital payment solutions, multiple transportation modes and new technologies to keep them running smoothly.

MEETING GLOBAL BACK-TO-SCHOOL DEMAND ALL YEAR LONG

Parents across the U.S. are hitting the stores to purchase back-to-school merchandise for their kids. For the companies making school supplies like binders, notebooks and backpacks, though, missing the rush can mean missed opportunities — and lost sales and revenue.

To keep their inventory moving, backpack retailer Dabbawalla Bags turns to global markets with school cycles that begin at different times throughout the calendar year. For the August Global Payments Architecture Report™ feature story (p. 6), PYMNTS caught up with the company's founder, Susan Givens, who shared the lessons she has learned in running a back-to-school supply company and the challenges of keeping a manufacturer financially afloat during slower demand periods.



EXECUTIVEINSIGHT

What do businesses active in the global supply chain need to understand about the current state of cross-border payments?

"From payers' perspectives, they consider a payment complete once the money leaves their account. However, it can take up to 10 days for the money to settle into the receiver's account. It's important for trading companies to understand the many layers of a crossborder transaction, as money moves from one market to the next. When it comes to cross-border payments, companies should have a solution that is transparent related to fees, tracking and rates. This transparency will ultimately provide more control over the economics associated with crossborder transactions and savings can hit the bottom line."

RYAN FRERE, VP of Global Payments at Flywire

FIVE FAST FACTS

\$25.5M

Value of new funding secured by supply chain solutions provider Genesis Automation

\$12.2B

Estimated supply chain management software spend for 2017, up 13.9 percent from 2016

1.83M

Number of shipping containers imported into the U.S. in June, up 6.8 percent from 2016

3.2M

Estimated number of truck drivers, warehouse employees and port workers employed in U.S. supply chain logistics

\$2B

U.K. businesses' estimated annual losses due to supply chain inefficiencies





WHY IT PAYS TO THINK

GLOBALLY IN THE

BACK-TO-SCHOOL MARKET

Feature Story 7

Many parents partake in a certain ritual during the month of August: the back-to-school shopping rush.

It's that time again — when parents hit the stores to get the pencils, notebooks, binders, backpacks and more that their kids need for the upcoming school year. It's also a lucrative season for retailers and global back-to-school supplies manufacturers. According to some recent <u>estimates</u>, the approximately 29 million U.S. households with school-age children are on track to spend \$27.6 billion on back-to-school supplies in 2018.

For the companies that make back-to-school supplies, though, there's often a limited window to reach these consumers. If a backpack is not available for purchase in time for the back-to-school season, it will likely remain unsold — fewer parents will be shopping for school supplies after the school year begins.

So, what are retailers and manufacturers to do?

Some, like backpack retailer <u>Dabbawalla Bags</u>, approach the seasonal challenge of back-to-school shopping by thinking globally, delivering products to the international markets in which students return to school at different times of the year. In a recent interview with PYMNTS, founder Susan Givens discussed both the inspiration behind her company and the lessons she has learned from running a year-round school supplies business.

"It's a juggling game every single year," Givens said.



The whole world does not start [the school year] in September.



AN EARLY EDUCATION IN GLOBAL SUPPLY

Dabbawalla Bags was inspired by Givens' experience buying backpacks and lunch bags for her own preschoolaged child.

"He was blowing through [reusable] lunch bags like once a month," she said. "As soon as he spilled his lunch or milk or yogurt, or stepped on it in the playground, it couldn't be washed."

This led her to create Dabbawalla Bags, whose name pays homage to the lunchbox delivery system in India, 10 years ago. The company produces and sells machinewashable backpacks, lunch bags, harness bags and other school accessories.

Feature Story 8

Givens quickly learned a hard lesson about producing backpacks, though. Most consumers will shop for a backpack at a certain time of the year, she said, leaving retailers like Dabbawalla Bags with just a two-month window to cash in on the demand for such products. Come September, leftover inventory loses its value.

"When I launched, I was very naïve and did not recognize that it was a seasonal company," Givens explained.

The solution was in looking for business in overseas markets, where back-to-school time frames often differ. Children return to the classroom in January or February in nations like Malaysia and Australia, for example, while in South Korea they head back in March.

"The whole world does not start [the school year] in September," Givens said.

Turning to international markets to help make ends meet has paid off. Roughly half of Dabbawalla's sales are international, with products being shipped to China, South Korea, Japan, Vietnam, Malaysia, Australia, New Zealand, the Middle East and Central America.

KEEPING MANUFACTURERS AFLOAT

Givens' company isn't alone in being impacted by back-to-school shopping's seasonality. Its manufacturing partner, a family-owned factory in Taiwan, also deals with the inconsistencies and challenges of a seasonal business. That partner earns 90 percent of its revenue from Dabbawalla Bags, meaning it is often faced with a cash flow crunch during the slower periods of the year.

As such, the pair have formed an agreement to help each other stay afloat when demand for supplies decreases. Dabbawalla Bags makes cash advance loans to the supplier to help float it during the slower season, and the supplier extends terms to Dabbawalla Bags during the company's busy season.

"It's a very fortunate relationship, one built on trust, and we cover each other during our respective needs," Givens said.

SURVIVING THE TRADE WAR

Dabbawalla Bags and its supplier may have agreements in place to help each other stay on stable ground, but



a global trade war is threatening to destabilize a wide range of businesses. Companies in the back-to-school market are no exception.

Givens acknowledged that her company has struggled in certain markets more than others in recent years. Dabbawalla Bags has seen a downturn in European sales, for example, partly because the company's products are manufactured in Taiwan, brought to the U.S. and then sent to Europe. This arrangement means said products are subject to recently imposed tariffs.

With declining European sales, Givens said Dabbawalla Bags is now focused on expanding its presence in Asia. It will be focusing intently on China, where 70 percent of its international sales are made, and is considering adding a new factory in Vietnam to keep up with growing demand.

One of the factors fueling that demand is the company's adherence to fair-trade standards. Many Asian customers appreciate that the backpacks are not mass-produced but individually sewn. Its manufacturing partners in Taiwan are also highly "progressive" in terms of wages, working conditions and maternity leave — all of which are key selling points.

"Those principals are appealing to young moms in Asia coming into a middle class economy," she said. "It's really struck a chord with them, which is why I think we've had a lot of success."

Givens is hoping to keep that success going by bringing Dabbawalla Bags to new global markets. As students in these markets — after all, it pays to think globally.



UNDER THE HOOD

What happens when an international order for back-to-school supplies is delayed?

"We have a contract with our supplier that penalizes [it] for every day of delay past the contract delivery date. Conversely, some of our larger customers will also impose that on us. They will take the goods, but they will assume they will have to discount [them] in order to move them before the back-to-school period, particularly in U.S. market.

Or, worst case, if they really don't deliver, we would have to liquidate some inventory just to keep the cash flow going. That, I think, has become harder and harder to do. Generally, we will do that through one of the flash sales sites like zulily, Nordstrom Rack or Rue La La.

We also don't know what's going to sell every year. A few times we've had to move inventory that came in too late and we just couldn't sell it."

SUSAN GIVENS, founder of <u>Dabbawalla Bags</u>

NEWS AND RENDS

US supply chain woes

DISPATCHES FROM THE US-CHINA TRADE WAR

In early July, the U.S. imposed tariffs on an estimated \$34 billion in Chinese imports, with China retaliating shortly thereafter. Supply chains are experiencing disruptions as a result of the escalating trade war between the two countries, and a Shanghai port has already delayed customs clearance for shipments carrying U.S. cargoes. It is unclear if the delay was intentional or tariff-related confusion, but China has vowed to respond to the moves that the U.S. makes with "quantitative" countermeasures. Those could be achieved by causing delays and creating barriers at its ports.

WHITE HOUSE SHUFFLE COULD CAUSE SUPPLY CHAIN RIFTS

More confusion in the U.S. supply chain could emerge from the restructuring of two agencies with a central role in it. The White House has been working to privatize both the U.S. Postal Service (USPS) and the Department of Transportation (DOT). Though proposals are still in development, and it could be years before implementation, the move could bring far-reaching changes to the U.S. supply chain — specifically in logistics and last-mile delivery. Such changes could also impact emerging markets, including autonomous vehicles and drones in the freight industries.

The USPS privatization proposal has seen mixed reviews.



It could spur competition for new third-party logistics providers to fulfill last-mile delivery services, according to Steve Bowen, CEO of supply chain and operations consulting firm Maine Pointe, and enable the agency to more effectively compete with FedEx, UPS and others. However, it may also lead to reduced jobs for postal workers and shuttered locations.

US RECOGNIZED FOR LATE PAYMENTS

U.S. companies also face problems when getting paid by their trading partners. A recent **report** from credit insurance and debt collection provider Atradius found 51 percent of survey respondents in the Americas said their outstanding B2B invoices were deemed uncollectible because customers had gone out of business or declared bankruptcy. Other merchants reported being unable to locate a customer or having failed at collection attempts. The report also revealed that U.S. vendors are beginning to shy away from offering corporate credit terms to overseas customers, and that supplier payment terms in the U.S. average 32 days but payment length averages 55 days.

Changes in the supply chain

A CURE FOR MEDICAL SUPPLY CHAIN MALADIES?

A late delivery can sometimes mean life or death.

The Access to Medicine Foundation (AMF) recently

released a white paper outlining opportunities to improve
the supply chain and ensure patients get access to



antibiotics. Antibiotic shortages are a side effect of the low-profit nature of the business, as companies are not as incentivized to invest in antibiotic research, development and manufacturing if other treatments generate more revenue. The organization recommended supply chains adopt better planning, procurement and inventory management practices to address this issue, and that doctors turn to local manufacturers to relieve pressure on active pharmaceutical ingredient manufacturers and make prices more competitive.

VOLKSWAGEN RESTRUCTURES COMPONENTS DIVISION

A major German automaker is reorganizing to make its supply chains more efficient. Volkswagen recently announced plans to transition its global components business into a new corporate division, the Volkswagen's Group Components network, which includes 56 plants and roughly 80,000 workers producing engine, transmission, steering and other automotive components.

The restructuring is in anticipation of the growing market demands for electric vehicles, the company said. Electric vehicles do not require as many components as traditional cars, so a growing market for them will require original equipment manufacturers (OEMs) to rethink their approaches and deliver parts for both new electric vehicles and traditional cars.

WOOL RETURNS TO PATAGONIA'S SUPPLY CHAIN

On the topic of components, U.S. clothing company Patagonia recently <u>announced</u> it will resume using wool in its products following a three-year break. It paused its wool buying from the Ovis 21 agricultural network in 2015 after animal rights group PETA revealed footage showcasing animal cruelty in the wool cultivation process. Patagonia switched to synthetic materials in its products following the information's release.

The decision to resume using wool follows an investigation to determine the wool in the company's supply chain meets the Responsible Wool Standard "from farm to finished product," Patagonia said, including that its entire supply chain uses only responsibly sourced wool. The global standard aims to ensure fair treatment of sheep and best practices in protecting land.



AMAZON SEEKS SMB HELP FOR DELIVERIES

eCommerce giant Amazon is looking for help to fulfill deliveries and is turning to small and medium-sized businesses (SMBs) for assistance. A <u>press release</u> noted that Amazon wants to help entrepreneurs create startups that will deliver Amazon packages, and <u>provide</u> access to its delivery technology, training and discounts on services like vehicle leases and insurance.

The company claims owners have the potential to earn up to \$300,000 in annual profit operating a fleet of approximately 40 delivery vehicles, and is looking to help itself by creating a broader logistics network. Amazon has so far relied on shipping providers like FedEx and UPS to fulfill last-mile delivery, but a growing eCommerce industry has left carriers strained. The new venture could provide a fresh market for delivery services.

Blockchain meets supply chain

WIRECARD LAUNCHES BLOCKCHAIN-BASED SUPPLY CHAIN SOLUTION

Some companies are turning to blockchain to improve supply chain operations. Among them is payments firm Wirecard, which recently <u>announced</u> plans to expand its presence in the B2B payments market. A news release noted the company will use blockchain to connect merchants with producers as well as facilitate the creation and transmission of smart contracts to reduce fraud risk. Its solution will be able to monitor all commercial supply chain steps — including contract



creation, quality assurance and origin guarantee — by mapping them in a decentralized database. Its supply chain solution is currently in prototype.

GE FILES FOR 3D PRINTED PARTS BLOCKCHAIN PATENT

Energy company General Electric (GE) is also turning to <u>blockchain</u> to validate 3D-printed parts' usage in its supply chain operations. While 3D printing has gained popularity among small-parts manufacturers, larger companies struggle to validate its authenticity and guard against counterfeits. Distributed ledger technology would allow both the product manufacturer and recipient to sign off on a 3D-printed part to verify it.

"Validating the build file and the material identifier via the distributed ledger may include determining whether data indicating a contract between the author of the build file and the origin of the particular lot of manufacturing media exists within the distributed ledger," the patent application states. Blockchain integration could open the doors to the technology, enabling it to become more commonly used in supply chain operations.

MAKERDAO, TRADESHIFT PARTNER ON BLOCKCHAIN SUPPLY CHAIN SOLUTION

Blockchain solutions provider MakerDAO is working on its own solution to aid supply chains, recently announcing it had partnered with supply chain solutions platform Tradeshift on a pilot. The test aims to accelerate payment processing for SMBs and create a "supply chain liquidity marketplace for businesses, developers and investors." In a press release, MakerDAO

said the project could improve small business' financial stability by unlocking an estimated \$9 trillion in outstanding receivables.

Supply chain numbers

NESTLÉ SUSPENDED FROM THE RSPO

Speaking of outstanding payments, food and drink company Nestlé was recently <u>suspended</u> from the Roundtable on Sustainable Palm Oil (RSPO) in a decision related to its failure to pay dues or meet annual reporting requirements. RSPO said the company did not submit a 2016 progress report and had not paid membership fees valued at \$2,350. The suspension means Nestlé's products will lose their RSPO certification and that it will be unable to claim it uses sustainable palm oil in them.



RSPO is offering Nestlé 30 days to notify its customers, giving them time to "seek alternatives." The company cited "fundamental differences" between its approach and RSPO's requirements, however, and maintains that its palm oil supply is sustainable.

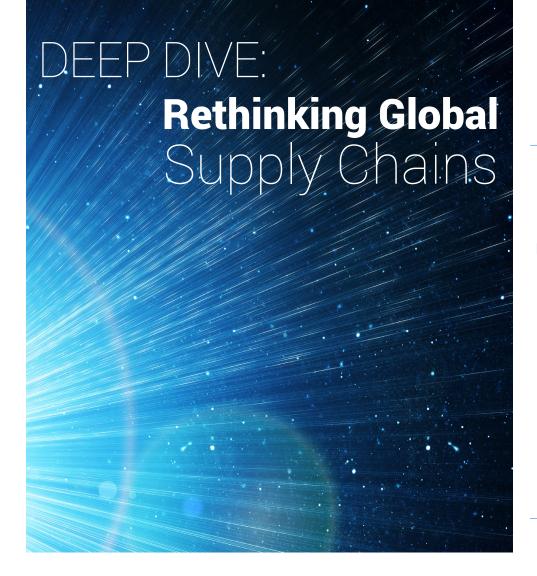
SUPPLY EXECUTIVES SEE BRIGHT OUTLOOK IN RECENT ECONOMIC DATA

New figures have supply chain executives excited about the industry's economic outlook. The Institute for Supply Management (ISM) recently reported that the July Purchasing Managers' Index (PMI) came in at 58.1 percent, a slight decrease of 2.1 percent from the prior month.

The PMI surveys senior executives at 400 major organizations regarding new orders, inventories, production, prices, supply deliveries, order backlogs, new export orders, imports, buying and employment. It reported decreases in new orders, prices, production and deliveries, and increases in employment and inventory. Overall, the panel found the supply chain sector to be strong — growing for 111 consecutive months — but survey respondents appear concerned about how tariff-related activities could impact their operations.







The U.S. eCommerce market alone is expected to surpass

\$506 BILLION THIS YEAR.

The global transportation network that supports the movement of goods from suppliers to buyers is undergoing a radical transformation. Industry players are increasingly turning to new tools for better data and analytical insights, enabling them to address transportation issues in real time.

These changes ensure that various global supply chain participants — suppliers, manufacturers and logistics providers — are working together. After all, a strong transportation network must be in place to keep things running smoothly,

particularly if consumers and businesses want to receive their purchases on time and in the condition they were promised.

The global supply chain's transportation component has seen significant evolution in the past few decades. Once primarily dominated by freight drivers and couriers, the market now includes third-party logistics providers (3PLs) who handle tasks such as order processing and information management. A more recent addition to the market includes fourth-party logistics providers (4PLs) — entitites that can be contracted by firms

to oversee third-party activities, meaning they can outsource the supply chain management process entirely.

Strains on the global supply chain are building as more customers choose to conduct commerce online. The U.S. eCommerce market alone is expected to surpass \$506 billion this year, by some accounts, and could exceed \$712 billion by 2022.

Supply chain industry leaders are thus turning to a wide array of technologies to improve efficiencies, provide greater

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AUGUST 2018

Deep Dive 17

transparency and prepare for the influx of online customers and heightened demand for efficient deliveries. The following Deep Dive examines how such solutions are shaping global supply chains' futures.

DIGITAL PAYMENT SOLUTIONS

Ensuring a supply chain continues to operate smoothly requires being certain that all involved parties are paid promptly, and digital payment solutions are proving invaluable.

These solutions — which include application program interfaces (APIs), digital invoicing and subscription services, among other options — can improve commerce by quickly delivering payments to sellers and suppliers. This ensures suppliers are paid for their services, strengthens their financial liquidity, helps automate payments and streamlines payment processing, sparing

companies the hassle of having to track down invoices.

Supply chain-focused financial tools are already having a strong impact on the B2B payments market. The Association for Financial Professionals (AFP) reported in May that 81 percent of B2B organizations were paid by check in 2004, a figure that had declined to 51 percent by 2016.

A STRONGER TRANSPORTATION INFRASTRUCTURE

Global supply chain managers' top priorities include establishing a strong transportation network and reducing costs. Neither represents an easy task, to be sure, especially since transportation-related expenses can account for 65 percent of a supply chain's budget, according to some reports.

A growing number of companies are relying on a diverse set of transportation solutions to offset potential transportation disruptions and associated losses. A recent survey of supply chain management professionals by freight provider CSX found 53 percent of respondents are using multiple modes of transportation — railways, freight, air and maritime methods — to avoid supply chain disruption.

Using two or more transportation modes in shipping, called "intermodal shipping," is popular among companies, the survey noted, and for good reason. CSX claimed that firms that switch to intermodal shipping save roughly 15 percent on transportation costs.

THE RISE OF SUPPLY CHAIN 4.0

The availability of data insights, heightened transparency, connected technologies and robotic, automated data solutions is also helping supply chain companies further improve efficiencies. Integrating these connected systems and data analytics services into supply chain operations is referred to as "Supply Chain 4.0."

Recent analysis indicates Supply Chain 4.0 could have a wide-ranging impact on the market. Its innovations have the potential to reduce operational expenses by roughly 30 percent in the next one to two years, and do so while also decreasing lost sales and inventories by 75 percent. These developments



Deep Dive

are expected to help supply companies improve their customer interactions, offering easier access to insights and using real-time data to improve quality and services.

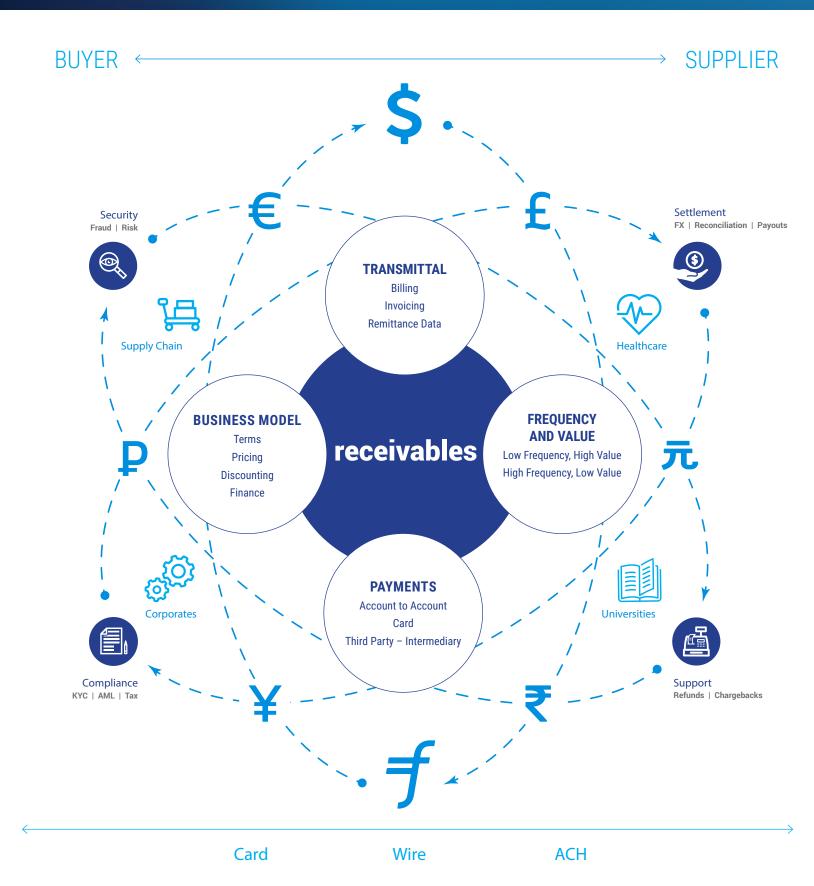
Future developments may also see drones and autonomous vehicles used to facilitate deliveries, and warehouses are embracing related technologies that can locate goods and usher them along faster. These systems can communicate their activities in real time, too, providing updated information on supply chain status and enabling others in the process to anticipate goods' deliveries or potential delays.

The supply chain is no longer simply a method of shipping items from one

party to another. It has evolved into an information-rich system with insights and intelligence helping to advance its evolution. A stronger supply chain that can quickly process payments or information and respond to unexpected developments will be needed to ensure consumers' expectations are met — and that the gears of its machinery continue to turn unencumbered.



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about

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flywire

Flywire is a provider of global payment and receivables solutions, connecting over 1,400 businesses and institutions with their customers on six continents. The company processes billions in payments per year around the world. Flywire's offerings include a comprehensive suite of products including OnPlan, a domestic billing and payment solution for pre-collection and payment plans. The company also supports its clients with end-to-end customer support including multilingual servicing via phone, email, and chat, as well as 24/7 online payment tracking. Flywire is headquartered in Boston and has offices in Chicago, London and Manchester (UK), Valencia (Spain), Shanghai, Singapore, Tokyo, Cluj, and Sydney. For more information, visit www.Flywire.com.

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AUGUST 2018

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AUGUST 2018