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2019 GLOBAL E-COMMERCE LOGISTICS OUTLOOK

Opportunities in Express, Postal, Air Cargo, Contract Flying and Last Mile Delivery Services.

2019 Global E-Commerce Logistics Outlook

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Executive Summary

E-commerce is fundamentally changing the physical distribution of goods. This matters to companies in the global logistics business because it is creating both new opportunities for growth as well as risks to profitability. Most of the disruption is taking place in the business to consumer segment, where both supply and demand patterns have changed significantly. As such this report focuses on the business to consumer, rather than the business to business and consumer to consumer segments.

A month in the world of e-commerce is a long time, and a year is an eternity. It is hard keeping up with the flood of acquisitions, investments and product launches by the big e-commerce platforms. Annual revenue growth rates of 30% - 50% for e-commerce providers are not unheard of. Despite global trade tensions and an uncertain global economic outlook, optimism abounds in the e-commerce business. The greatest near-term worries center around enough network capacity being available to handle the upcoming peak season.

E-commerce revenue growth has been outpacing traditional retail growth for years now. As traditional high e-commerce penetration markets such as the US, Europe and possibly even China reach a saturation point, the focus will shift to markets in other parts of Asia, Middle East, Africa and Latin America.

Cross-border e-commerce, while currently only accounts for about a quarter of the size of domestic e-commerce, has been outpacing overall e-commerce growth. Cross-border and domestic e-commerce are fulfilled through distinctly different channels.

Postal companies and express carriers are key agents in cross-border fulfillment, where the ability to deal with customs and value-added and other tax regulations are necessary. Parcel carriers, postal companies and other ground transportation providers are key participants in domestic and regional fulfillment. Air capacity is important in intercontinental fulfillment, but for domestic and regional fulfillment ground transport is king.

E-Commerce logistics fulfillment networks and service requirements are being shaped by the large global and regional platforms. The 12 companies included in our analysis account for 44% of the value of global e-commerce revenues. Most of that is generated by three platforms – Alibaba, JD.com and Amazon. These companies are large and increasingly powerful buyers of logistics services. Understanding these companies is key to understanding some of the larger contracting opportunities available to logistics companies.

While e-commerce platform expansion has been good for logistics subcontractor volumes, we see trouble ahead. Logistics subcontractor requirements have changed as platforms have made moves to insource volumes carried by third-party express, postal and parcel companies. A shift from two-day to faster overnight and same-day shipping has seen fulfillment costs growing faster than revenues. Platforms are moving quickly in reviewing their logistics networks and subcontractor arrangements.

Table 1 summarizes the key trends and strategic outlook for the postal, express, contract flying, air cargo, as well as ground transportation and last mile segments.

Table 1 - E-Commerce Logistics Trends and Outlook by Sector

Sector	Key Trends	Outlook and strategies for growth
Postal	Postal networks have become e-commerce parcel networks. This has been good for volumes but has put pressure on companies to adapt operating patterns and invest to cope with this growth.	As big e-commerce platforms insource volumes, postal companies risk losing business. Moving beyond the traditional scope of postal services and providing value-added e-commerce services can fuel growth and profitability.
Express	The share of business-to-consumer traffic is increasing faster than business-to-business traffic and stands at about 48% of total shipments moving through air and ground express networks.	The big platforms are emerging as express competitors in domestic networks. Postal companies are creating increased competition in cross-border networks. Focus on SMEs, service expansion and last-mile cost reduction appears to be the blueprint for future success.
Contract Flying	So far Amazon has been the only company to invest in a substantial dedicated air network. Other platforms have generally pursued partnerships.	There is scope for other operators to provide services to Amazon. If other platforms such as Alibaba and JD.com follow suit this will create opportunities for airlines and airports.
Air Cargo	About 16% of global air cargo is e-commerce traffic. This includes a mix of air mail, express and general cargo e-commerce consolidations.	E-commerce traffic growth is likely to capture a larger share of air cargo volumes in the future. Carriers that partner with postal companies and focus on systems integration will capture higher-quality revenues.
Ground Transportation and Last Mile	The biggest impact of e-commerce has been in last mile, ground linehaul and fulfillment networks. The largest share of e-commerce fulfillment costs is in last-mile networks.	With fulfillment costs rising faster than revenues, big platforms are focused on insourcing and developing lower cost alternative delivery models. Courier operators that cannot diversify away from the platforms will be squeezed.

1. Introduction and Organization of the Report

This report is our exploration of what is happening in the global e-commerce business and what it means for companies providing logistics services, particularly those in the postal, express, contract flying, air cargo, as well as ground transportation and last-mile delivery businesses. We hope the discussion and analysis contained herein will help shape your company's e-commerce strategy.

E-commerce is a wide field that influences business-to-business, business-to-consumer as well as consumer-to-consumer transactions. Much wholesale, business-to-business purchasing activity has also shifted online. In this report, however, we focus on e-commerce transactions that include small package-type, last-mile delivery, rather than warehouse-to-warehouse traffic. This is where we are seeing the greatest changes to logistics networks. Wholesale distribution networks are not changing to the same degree, although technology is leading to increased efficiency and a change in competitive dynamics.

Chapter 2 provides an overview of the key e-commerce trends, growth and supply enablers and discusses the degree to which they impact logistics requirements. Chapter 3 provides a deeper analysis of how the big global as well as regional e-commerce platforms are shaping logistics requirements and opportunities. This section is complemented by detailed logistics profiles of the main logistics platforms in Appendix A. Chapter 3 offers an overview of the mechanics of e-commerce fulfillment, particularly the differences between domestic and cross border fulfillment.

Building on the above Chapter 5 discusses the existing and future role of postal networks in e-commerce distribution, while Chapter 6 provides a similar discussion for express networks and is complemented by express carrier e-commerce profiles in Appendix B. Chapter 7 provides an analysis of e-commerce related opportunities for the contract flying, air cargo and airport business.

The report is complemented with an interactive map application that allows users to analyze and understand the spatial dimensions of different aspects of the e-commerce logistics business. Subscribers will also receive access to periodic updates of e-commerce platform logistics profiles and research.

We trust that you will find the material presented in the report valuable in shaping your company's e-commerce logistics strategy or e-commerce product offering. We welcome your comments and feedback on the content, as well as subjects that you would like included in next year's report.

2. Outlook for e-Commerce: Enablers of Growth

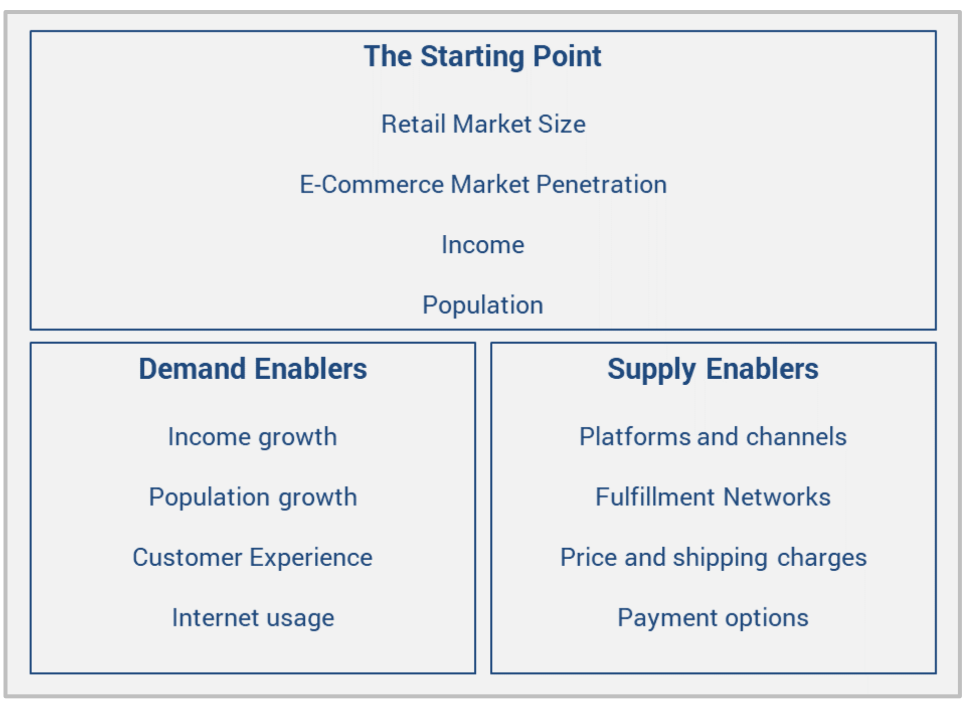
Key findings:

- E-commerce revenue growth has been outpacing traditional retail growth.
- Cross-border e-commerce, while currently only about a quarter of the size of domestic e-commerce, has been outpacing overall e-commerce growth.
- As traditional high e-commerce penetration markets such as the US, Europe and possibly even China reach a saturation point, the focus will shift to markets in other parts of Asia, Middle East, Africa and Latin America.
- Existing online market penetration, income, population trends drive future demand, while supply is facilitated by shopping platforms and supporting fulfillment networks. Mobile payments have emerged as a key factor in bringing supply and demand together.

2.1 E-Commerce Growth Drivers

E-commerce growth has been outpacing overall retail growth by a factor of five. There are several factors that have facilitated this, including price, convenience, increasing internet and mobile device usage, as well as mobile payments. Figure 1 provides an overview of the factors that we feel are the most significant in assessing future market growth potential.

Figure 1 - E-Commerce Growth Enablers

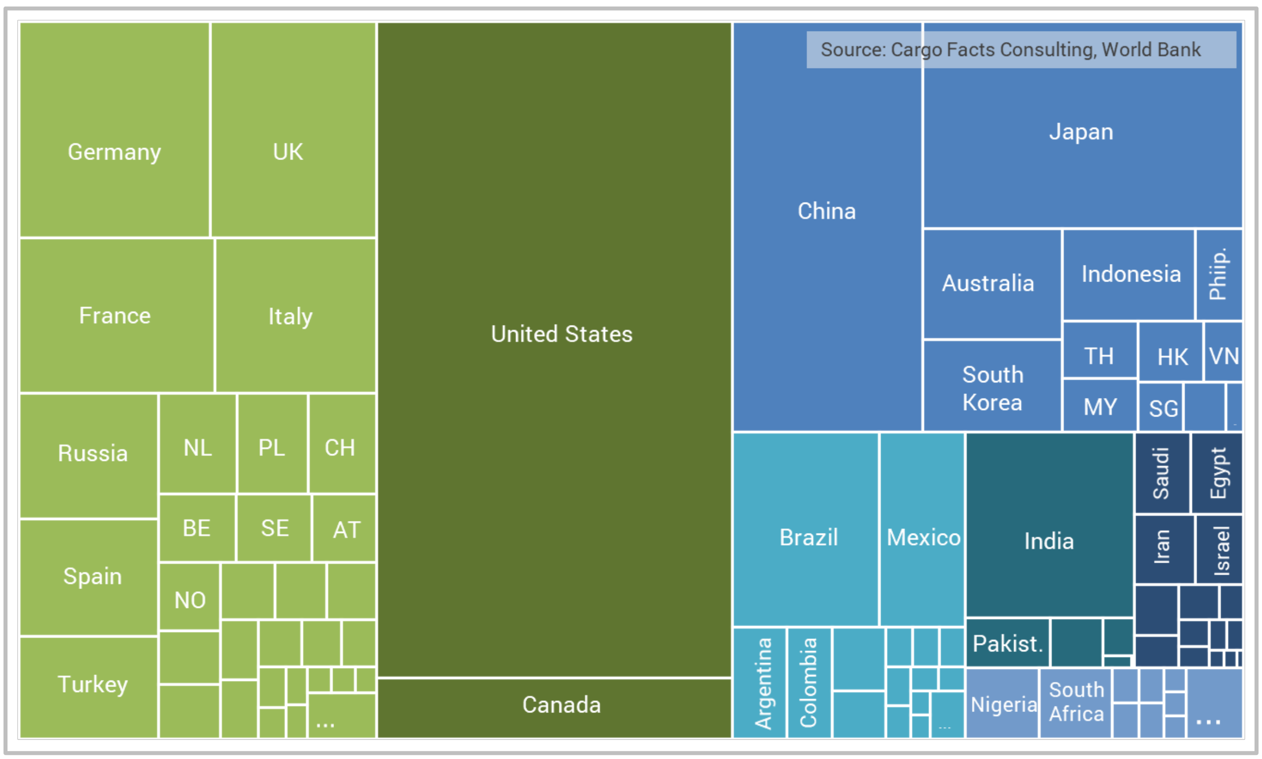


Current e-commerce retail market penetration varies between as low as a few percent in some markets (such as Africa) to as high as 15% in others (such as China). Cross border and domestic e-commerce are subject to different forces and constraints and distinctly different fulfillment channels. Not all products lend themselves equally to online distribution, or require special delivery chains, as do, for example, groceries. Developing a sense for the above is paramount in understanding potential logistics growth opportunities and risks. The following two chapters provide some more discussion on some of these underlying drivers and give a sense of where we are today and where we are headed in the future.

2.2 The Starting Point: Global E-Commerce Today

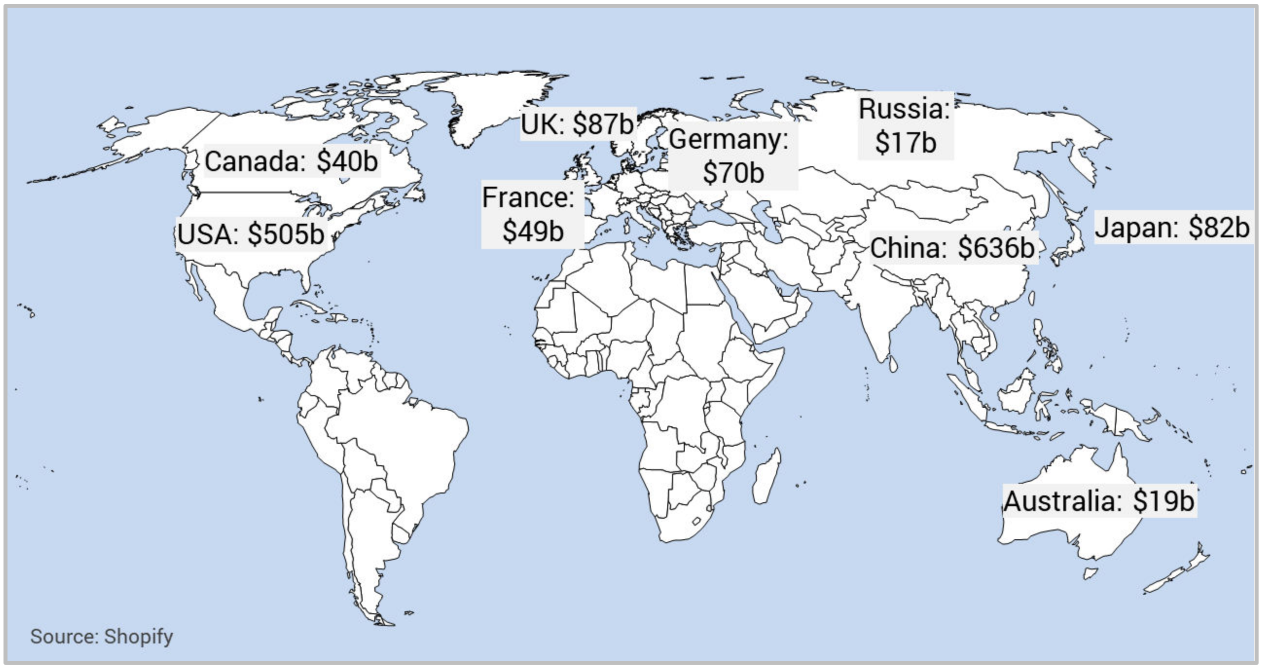
In value terms, global retail is dominated by a dozen or so markets. The United States, the European Union, China and Japan account for two thirds of all consumer spending worldwide. In fact, the US and the EU alone account for 23% and 27% of worldwide household spending, respectively, with China and Japan accounting for 9% and 8%. Figure 2 shows the percentage of household consumption by country.

Figure 2 - The World's Largest Retail Markets in 2018



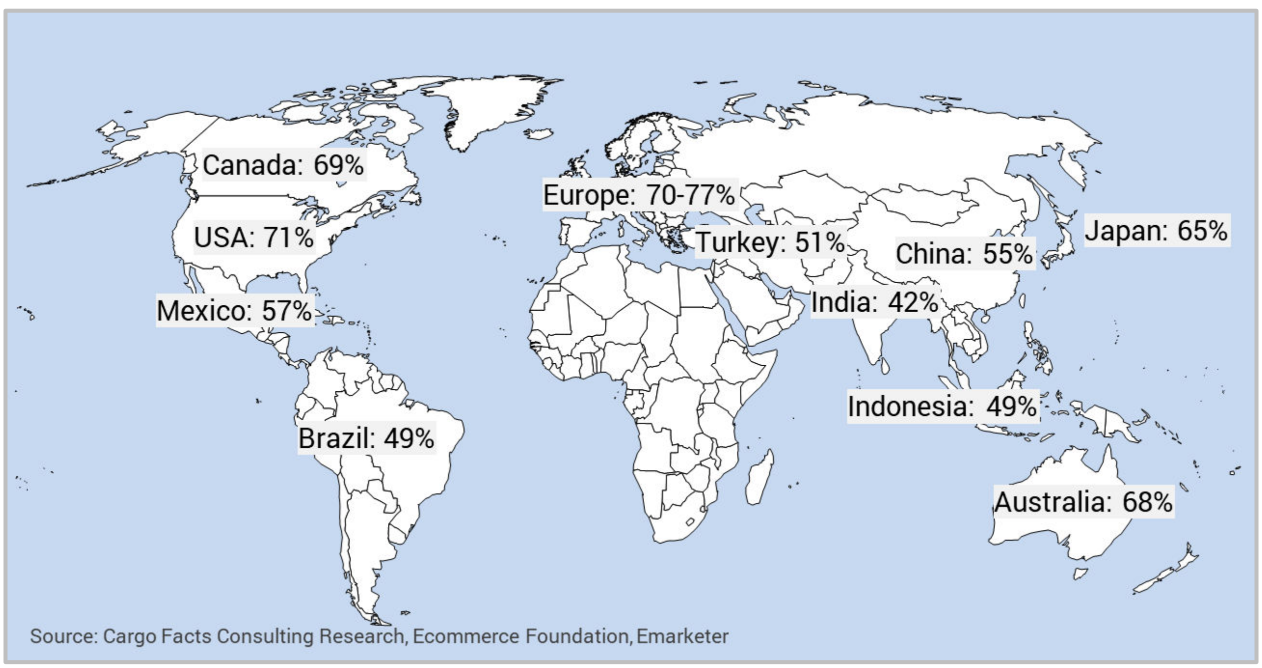
In terms of revenues the world's largest e-commerce markets are China and the United States, followed by the UK, Japan and Germany (see Figure 3). As a bloc Cargo Facts Consulting estimates that the EU accounts for approximately $400 million in e-commerce revenue.

Figure 3 - E-Commerce Revenue by Market 2018



The e-commerce share of retail varies substantially between individual markets. In China, the United States and countries such as the UK it is as high as 15%, although some estimates for the UK and China are closer to 20% and 30%, respectively.

Figure 4 - E-Commerce Market Penetration 2018



Other markets such as Japan or India are dominated by traditional retail and operate well below their e-commerce market potential. As e-commerce has grown, traditional retail has suffered particularly in the European Union and the United States. Figure 4 provides an overview of the e-commerce penetration in selected markets.

While some analysts have predicted that e-commerce penetration rates in some countries could go as high as 40% of total retail sales in the next five years, we feel that a cap of 25% seems more realistic given slowing growth rates in key e-commerce high penetration markets, product mix and customer preference. Bulky and perishable goods do not lend themselves well to low cost last mile distribution.

Clothing and sporting goods, household goods and books and magazines are the most popular items purchased online. Online market penetration across all goods have increased, with the biggest reported increase taking place among groceries. Table 2 provides an overview of the increase in the number of online shoppers in the European Union reporting purchases of the main product groups.

Table 2 - Top E-Commerce Purchases in the EU

Commodity	2008	2018
Clothing and Sporting Goods	13%	38%
Household Goods	11%	27%
Books and Magazines	12%	21%
Electronic Equipment	8%	15%
Groceries	4%	15%
Computer Hardware	5%	10%

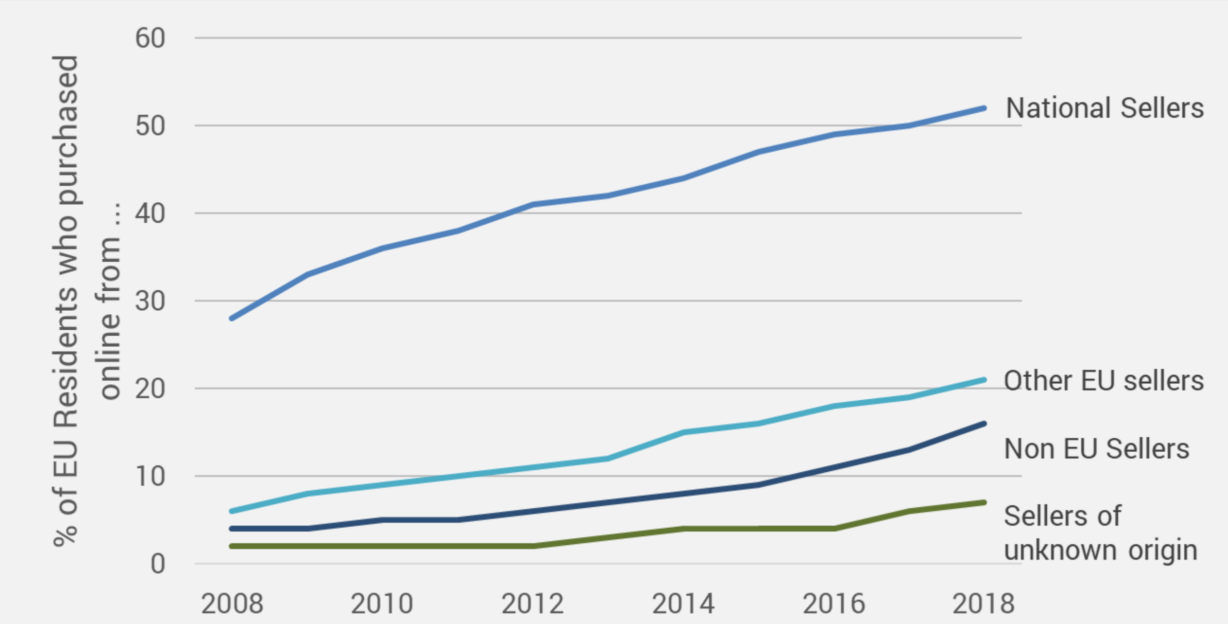
Source: Cargo Facts Consulting Analysis of Eurostat survey data

Customers have become more likely to purchase online – both from domestic and cross-border sellers. Increased experience with purchasing online, growing internet usage, better mobile applications and payment options have all facilitated this. Not only have consumers been buying more items online, but the total amount spend online has also increased. Correspondingly, companies have also noted an increase of the total turnover that is generated through online sales.

2.3 Cross Border vs Domestic E-Commerce

Cross border e-commerce growth, although currently only about 20% of all e-commerce, has outpaced growth in purchases from domestic sellers. For example, Chinese E-Commerce and imports have grown twice as fast as domestic e-retail transactions. Figure 4 shows an example of this trend in the European Union, where usage of cross border channels has also grown twice as fast as national ones. While most purchases are made from local sellers, purchases from sellers abroad have grown faster than domestic or intraregional e-commerce.

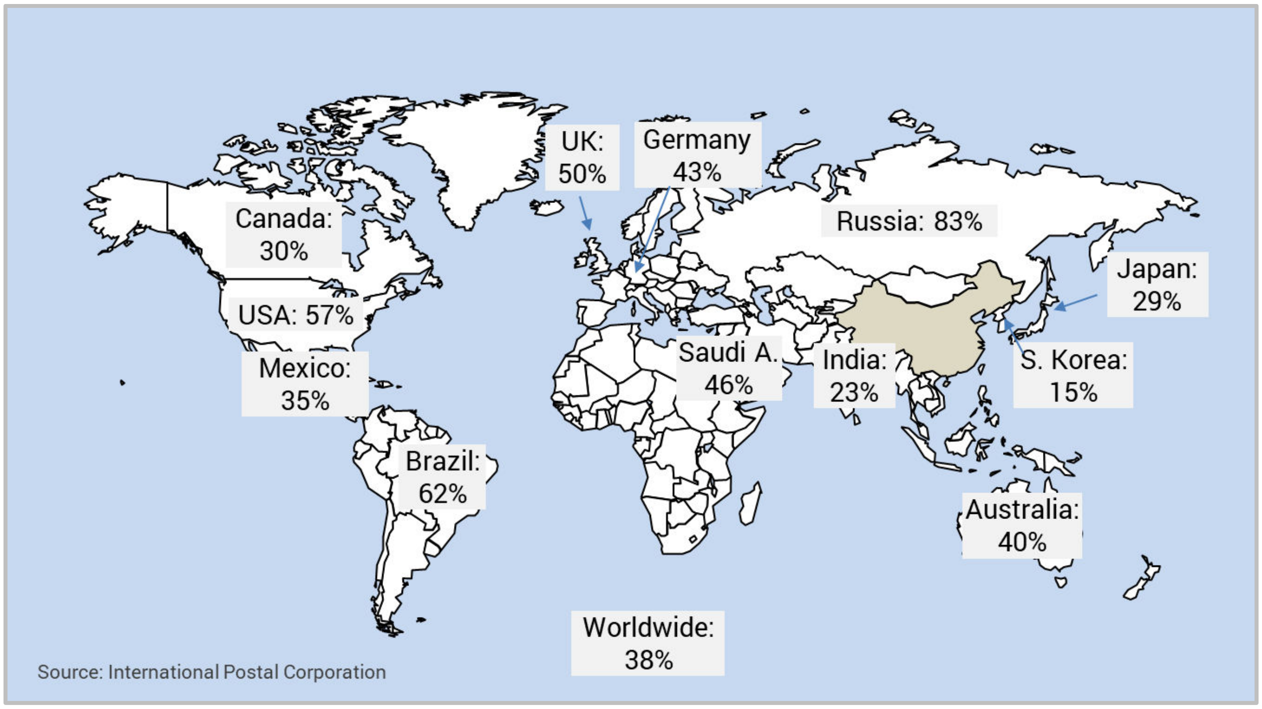
Figure 5 - E-Commerce Purchased in the EU 2008 - 2018



Source: Cargo Facts Consulting Analysis of Eurostat data

China is the main source of cross border e-commerce, accounting for approximately 38% of all online cross border transactions. If intra-EU transactions (which are essentially domestic in nature) are excluded this number would be much higher. Figure 6 provides an overview of the important of China as a source of cross border purchases. The map application that accompanies this report provides a by country overview of the top three source countries for cross-border purchases.

Figure 6 - 2018 Chinese Share of Cross Border E-Commerce by Country



The China share of cross border e-commerce does varies significantly by country. As a general rule, sellers in neighbouring countries have an advantage over long distance sellers. A 2018 survey of online shoppers conducted by the Brussels based International Postal Corporation (IPC) found, for example, that US sellers accounted for 43% and 53% of Mexican and Canadian cross border sales, respectively. Within Europe, UK and German sellers enjoy good access to buyers in neighbouring countries. Across Eastern Europe where incomes are lower than in Western Europe, Chinese sellers enjoy a higher market share than Western European sellers. While the survey did not cover African markets, our research shows that the primary sources of cross border shipments are China, Europe and the United States.

2.4 Drivers of Future Growth

Growth in established high-income markets will primarily come in form of increasing internet market penetration. Growth in middle to low income countries will come from a combination of population and income growth as well as increasing e-commerce market penetration facilitated by improved delivery networks and mobile payments. Figure 7 and Figure 8 provide an overview of population, income and expected economic growth for high-income and low to middle-income countries. The biggest e-commerce growth potential will likely come from high-growth countries with large populations and a growing middle class.

Figure 7 - GDP per Capita, Forecast GDP Growth and Population, High Income Countries

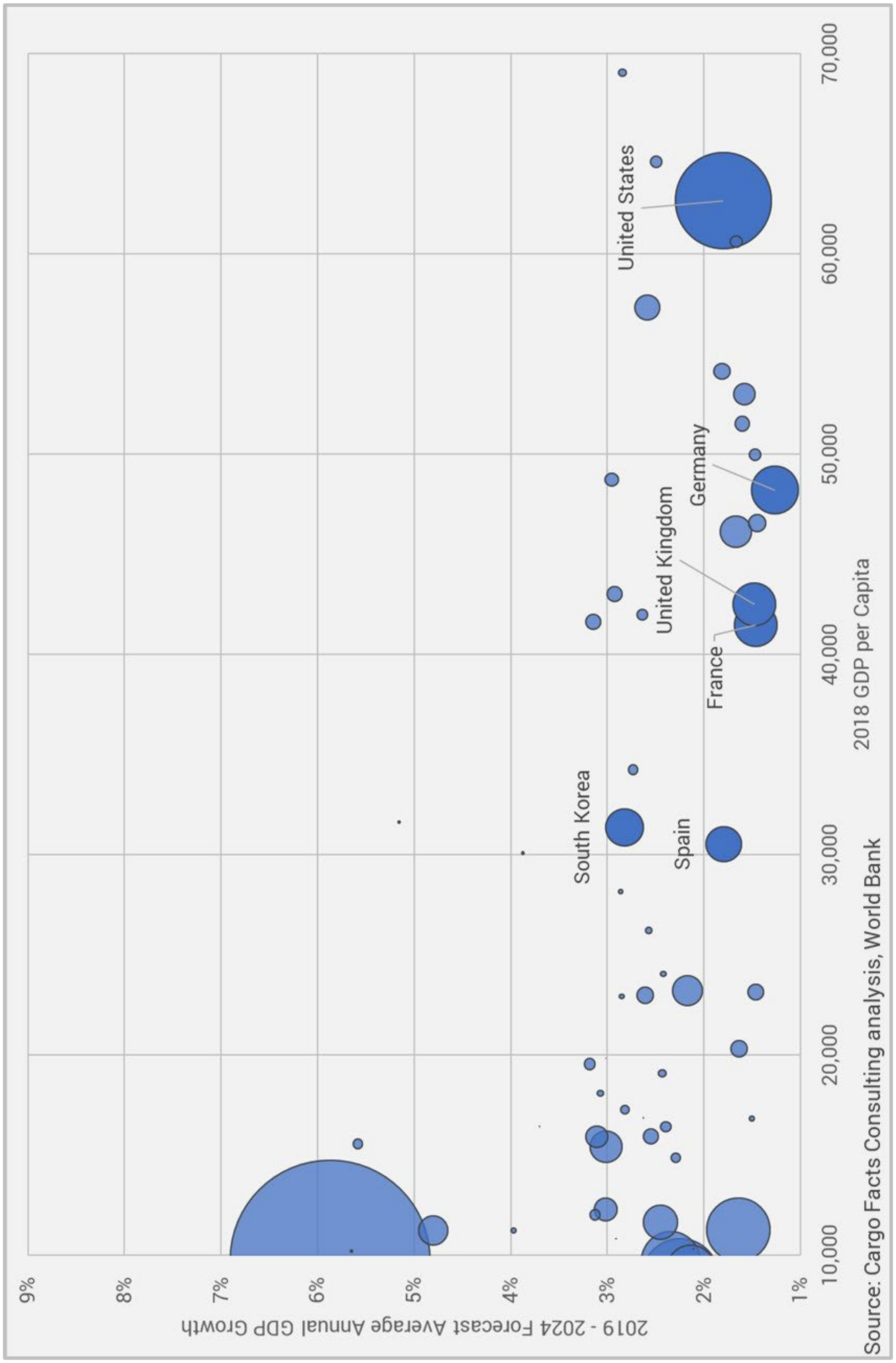
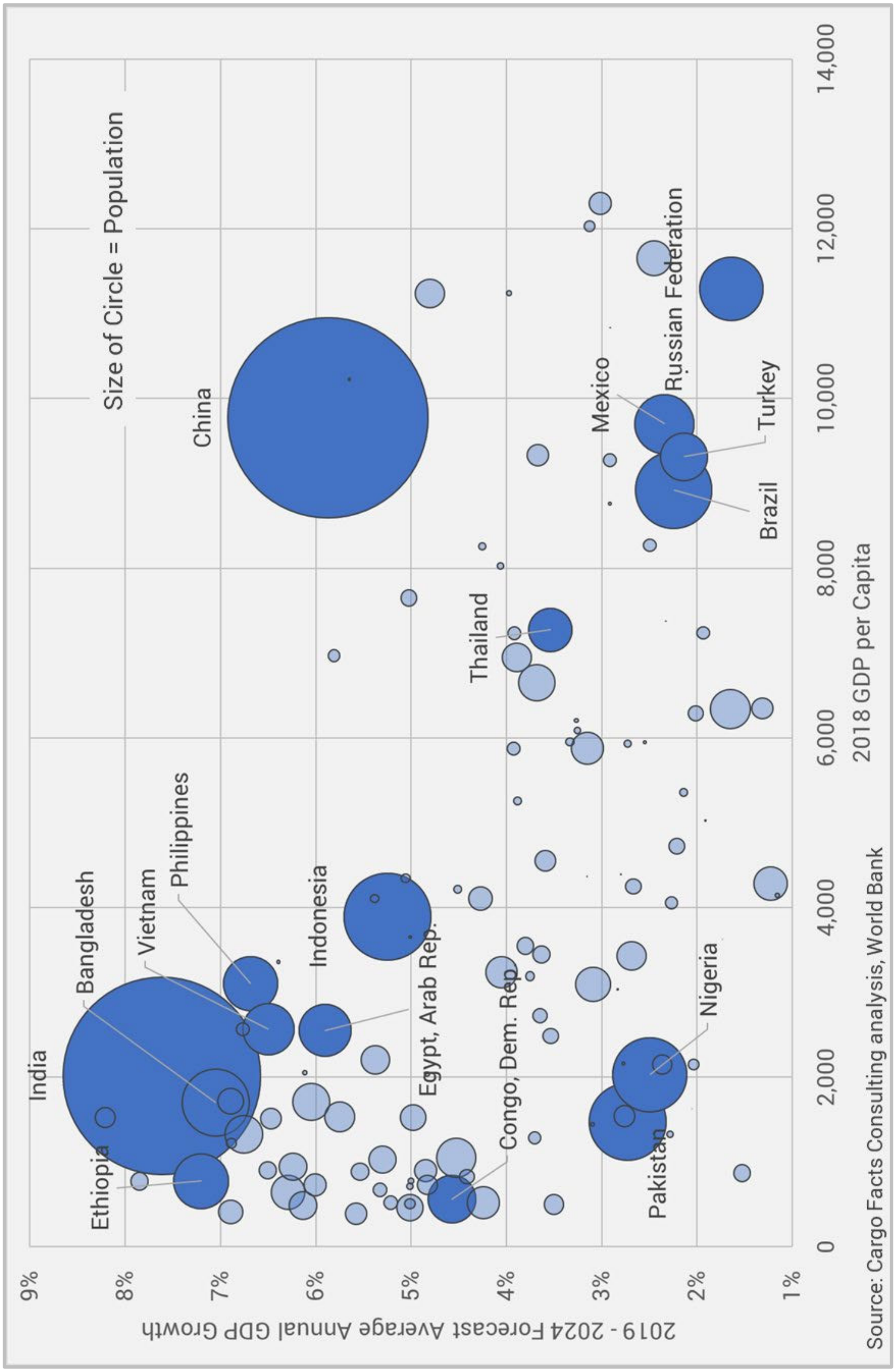


Figure 8 - GDP per Capita, Forecast GDP Growth and Population, High Income Countries



2.5 Key E-Commerce Trends and Their Impact on Logistics

The fast-changing landscape of e-commerce is creating opportunities and challenges for retailers, postal networks and express operators. The introduction of new digital payment solutions, the role of artificial intelligence or next-day delivery have a huge impact on retail demand in the e-commerce environment but not all of them have the same impact on the logistics chain.

For instance, the growth of last-mile delivery and demand for next and same day is pushing logistics beyond its traditional operating models. As consumers demand faster delivery times, companies are looking to deploy more inventory in advance, changing their normal fulfillment processes and delivery methods to meet customer expectations. Also, the digitization and automation of e-commerce companies increase the speed of order fulfillment, reducing inefficiencies and accelerating the last-mile delivery process. From dispatch to delivery and returns, there are several places where data tracking and automation are key to streamline the fulfillment and distribution process with a smaller workforce and higher efficiency.

On the other hand, e-commerce trends such as personalized experience, higher use of mobile-friendly technology or changes in the payment methods are key emerging trends that will transform the world of e-commerce. But that is not causing great change on companies' logistics and supply chain methodologies. Figure 9 identifies the main e-commerce trends and shows whether these have a major or minor impact on logistics.

Figure 9 - Main E-Commerce Trends and their impact on logistics

High impact on Logistics

- Faster and more efficient delivery [same-day delivery]
- Last mile network expansion
- Digitization and automation of e-commerce providers

Low impact on Logistics

- Incorporation of digital payment methods
- Greater use of mobile technology
- Integration of Machine Learning, Data Analytics and Artificial Intelligence
- Personalization and Customer Engagement & Support

3. Fulfillment Channels: The Mechanics of e-Commerce

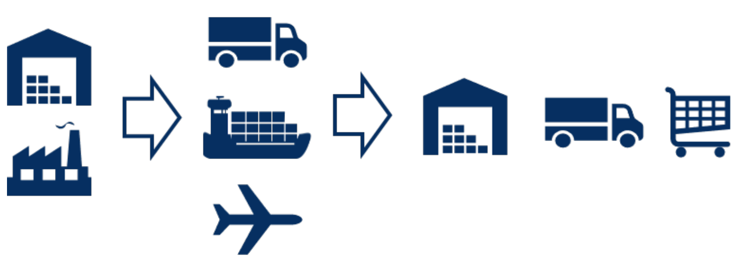
Key findings:

- Cross border and domestic e-commerce are fulfilled through distinctly different channels.
- Postal companies and express carriers are key agents in cross-border fulfillment, where the ability to deal with customs and value-added and other tax regulations are necessary.
- Parcel carriers, postal companies and other ground transportation providers are key participants in domestic and intra-regional fulfillment.
- Air capacity is important in intercontinental fulfillment, but for domestic and regional fulfillment ground transport is king.

3.1 E-Commerce Fulfillment vs Traditional Retail Chains

Traditional retail and e-commerce fulfillment channels are fundamentally different in nature and involves a different set of providers. Traditional retail fulfillment is largely involves wholesale transportation of large lots between factories, distribution centres and retail outlets using linehaul truck, shipping and air transportation. Figure 10 provides a simplified overview of traditional retail fulfillment.

Figure 10 - Traditional Retail Fulfillment



The key transportation providers in traditional retail fulfillment are third party logistics providers and freighter forwarders, shipping lines, airlines and trucking companies. In some markets, rail transport also plays a role in the shipment of containers from port to distribution centres. Shipment sizes tend to be either full or partial container or truck loads.

While much of the front end of the e-commerce retail fulfillment from factory to distribution centre is similar to the traditional retail chain, online retail is primarily centred around movement and delivery of small packages or single items, either domestically or cross borders. Figure 11 provides a simplified overview of the e-commerce fulfillment chain.

Figure 11 - E-Commerce Retail Fulfillment

A customer – be it a consumer or business – places an order which is then picked, packed, and dispatched from a seller or distribution centre using an inhouse or third-party logistics system that may involve pick up, origin handling, sorting and consolidation, road and air linehaul, customs clearance, destination sorting and handing, and last-mile delivery to homes, business or pick up points such as retail outlets and parcel lockers.

Particularly for domestic e-commerce the customer is generally provided with real-time or near-real-time tracking information. Due to the fulfillment options chosen by sellers in cross border e-commerce, tracking information is often not available to the customer.

E-commerce fulfillment involves more parties than traditional retail fulfillment. These include postal companies, express companies, courier companies, independent contractors as well as wholesale transportation capacity providers such as airlines or trucking companies. The traditional third-party logistics providers and freight forwarders play a lesser role in e-commerce fulfillment, either because platforms manage their own logistics or rely on specialist e-commerce consolidators or other providers to organize transport.

When shipments are injected into third party carriers’ systems depends on how sellers and logistics platforms manage their requirements. In essence there are interface possibilities at all stages of the chain. For example, Shipments may be handed over to an integrator at origin, injected into last mile networks for delivery without any network impact further upstream.

The next two subchapters describe the mechanics of domestic and cross-border e-commerce fulfillment in more detail. Chapter 4 and accompanying appendix describe how the large platforms manage their logistics requirements.

3.2 Domestic E-Commerce Fulfillment

Fulfillment in domestic networks primarily relies on ground transportation, i.e. trucks and vans. For the purposes of our analysis domestic also includes intra-EU or other customs union markets that essentially operate like domestic markets. Some premium traffic moves by air in express or dedicated networks, and driven by predictive analytics, platforms such as Amazon also move inventory between fulfillment centers using air freight to ensure shorter delivery times to market once actual orders have been placed.

More detail of the type of traffic moving in different networks can be found in Chapters 5 (Postal), 6 (Express) and 7 (air cargo and dedicated e-commerce networks). Last mile network growth is discussed in Chapter 8.

Figure 12 provides an overview of the mechanics of domestic and intra-regional (customs union) fulfillment.

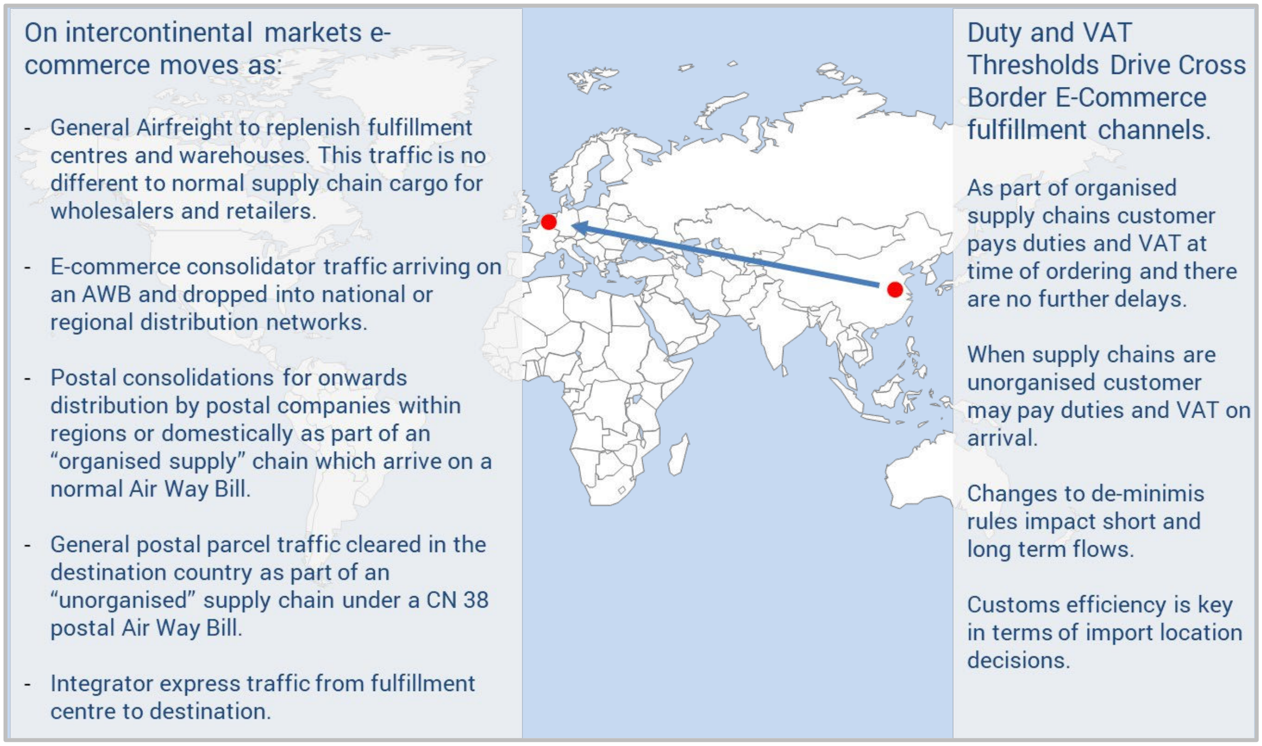
Figure 12 - Domestic Fulfillment

The choice of fulfillment channel and carrier is generally determined either by the seller or e-commerce platform, although in many cases customers can choose a shipping speed and occasionally are also given a choice of different parcel operators.

3.3 Cross-Border E-Commerce Fulfillment

Cross border e-commerce generally involves the use of airfreight, with subsequent on forwarding through postal, express or other parcel networks (see Figure 13).

Figure 13 - Cross Border Fulfillment Channels



Fulfillment channels are driven by customs and tax regulations and practices, particularly rules relating to de-minimis and tax-free thresholds. Changes to these have a fundamental impact on the flow of cross border e-commerce. For example, when Australia abolished the A$1000 tax free threshold in July 2018 for online purchases from abroad, this had an instant impact on cross border traffic and created an incentive for e-tailers to set up local warehousing and fulfillment. By the same token, a disorderly "Brexit" of the United Kingdom from the European Union at the end of October 2019 could hugely diminish flows between the UK and the rest of the European Union.

Postal, express companies, e-commerce consolidators are the key players in cross border e-commerce. Traditional forwarders and 3PL have tended to remain focused on their traditional business-to-business industrial operations.

We do not view the replenishment of e-commerce provider warehouse and fulfillment center inventory as e-commerce. This type of traffic is no different to normal consumers goods and supply chain cargo moving by air (and ocean freight) for the replenishment of wholesaler and retailer stocks. As such we have excluded this from our analysis.

4. E-Commerce Platforms: Shaping Logistics Networks

Key Findings:

- E-Commerce logistics fulfillment networks and service requirements are being shaped by the large global and regional platforms.
- A shift from two day to faster overnight and same day shipping has seen fulfillment costs growing faster than revenues and is accelerating a review of logistics networks and subcontractor arrangements.
- Own controlled logistics is seen by the big e-tailers as a major source of competitive advantage and some have started becoming logistics providers themselves.
- Logistics subcontractor requirements have changed as platforms have made moves to insource volumes carried by third party express, postal and parcel companies.

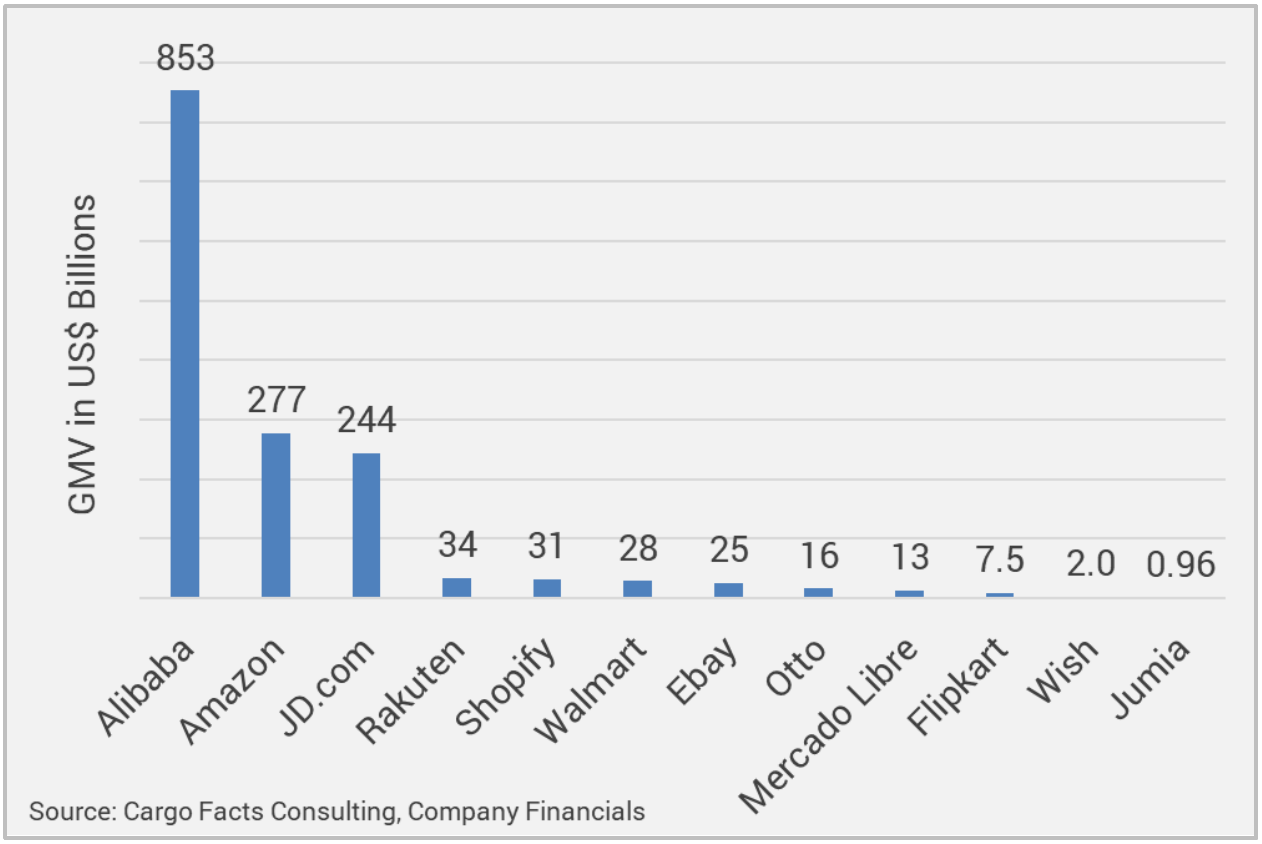
4.1 The Importance of the Big Global E-Commerce Platforms

With a large share of global e-commerce revenues generated by or via the big global e-tailers and marketplaces, the strategies of the major platforms have a disproportionate impact on shaping e-commerce logistics requirements. As part of our research, we have taken a detailed look at the operations and logistics strategies of 12 key, emerging global and selected regional e-commerce platforms representing approximately 44% of global e-commerce GMV: Alibaba (and its subsidiaries), Amazon, JD.com, Rakuten, Shopify, Walmart, Ebay, Otto, Mercado Libre, Flipkart, Wish and Jumia. Most of these companies have become large and powerful buyers of logistics services.

While we also track the activities of other platforms such as Pinduoduo, Souq.com (now part of Amazon), mail.ru, Zalando, to name a few, we feel the companies chosen provide a valuable cross-industry picture of what is happening in e-commerce logistics. As with other parts of the report, we welcome your feedback on the scope of our coverage in the lead up to next year's report, the research for which starts in the spring. A year in the world of e-commerce is a long time.

Figure 14 provides an overview of the Gross Market Value (GMV) of the platforms included in our analysis. GMV is a measure of scale and consists of the sum of revenue conducted with own retail and revenues achieved by third party retailers. For platforms which host third party sellers, the revenue generated by platform itself (also called net revenues) is usually a fraction of GMV. In Alibaba's case net revenues are about 6.5% of GMV. This number increases depending on the commissions charged by the platform as well as value-added services provided to sellers, such as fulfillment. Appendix A provides a detailed profile of each of the platforms, their logistics operations, expenditure and strategies.

Figure 14 - Key Global and Regional E-Commerce Platform Revenue in 2018



4.2 Key Platform Driven E-Commerce Logistics Trends

While the scale of operations, geographical scope and share of revenues in individual markets varies substantially between platforms, we have identified some trends that apply across most if not all platforms:

- **Fulfillment costs are rising faster than revenues** – this is both a sign of a shift in service offering as well as a problem. Many platforms (Amazon, Walmart, JD) have moved from two day to overnight, same day or even delivery within the hour. Companies have not recovered the additional cost of this from their customers through their "Prime"-style memberships. For example, Mercado Libre started subsidizing shipping in 2017. This is hurting its margins, and consequently transportation suppliers will be pushed harder to lower prices.

- **Own controlled logistics is seen as a competitive advantage:** all the above platforms have their inhouse logistics providers, with the exception of Shopify, Wish and Ebay -- although the latter has recently made moves in the direction of own-controlled logistics. While most run their own fulfillment centres, they tend to rely on third-party carriers for linehaul and last-mile services. Otto is an exception with its own package company, Hermes, as is JD.com, who also runs its own delivery company.

- **Big platforms are shaping third-party provider networks:** Sunday and late evening delivery are becoming more prevalent around the world, and courier working times and delivery times are being driven by arrival of trucks from fulfillment centres. For example, DHL in Germany has delayed start times of delivery runs to accommodate trucks arriving from Amazon fulfillment centres.

- **Logistics networks are open to third-party sellers:** where platforms host third-party sellers, these can access the platform's fulfillment networks. This is a logical development as most platforms either rely entirely on third party sellers (e.g. Alibaba) or have seen an increasing share of third-party sellers (e.g. Amazon). However, none of the big platforms have become serious competitors to the traditional 3PL giants like DHL or Kuehne & Nagel. Cross border as well as domestic e-commerce fulfillment is a fundamentally different business. Cainiao has the greatest potential to become a threat to the traditional 3PL business.

- **Some logistics networks are open to third parties who are not sellers**: JD.com and Hermes, for example, have opened their parcel networks to thirds parties including the general public. We believe that once networks have reached a certain scale and maturity, platforms will seek to use these networks to drive additional revenue opportunities.

- **Moving from Controlled to Insourced Logistics:** in order to reduce costs and dependency on third-party providers, some platforms particularly JD.com and Amazon have moved from controlled to increasingly insourced logistics networks. This includes both linehaul, last-mile delivery and establishment of non-courier-based networks of parcel lockers and pick up locations.

The following chapters discuss how postal, express and other companies in the logistics business have been positioning themselves to deal with these trends as well as establishing themselves as alternatives to the large e-commerce platforms.

5. Postal Networks

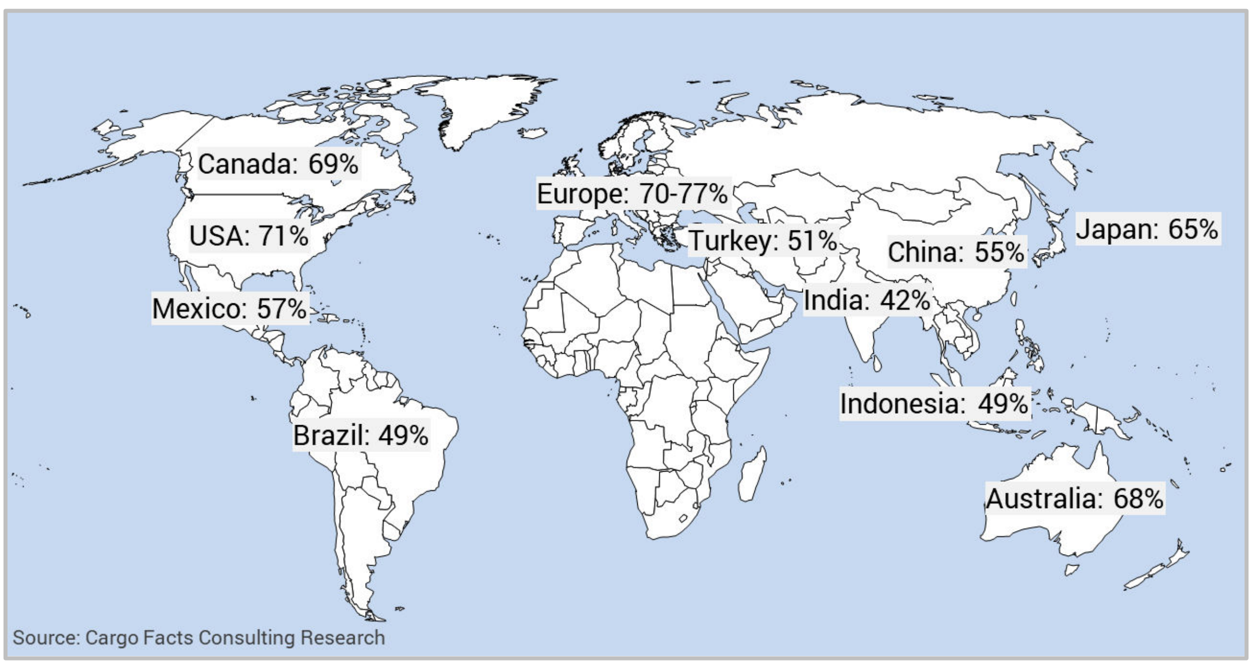
Key Findings:

- The nature of the postal business has changed with growth in parcels and logistics replacing declines in the traditional mail volumes. Today, most parcels moving in postal networks are related to e-commerce.
- E-commerce service requirements and volume increases are putting pressure on postal networks which have been forced to adapt operating patterns and invest in physical and IT infrastructure.
- Many, particularly smaller postal companies, are moving beyond the traditional scope of their business and have started providing a wide range of e-commerce related service.

5.1 From Letters to Parcels and Logistics: The Changing Face of the Postal Business

The postal business has undergone fundamental changes over the last decade. During this time, the share of postal revenues from logistics and parcels has increased from 15% to 25%, while traditional mail volumes have continuously declined and represent only 39% of postal revenues today compared to 46% in 2017, according to statistics collected by the Universal Postal Union (UPU). Figure 15 shows how important e-commerce has become in postal parcel networks.

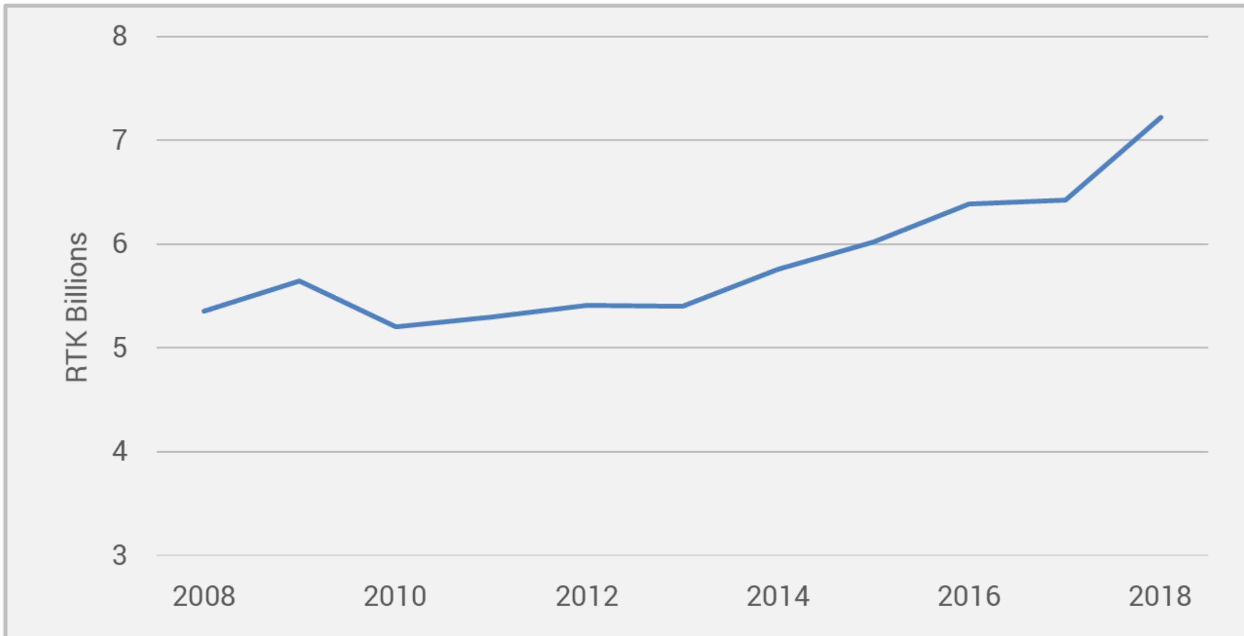
Figure 15 - Share of E-Commerce in Postal Parcel Networks 2018



Airmail plays an essential role in the delivery of letters and parcels between intercontinental and within key domestic markets. According to IATA, 7.4 billion parcels and 328 billion letters were sent via air in 2018 and even though mail volumes have decreased, parcel volumes have risen due to the growth in e-commerce.

The growth in cross-border as well as domestic parcel traffic has also driven renewed growth of global postal traffic carried by air. Figure 16 shows the global airmail traffic measured in billions of revenue tonne kilometers (RTKs) over the last ten years. In 2018 world airmail traffic grew by 12%, significantly faster than general air cargo traffic, which only increased by 4%. As cross border e-commerce traffic continues to grow strongly, we expect this trend to continue for at least the near term. However, there is also an increasing amount of cross border traffic destined for postal networks that travels as general airfreight and not under a CN 38 postal airwaybill.

Figure 16 - Global Airmail Traffic 2008 – 2018



Source: Boeing, IATA, Cargo Facts Consulting

5.2 Postal Networks Overview: Financial Performance, Challenges and Outlook

E-commerce traffic has been good for both volume and revenue growth. Importantly, however, this growth has generally not been detrimental to profitability. Some companies, such as La Poste (France), Australia Post and UK Royal Mail have done extremely well. Others, such as the United States Postal Service, have seen losses increase.

E-commerce offers growth potential for the postal industry but there are some drawbacks that must be overcome. These include the inefficient and lengthy customs process, absence of adequate infrastructure support and complexity of the diverse postal product offering. Customers are looking for affordable, simple and reliable international postal service and therefore, postal companies must take a global approach based on customer focus and market needs towards the development of an efficient postal delivery networks for cross-border e-commerce.

We have analyzed the largest postal companies in the world in terms of volume and revenue. The consistent trend is that there is significant growth in their parcel business units, driven mostly by e-commerce, while the mail business is in an irreversible retreat. Even though mail revenues share still stands between 35% and 45%, there is a clear decline as volumes are shifting from letters to parcels. Many postal companies are also developing solutions for international shippers to consumers (B2C) and expanding their cross-border portfolio of e-commerce services.

Traditional mail remains an important source for the postal operators, but e-commerce is becoming the main driver for the delivery business, filing the gap caused by the declining volume in mail and increasing volume in parcels. Postal companies should expect their parcel business to continue growing robustly in the coming years and this will likely expand their parcel networks.

Our research shows no clear profitability trends as a consequence of this growth and change in business mix, but we have found that most postal operators reporting have reported profits in the last five years. For those that have made losses, these have gotten smaller. Even though operating costs have increased generated by saturated production capacities and uncompetitive labor costs, the e-commerce expansion and parcel handling business have offset these losses.

Table 3 shows the largest postal networks in the world, their country of origin and volume of pieces handled annually. Furthermore, the table shows revenue reported in 2018, average profit in the last five years and their main joint-ventures and agreements with large enterprises operating in their territory.

Table 3 - Postal Network Summary: volumes, financial performance, and agreements

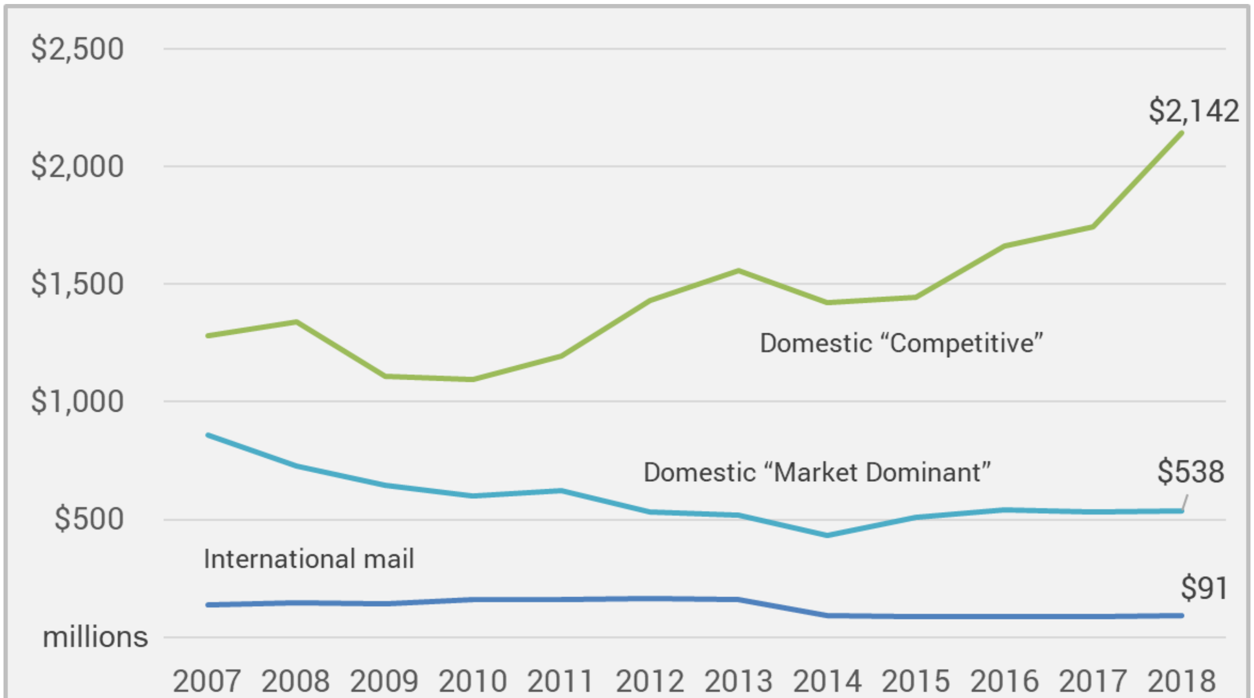
Postal Company	Country	Total Annual volume (no of pieces in million)	2018 Revenue (USD in billion)	Average Profit 2014-2018 (USD in million)	JV & Agreements
USPS	United States	65,714	$70.6	$-5,302	Amazon, USPS, Ebay
Canada Post	Canada	8,383	$4.9	$22	Zulily, Amazon
Correos de Mexico	Mexico	980	$0.92	$-13	Amazon, USPS
Correios	Brazil	1,270	$4.4	$24	Amazon, Mercado Libre, Alibaba
Royal Mail	United Kingdom	15,608	$9.2	$567	Amazon, Marks & Spencer
La Poste	France	13,965	$13.1	$633	Cdiscount, Amazon
Deutsche Post	Germany	22,630	$18.5	$1,309	Amazon, Zalando, Bol.com, IKEA
Poste Italiane	Italy	3,280	$4.1	$-559	Amazon
Correos	Spain	2,740	$2.3	$-34	Amazon, Alibaba
PTT – Turkish Post	Turkey	1,320	$0.5	$128	Amazon
India Post	India	6,240	$1.7	$-1,042	Blue Dart, Bombino, Amazon
China Post	China	NA	$84	$6.4	Alibaba
Korea Post	South Korea	5,240	$2.5	NA	Coupang
Japan Post	Japan	21,735	$19.1	$112	Rakuten, Amazon
Pos Indonesia	Indonesia	786	$0.4	$21	Zalora
Australia Post	Australia	3,620	$4.6	$338	Qantas, Toll, JD.com

Source: Cargo Facts Consulting, Company Financials

The United States Postal Service (USPS) remains the largest single player in the postal market and its product offering is divided into two categories: Market Dominant and Competitive. The market-dominant category includes First-Class Mail, Marketing Mail, Periodicals, Package Services and other services, such as Certified Mail. These products are market-dominant because USPS is the only alternative to physically deliver them. On the other hand, the competitive type includes several products that compete directly with other delivery companies. This category includes Priority Mail, Priority Mail Express and commercial package services like Parcel Select and Parcel Select Return.

USPS spend on domestic air in 2018 was $2.9 billion, 21% higher than in 2007 and 46% higher from its lowest point recorded in 2010. Figure 17 shows how much USPS has spent on airmail in the domestic and international segments. The domestic competitive category accounts for most of the growth, mainly fueled by the increase of priority and express parcels carried via air.

Figure 17 - USPS Domestic Air Spend by Category 2007 – 2018



Source: Cargo Facts Consulting analysis of USPS Financials

This growth has provided business opportunities for a range of suppliers across the transportation and logistics business, but in particular for express carriers such as FedEx and UPS that have seen a large increase in revenues generated with the United States Postal Service. Table 4 provides and overview of the top air express and airline related supplies to USPS.

Table 4 - USPS Top Contractors 2016- 2018.

Rank	USPS Supplier	FY 2018 Spend, $ Millions	FY 2017 Spend, $ Millions	FY 2016 Spend, $ Millions
1	FedEx	2,001	1,610	1,679
5	UPS	206	172	169
10	United Airlines	167	165	161
21	Kalitta Air	102	83	78
23	American Airlines	98	93	86
25	Delta Airlines	85	74	72
33	Northern Aviation Services/ Aloha	59	56	57
53	Alaska Air Group	39	37	31
75	Everts Air Alaska	31	27	29
87	Japan Airlines Co., Ltd.	26	20	22
136	Lynden Air Cargo	15	13	14

Source: Hush Blackwell (Feb 2019, 2018, 2017), for year ended September

5.3 Postal Networks: adapting to the e-commerce expansion

In order to survive, postal companies must remain competitive and for that, they need innovate and provide an enhanced customer experience and service offering. Those players willing to innovate are looking to optimize their operations in the areas of delivery, transport, pick-up, sorting and handling and we have observed some of these postal companies investing in modernizing their logistics facilities to support the grow of e-commerce parcel market, setting them up for near-term success in the parcel handling and distribution segment which is rapidly becoming their most profitable sector.

Postal networks are working on automating their logistic centers with higher processing capacity, allowing them to meet all delivery time requirements and improving the tracing and tracking information so customers can manage volumes in real-time and more efficiently. Some of these initiatives include the adoption of new automation technologies to support production and sorting processes and the implementation of lean production systems with the goal of reducing the number of full-time employees across various sites. The long-term objective with this labor reduction is to lower operating costs.

In addition to the automation of centers, postal companies in North America and Europe are investing in refreshing their ground fleet with electric delivery vehicles to address growing environmental awareness and the need for reduced operating costs. A high share of this investment is aimed to infrastructure and information technology improvements and it is focused on the parcel business divisions.

Our research also shows that postal companies are investing in new delivery models which include evening and weekend deliveries. To enhance this service, we have seen the largest postal networks worldwide trying to enhance their last-mile delivery options by introducing automated parcel lockers. This is a great option for the delivery of postal and parcel items where the customer receives a unique code that is scanned at the locker's monitor for secure collection of the item. Usually, RFID technology is used, enabling the end-user to securely receive, drop-off, transfer and store parcels. Some other features include locker reservation and monitoring or remote system management.

Last-mile delivery providers appreciate this approach since it lowers shipping costs and protects the consumer from price increases or a parcel that cannot be delivered out of business hours. So far, the customer experience has proven to be positive even though proximity is essential for the success of a parcel locker network. We have recently seen the expansion of these lockers to petrol stations, supermarkets, parking lots, shopping malls and other public spaces. This service is currently in a rapid expansion and soon, more customers will have parcel lockers close to their residences making this approach more convenient for both, end-users and last-mile delivery providers while minimizing the distance end-users must travel to collect their items. Another benefit of this system is the high delivery success rate since the first delivery attempt at a locker is certain while deliveries at home show higher failed delivery attempts, sometimes requiring a trip to the postal office later to receive the parcel. In summary, lockers have proved to be operationally effective offering a high customer experience.

Post offices are undergoing a transformation by incorporating a new customer service model with more points of access to all service offerings. There is a significant challenge remaining: the number of addresses to which postal enterprises deliver grow steadily each year while the number of pieces of traditional mail to each address decreases sharply.

5.4 The Universal Postal Union (UPU) and Cross Border E-Commerce

Established in 1874, The Universal Postal Union (UPU) is a special agency of the United Nations (UN) created with the goal of coordinating postal agencies among member nations. In the absence of individual bilateral agreement between postal authorities, UPU arrangements regulate onforwarding costs and service requirements for mail and parcel volumes moving between postal networks.

In October 2018 the United States informed the UPU of its decision to withdraw from the organization, effective in October 2019. Following the US notification to the UPU, Member States will be meeting in Geneva from 24-25 September 2019 to discuss implementing a new system. The US, along with a number of European countries, have raised concerns that the current system benefits countries such as China that are still classified as 'developing countries' and as a result benefit from lower terminal dues. Terminal dues are fees that post offices charge each other for the delivery of mail. The US stated that this costs its taxpayers $300 million per year.

However, Cargo Facts Consulting believes that over time UPU terminal dues may become less relevant as cross border e-commerce moves towards a more controlled logistics chain which involves cross border movements taking place under a standard rather than CN38 postal waybill, with post-clearance onforwarding taking place under bilateral agreements between postal companies. In this context, changes to de minimis legislation in key destination markets also has a negative impact on the attractiveness of uncontrolled supply chains. For example, in mid-2018, Australia dropped the A$1000 tax free threshold for online purchases from abroad. Following this move all purchases are now subject to 10% Goods and Services Tax (GST). By 2021 the EU will also do away with de minimis thresholds. Previously, imports from outside the EU up to a value of EUR 22 per shipment were not subject to Value Added Tax (VAT). In future VAT will apply to all cross-border purchases.

The UPU oversees the Express Mail Service (EMS) program, a global service with the most customer access points in the world, providing last-mile coverage worldwide and supported by a premium postal delivery network. Some of its features include end-to-end tracking, priority handling, acceptance at any post office, pick-up from customer’s premises, signature at delivery and delivery to addressee’s premises. However, since cross-border international deliveries require the involvement of two postal companies, the EMS features vary depending on the services offered by each postal agency. EMS claims to be the fastest postal product, combining visibility, speed and reliability with an excellent customer service which continuously improves performance and responsiveness to meet the demands of e-commerce.

The UPU also has an integrated e-commerce program called the ECOMPRO whose primary function is to develop e-commerce-related strategies taking into consideration current postal industry standards, market issues, payment providers and other IT tools. This example of international cooperation is crucial to ensure the continuous penetration of e-commerce across postal agencies.

Moreover, the UPU has launched programs across the world such as the Ecom@Africa with the aim of ensuring the development of e-commerce through the African postal network, providing small and medium-sized businesses easier access to local and international markets by simplifying projects in letter-mail and traditional postal services.

6. Express Networks

Key findings:

- Express carriers have traditionally played an important role in the distribution of e-commerce, both in their regional and cross border networks.
- Across the express business, the share of business-to-consumer shipments increasing faster than business-to-business shipments and currently stand at approximately 48% of shipment volumes.
- However, express carriers risk being cut out of part of the business as e-commerce platforms insource their regional distribution networks, and as postal companies become more active in cross-border fulfillment.
- In recent times there has been a decoupling of integrators from e-commerce platforms as express carriers develop and expand their own end-to-end e-commerce products.

6.1 The Role of Express Carriers in E-Commerce Distribution

While postal networks are the primary fulfillment option for e-commerce packages, all the major global and regional integrators play an important role in both cross border as well as domestic distribution. In the context of this report we have taken an in-depth look at the e-commerce product offering, current and expected future exposure to the business. Specifically, we have looked at DHL and its Indian subsidiary Blue Dart, FedEx, UPS, SF Express, EMS/China Postal Airlines and Aramex. Detailed profiles can be found in Appendix B. All of these but Aramex have their own dedicated air networks. For the purposes of this analysis we have excluded Purolator (Canada), Estafeta (Mexico), YTO (China), Toll (Australia) as well as the express air operation run by Australia Post. Before the end of 2019, we will be publishing a more detailed analysis of the major global and regional express operators that focuses on the overall (and not just e-commerce-related) express business which will include those additional express operators not discussed here.

Express companies participate in the e-commerce package delivery and fulfillment business on different levels, namely as:

- **Subcontractors to e-commerce platforms and major retailers**: both FedEx and UPS generate significant volumes from companies such as Amazon, Walmart or Target. The bigger the ground operation, the more likely that an express carrier generates substantial revenues from business-to-consumer packages.

- **Subcontractors to postal authorities**: for example, in 2018 the United States Postal Service spent $2 billion with FedEx and $206 million with UPS (see Table 4) which included a sizeable portion for airport to airport delivery of priority mail and priority mail express. These volumes ultimately included e-commerce packages shipped via the Postal Service.

- **As a service provider for cross-border fulfillment**: Many of the customers in this segment are smaller to mid-sized retailers and major brands who operate their own-e-commerce platform independent offerings. In 2018, DHL, Fedex and UPS accounted for 3%, 1% and 1%, respectively, of cross border e-commerce deliveries, according to a global IPC purchaser survey. However, this number understates the role of integrators in long haul cross-border fulfillment as it is skewed by intra-regional cross-border transactions that are essentially domestic transactions (such as within the EU). DHL noted that in 2018, 30% of its time definite international (TDI) shipments were from business-to-consumers.

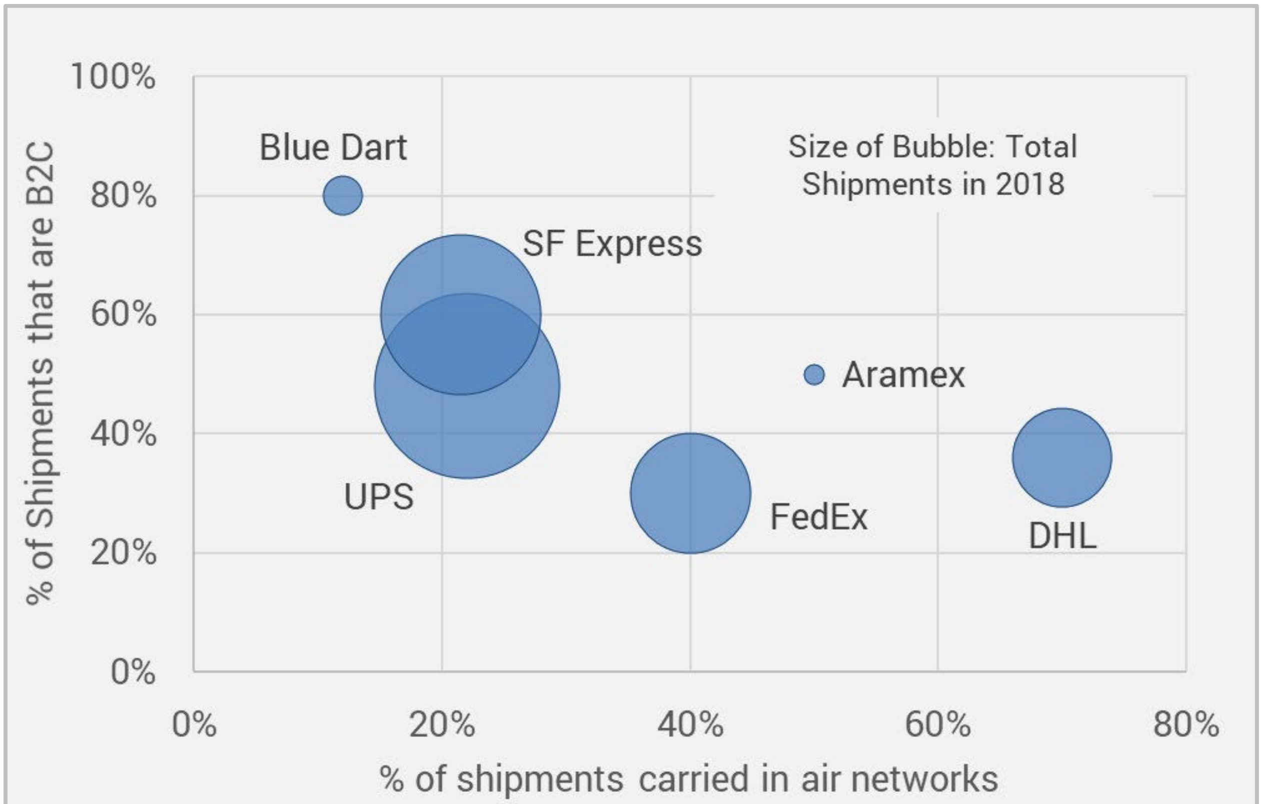
6.2 Express Carrier Exposure to the E-commerce business

While all express carriers agree that the e-commerce is the key driver of future growth, they are less specific about the current level exposure of their businesses to this type of (primarily business-to-consumer) traffic. Our research has found that the biggest dependence on e-commerce traffic is in ground rather than air networks and that intercontinental and regional air networks carry a more diverse mix of traffic with business-to-business volumes outweighing business-to-consumer volumes.

Across the express business, the share of business-to-consumer shipments that is increasing faster than business-to-business shipments currently stand at approximately 48% of shipment volumes. Figure 18 (next page) illustrates our analysis of the share of business-to-consumer vs shipments carried by air for key global and regional express carriers. While FedEx, and DHL are primarily business-to-business focused air express providers, UPS, SF Express and Blue Dart operate extensive ground and last mile networks with maximum coverage.

We find that increasing e-commerce package traffic has been positive for utilization of sort facilities and both air and ground linehaul networks but is increasing last-mile delivery costs due to the requirement to deliver to lower-yield shipments to lower-density locations. Moreover, the increase of business-to-consumer traffic in express networks has seen a decline of revenues per package particularly in domestic networks.

Figure 18 - Express Carrier Share of B2C vs Share of Shipments Carried by Air



Express carrier exposure to individual e-commerce platforms varies by company. While FedEx generated less than 1.3% of its revenue with Amazon (about $906 million), we estimate that UPS exposure is much larger. However, no single customer accounts for more than 10% of the company's total revenues (10% being $7.2 billion). By comparison, Amazon accounted for about 8.3% or about $5.8 billion of USPS' revenue in 2018. A sizable portion of this flows back to FedEx which generated $2 billion in revenues with the postal service as part of its contract to provide airport to airport service for the movement of priority mail and priority mail express. Amazon's total 2018 shipping bill was $27.7 billion.

In China we estimate that Cainiao shareholders and logistics partners YTO, SF, STO, Yunda, and ZTO -- each of which have a 1% stake in the company -- generate a significant portion of their revenues through Alibaba related traffic. Unfortunately, there is insufficient financial data available on these companies to compile a detailed profile, other than for SF Express.

6.3 The Great Decoupling: Strategies for Shifting Focus away from Platforms

The growth of the big e-commerce platforms with own-controlled fulfillment networks are creating potential competitors for the big integrators. With its own parcel network open to the general public, JD.com and Otto are the furthest in terms of creating their own integrated platforms.

In their financial filings, all the integrators acknowledge the threat of emerging competition from their customers. Some have chosen to draw a line under a selection of their platform relationships while others remain firmly aligned. In 2019, FedEx cancelled both its Ground and Express contracts with Amazon to focus on a future without the e-tailer and platform. UPS, meanwhile remains firmly aligned with Amazon.

However, all integrators have been making changes to their businesses to profit from e-commerce growth possibilities, without having to take the pain of higher last-mile delivery costs. Some companies are successfully implementing programs that involve concurrent investments and measures to reduce costs Our analysis has identified a series of actions that can help express carriers achieve this, including:

- **Service Expansion**: 7-day deliveries and pick-ups, same day capabilities, later cut offs. For example, both FedEx and UPS will move to offer 7-day delivery starting in early 2020.

- **Infrastructure investments**: new sorting and fulfillment facilities to reduce unit costs as well as cater for increased volumes.

- **IT Investments**: for example, to allow residential customers to choose delivery times, saving the costs associated with missed deliveries.

- **Alternative Last-Mile Channels**: through retail outlets or other pick up points. For example, FedEx is adding 8000 additional points to its retail network through its recently announced Dollar General alliance. All of the integrators use retail locations as part of their worldwide network to reduce the cost of last-mile delivery.

- **Cost Reductions:** shift from air to road (e.g. FedEx Express making greater use of TNT road network), realignment of their own networks (e.g. FedEx bringing Smartpost back inhouse).

- **Offerings for Small and Medium-Sized Business and cross border e-commerce:** this goes back to the root of the express business, which has traditionally focused on providing time-definite services including customs clearance to small and medium-sized businesses. However, the need for economies of scale mean that express carriers cannot afford to ignore e-commerce platform business opportunities.

More detail is provided in the profiles on each of the integrators in Appendix B.

7. Air Cargo Networks and Contract Flying

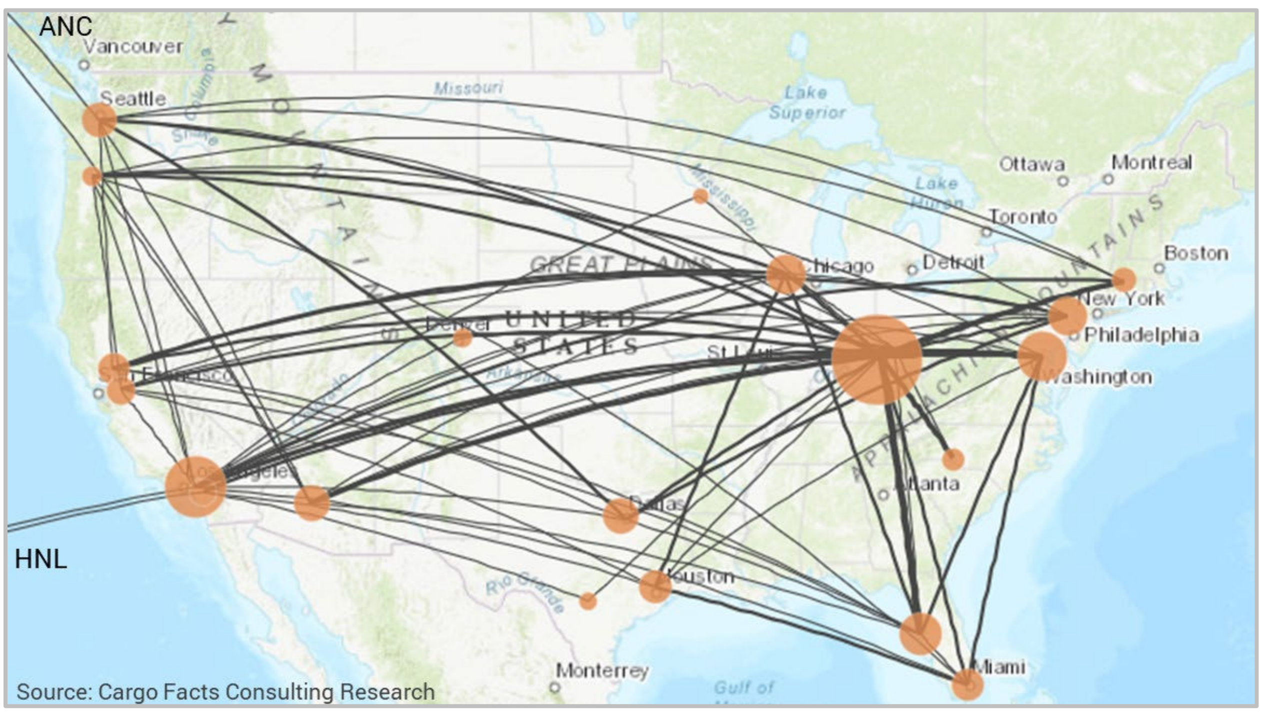
Key findings:

- We estimate that about 16% of global air cargo is e-commerce traffic.
- So far Amazon is the only e-commerce platform that has invested in developing a substantial dedicated air network in the United States and Europe to support its operations.
- Other platforms have not made similar moves and continue to rely on subcontractors for air lift requirements. However, there are significant amounts of dedicated e-commerce charter flights on intercontinental services.

7.1 All about Amazon: Dedicated E-Commerce Networks and Contract Flying

In order to meet their air capacity requirements, the different e-commerce platforms have generally pursued partnerships rather than setting up dedicated air networks. Amazon is a notable exception to this rule, with both the growth and scale of its dedicated network dwarfing the size of those operated by other e-commerce platforms. At time of writing, Amazon's dedicated air network comprised an extensive 45+ aircraft network in the US serving 23 air gateways (see Figure 19) and a smaller 5-8 aircraft network in Europe (see Figure 21) .

Figure 19 - Amazon Air US Network, Mid 2019



In the United States, Amazon relies on two airline groups to meet its dedicated lift requirements – Atlas Air World Wide Holdings (Atlas) and Air Transport Services Group (ATSG). We estimate that in 2018 Amazon spent a combined $625 million with these airlines, representing about 2% of the total 2018 US domestic airfreight and express revenue. As Amazon expands its network, we expect that this figure could increase to over $1 billion in by the end of 2021 as the dedicated fleet grows from 40 at the end of 2018 to 70 at the end of 2021.

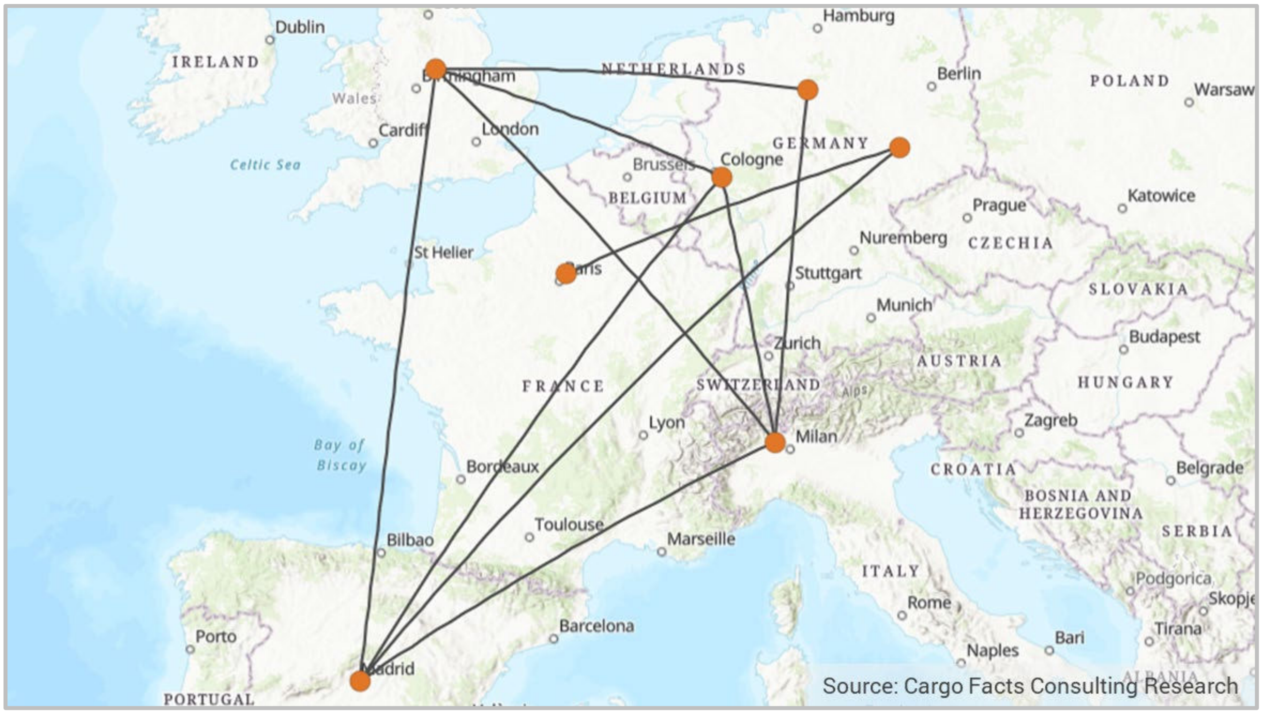
Between late 2015 when Amazon first commenced dedicated air operations with a fleet of 5 aircraft from ATSG and March 2019, the number of flights has increased from 300 to 2500 flight segments and 65,000 metric tonnes per month. At current operating patterns we expect this figure to grow by 50% to 100,000 tonnes per month by the over the next three years. Figure 20 provides an overview of how traffic on dedicated US Amazon Air flights have evolved.

Figure 20 - Traffic on Dedicated US Amazon Air Flights 2015 - 2019

Source: Cargo Facts Consulting, Form 41 Carrier Statistics

Amazon's current dedicated European air network is much smaller than its US network with less than 20 flight sectors versus in Europe more than 110 operated sectors per day in the US. The largest part of the network is operated by ASL Airlines, a privately-owned European contract operator as well as some flights by European Air Transport (EAT), a DHL subsidiary (see Figure 21). Routes and flight patterns are less established than in its United States network.

Figure 21 - Amazon Air European Network, Mid-2019



Source: Cargo Facts Consulting Research

Table 5 provides an overview of the arrangements between Amazon and its two main capacity providers, which comprise a mix of long-term aircraft leases, operating arrangements and potential shareholdings. We do not find that these agreements have had a negative impact on the performance of these companies.

Table 5 - Comparison of Atlas and ATSG Arrangements with Amazon

Item	Atlas Air Worldwide Holdings (AAWH)	Air Transport Services Group (ATSG)
Scope	Leasing and operation of 767-300 and 737-800 aircraft.	767-200 and 767-300 freighter aircraft operation and leasing, cargo handling and logistical support.
Start Date	May 2016. August 2016 and November 2018 20 767-300 were placed into service. 737-800 ops started in March 2019.	8 March 2016, following a Sep 2015 trial with five aircraft.
Term	Initial term of 7 years (with an option for a further three years) for CMI agreement and 10 years for aircraft leases.	Initial term of 5 years, extended in Dec 2018 by a further five years to 2026 with an option for three more years. Cancellation 180 days notice with penalty payments reducing over contract length.
Aircraft Lease	Dry lease of aircraft through Titan subsidiary of 20 767-300 freighters for a	Initial 5 year lease via CAM on 12 767-200 and 7 years for 8 767-300. In December 2018 Amazon signed for an additional 10

Item	Atlas Air Worldwide Holdings (AAWH)	Air Transport Services Group (ATSG)
	term of 10 years. The 737-800 aircraft are leased from GECAS.	aircraft to be added in 2019 and 2020 and extended existing 767-200 and 767-300 aircraft by 2 and 3 years to 2023 and 2026/27, respectively.
Aircraft Operations	CMI arrangement for 7 years for each aircraft, with an option to extend by 3 years. Same arrangements for both 767-300 and 737-800 aircraft.	Aircraft operated by ABX Air and ATI pursuant to a CMI arrangement
Ground Services	None.	Management of ground services by ATSG subsidiary LGSTX.
Investment Agreement	Warrants to purchase up to 20% of AAWH and a further 19.9% for revenue increases beyond the initial 20 aircraft for incremental business of $1 billion (or about $140m/year assuming a spread over 7 years).	Warrants to purchase up to 33.2% of ATSG und up to 39.9% by leasing a further 17 aircraft by January 2026.
Outlook	Total fleet will comprise 20 767s and 5 737s by end of 2019. Opportunity to operate up to 15 more 737-800 freighter by May 2021 at Amazon's discretion, although this business could also go to a third party.	Operating fleet will grow to 30 by the end of 2020 with the addition of 5 aircraft in 2019 and 5 in 2020. Current arrangements provide incentive for an increase to 47 by 2026.
Contract Value	$325m (2018).	$300 million (in 2018, including approx. $60 million in fuel expenses).
Exposure to Amazon	Atlas does not provide details on exposure to Amazon, but we estimate that Amazon accounted for approximately 10-12% of total revenue in 2018.	Between 2016 and 2018 Amazon share of total revenue increased from 18% to 27%. Exposure in 1H 2019 down from 29% to 19% as a consequence of Omni acquisition. Overall company revenues increased by 40% between 2016 and 2018, most of which was due to Amazon.
Impact of agreement on company profitability	Profit margin development shows no clear positive of negative trend as a consequence of Amazon business. Overall revenue increased by 46% between 2016 and 2018. Of this only about 39% is attributable to Amazon.	Profit margin development shows no clear positive nor negative impact of Amazon business.

Amazon has so far not made moves towards dedicated air operations in any markets outside the United States and Europe. However, in August 2019, its Canadian air capacity provider Cargojet announced that it had issued warrants to Amazon to purchase up to 14.9% of the company for meeting 7.5 year targets of up to CAD 600 million (US$ 450m). This could be a precursor to an arrangement for dedicated operations.

7.2 Dedicated Flying for Other Platforms

Our analysis of opportunities for dedicated e-commerce contract operations has primarily focused on Amazon's expanding network. The other two e-commerce giants JD.com and Alibaba do not operate similar dedicated networks but rely on partnerships or straight commercial arrangements with other providers. This includes operations such as a 737-800 Atran HGH-VKO-RIX flight from Cainaio and some other dedicated China to Liege (Belgium) charters. As in the United States, the majority of Chinese domestic e-commerce moves by ground but a number of Chinese express operators operate substantial air networks that carry business-to-consumer E-commerce traffic. However, our research has found that the share of e-commerce traffic is higher in China than other express networks outside China.

JD.com has a partnership with HNA subsidiary Tianjin Air Cargo, but this only accounts for limited capacity. Alibaba has stakes in YTO Express (11%), ZTO Express (10%), STO (14.60%) and Best Express (29%). YTO, SF, STO, Yunda, and ZTO each have a 1% stake in Cainiao. Figure 22 and Figure 23 provide an overview of the air networks operated by SF Express and YTO Express, respectively.

Figure 22 - SF Express Air Network, July 2019

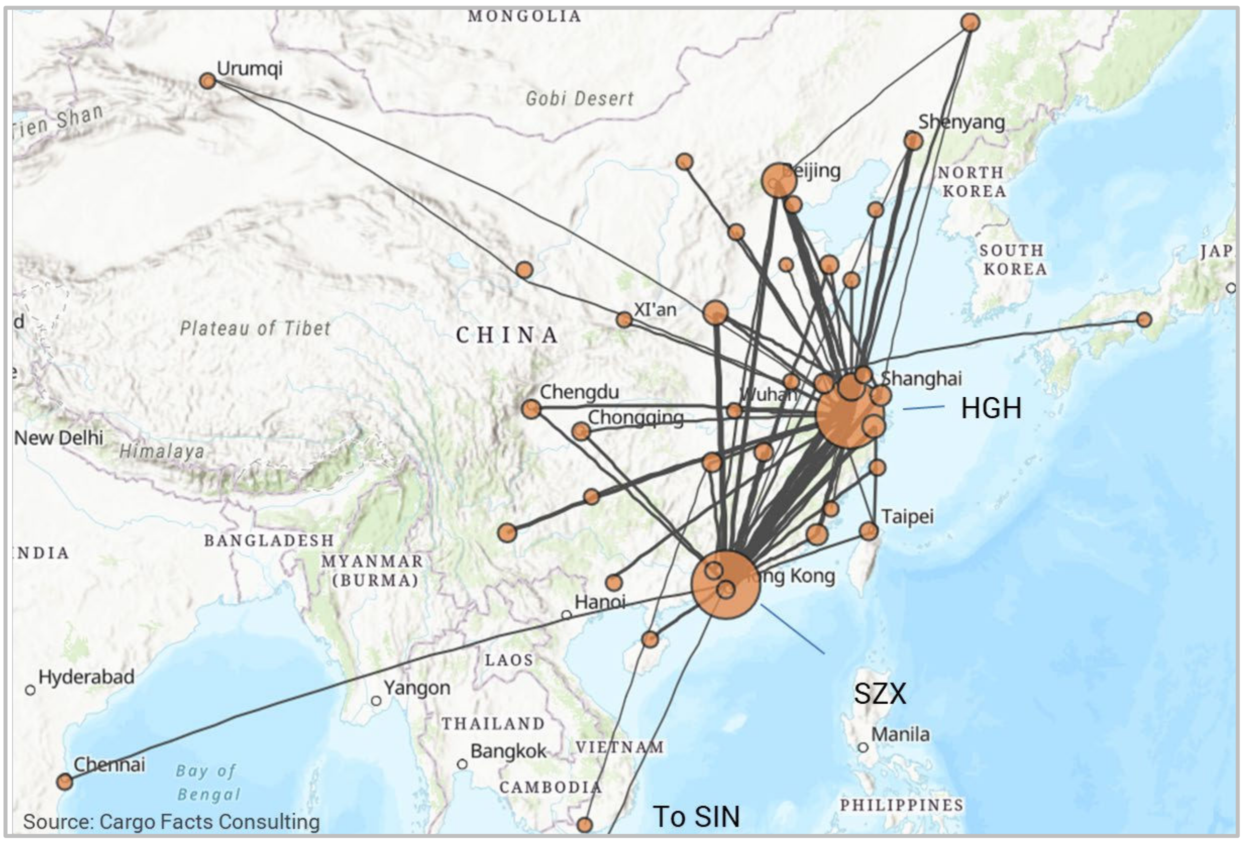
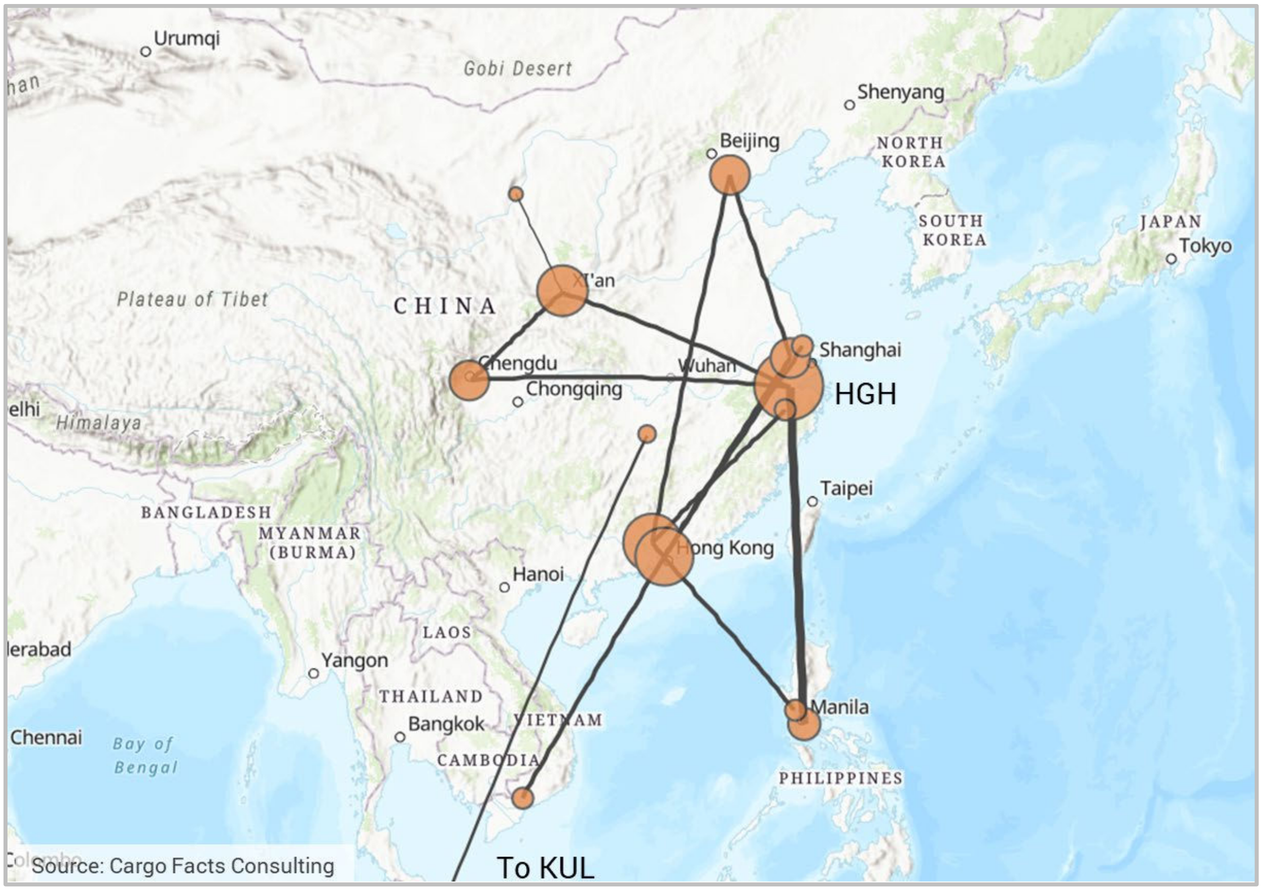


Figure 23 - YTO Air Network, July 2019

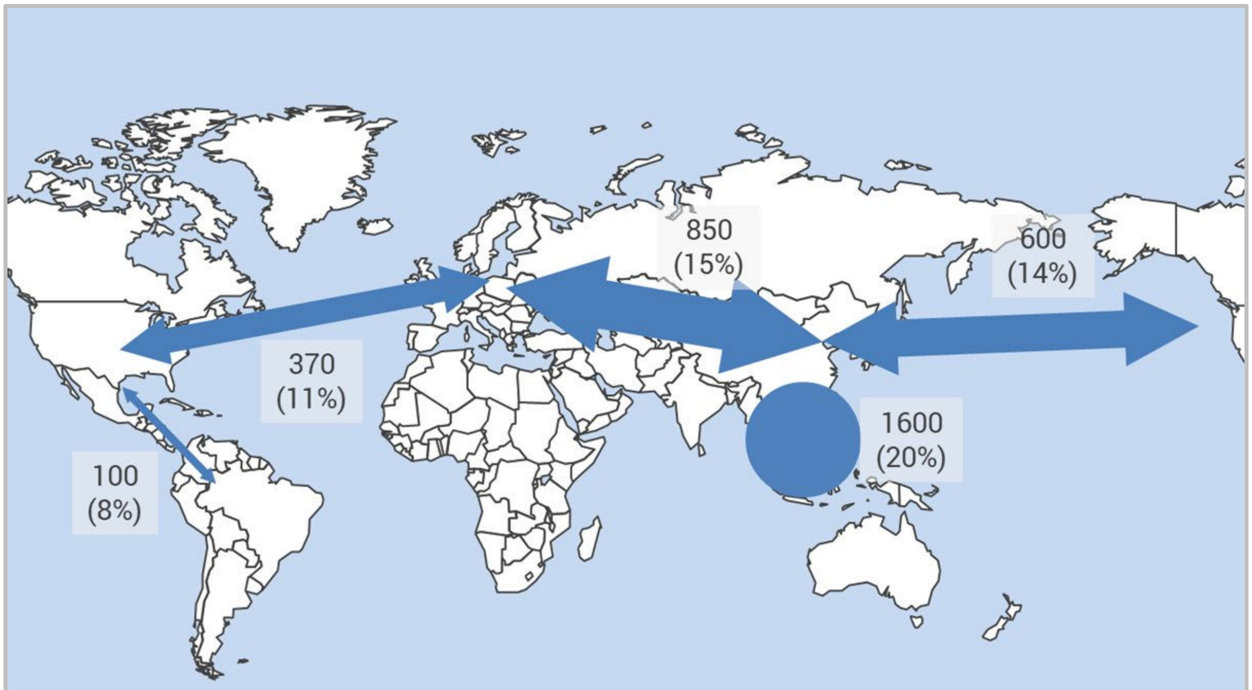


7.3 The Invisible Traveller: E-Commerce in Scheduled Air Cargo Networks

Most airlines have very little idea of how much e-commerce traffic they are moving through their networks. Estimates range between 8% - 15% of air cargo volumes. We estimate that 16% of global air cargo is e-commerce. Air Freight remains primarily wholesale business moving supply chain and perishable cargo between businesses. As mentioned earlier, we do not view the replenishment of e-commerce fulfillment centers as e-commerce traffic as its characteristics and service requirements are similar to cargo being transported to restock the inventories of large fixed location retailers and wholesalers.

Figure 24 provides an overview of our estimate of cross border e-commerce flows through airfreight networks. This includes traffic moving in express, general airfreight as well as postal networks. Overall, postal traffic and express traffic account for 4% and 17% of global air cargo traffic, respectively. By our estimates, some 70% of postal and 30% of international express traffic are e-commerce – this is a combined 8% of total cargo traffic. The remainder consists of e-commerce consolidations travelling under an air waybill as normal freight traffic for onward distribution in domestic or regional package delivery markets.

Figure 24 - Primary Cross Border E-Commerce Air Freight Traffic Flows



Source: Cargo Facts Consulting, based on market sizes in tonnes in Boeing 2018/19 WACF

E-commerce share is higher on outbound Chinese markets than other Asian markets. However, it is worth noting that China is also an important inbound market for e-commerce traffic from Europe and to a lesser extent also the United States. For inbound markets such as Japan, the United States is as important as China in terms of cross border purchases and in the case of Korea, the United States is the largest source country, according to research by IPC.

The reason why there is little visibility on the amount of e-commerce moving in global air cargo networks is a direct consequence of how this freight moves. The majority of cross border e-commerce moves under a CN 38 postal airwaybill or as a normal freight consolidation which is cleared at destination and then dropped into regional or national postal and other parcel distribution networks.

There are a number of so-called e-commerce consolidators that have specialized in moving this type of traffic. E-commerce consolidators bundle cross-border traffic from sellers and tender these as regular air freight to scheduled or charter cargo airlines. These companies will work together with partners at the destination end who arrange for customs clearance and then generally drop shipments into national postal systems. An example of such an arrangement is one between Pacific Air, Turkish Airlines and the Turkish Post. Some important companies that operate in the e-commerce consolidation segment include 4PX (moving approximately 2000 tonnes per month), An Ping (3000-4000 tonnes) and Fafalux (2000 tonnes). There are also a multitude of smaller companies which may co-load traffic on other freight forwarders. It is worth noting that many traditional freight forwarders and logistics providers are not geared toward e-commerce fulfillment in the business-to-consumer (or consumer-to-consumer segment). This is partly due to their existing networks and IT systems. For safety and liability reasons, there is also a reluctance to accept traffic that may contain insufficiently declared dangerous goods including batteries.

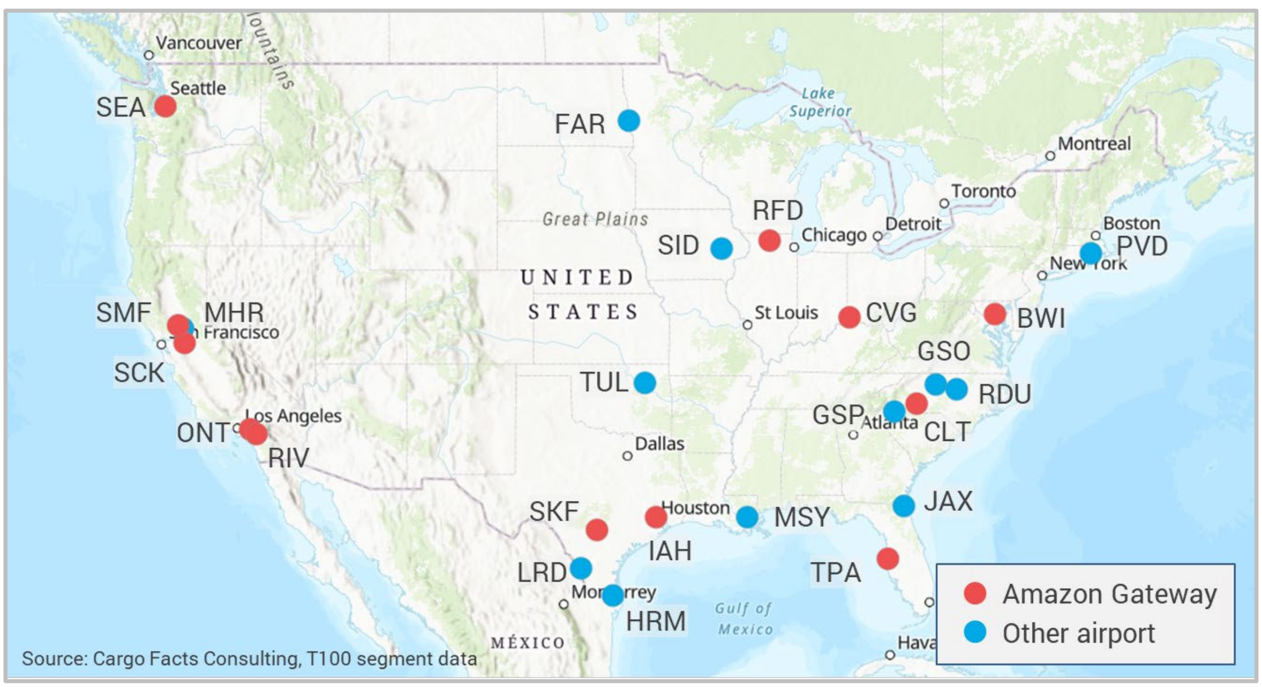
While much of this freight moves on scheduled cargo flights to main air cargo gateways, there is a substantial amount of dedicated charter traffic moving from key Chinese e-commerce gateways and cargo hubs (such as Hangzhou or Shenzhen) into airports across Europe and Russia.

Some airlines have been making moves to take a more prominent role in e-commerce distribution, but there are some difficulties in implementation due to their traditional role as mid-chain capacity providers. Some initiatives include Heyworld, a subsidiary of Lufthansa Cargo founded in 2019, as well as improvements to processes and systems of other airlines such as Emirates or Qatar Airways. In general, we feel that airlines are not in a position to play an integrated role in this business segment.

7.4 E-commerce flying: A Springboard for Airport Growth

The growth in domestic as well as cross border e-commerce is creating opportunities for a number of secondary and cargo-only airports, many of which have been struggling to attract or increase cargo operations. Figure 25 shows 26 airports (with more than 3 cargo departures per day) in the United States that have seen more than 20% growth between 2016 and 2018. About half of these are locations where Amazon has set up air gateway operations over the last years.

Figure 25 - Fast Growing US Cargo Airports



We feel that dedicated e-commerce operations, particularly if accompanied by investments in infrastructure, serve as a potential anchor for attracting additional cargo operations to the airport. Examples of this would be Riverside (RIV), Tampa (TPA), San Antonio (SKF) or Stockton (SCK), which five years ago had very limited cargo operations, if at all. However, even established hubs such as Cincinnati (CVG) have seen a boost in volumes and planned investments. Cargo departures at CVG increased by 70% between 2016 and 2018. In early 2019 Amazon announced plans to invest $1.5 billion in hub infrastructure at the airport.

In general, we have observed strong interest in co-locating e-commerce distribution facilities in proximity to major express hubs or airports with good access to multiple markets. Both established as well as secondary airports can position themselves to participate in growth.

In mid-2018, Alibaba's logistics arm Cainiao announced plans to establish a network of six global hubs to support its objective of providing 72-hour delivery worldwide. This would include warehousing and logistics facilities in Liege, Moscow, Dubai, Kuala Lumpur, Hong Kong and at its home base in Hangzhou (see Figure 26). These plans create substantial development opportunities for these airports as well as other providers offering handling or air lift. Cargo Facts Consulting sees the potential for other airports particularly across Europe, Southeast Asia, the Middle East and Africa to position themselves for similar opportunities as other platforms such as JD.com or Jumia expand their reach.

Figure 26 - Cainiao Global Hubs

E-commerce opportunities are not limited to the large platforms. Airports have multiple opportunities to participate in the developing e-commerce market and we have observed partnerships and collaborations between companies and postal networks with airports worldwide to support the continuous growth.

For example, the Miami-Dade Airport system authority has invested in a strategic planning to leverage the rapid growth in e-commerce and Miami's geographical position as an international center of cargo operations between the United States and Latin America. The program includes a comprehensive evaluation of the current cargo infrastructure, e-commerce trends, challenges and regulations. Miami (MIA) handles more international freight than any other airport in the United States and wants to position itself as an e-commerce hub in the Americas and worldwide. An example of this investment is the recent announced partnership between Miami Intl. Airport and Correios, Brazil's post office. "Compra fora" is a new expedited e-commerce service that accommodates packages of all sizes originating anywhere in the world to be pre-cleared by Correios in Miami and shipped anywhere within Brazil as domestic cargo.

Zaragoza (ZAZ) in north-eastern Spain recently became the second busiest airport in the country for cargo operations, surpassing Barcelona. The local government is investing 25 million euros to boost the international cargo capacity through new facility and infrastructure improvements. In 2018 Zaragoza handled 166,834 tonnes of cargo, a 17% increase from the same period in the previous year. Inditex (parent company of Zara) is behind this cargo boost in the region and the reason why Zaragoza is becoming one of the world's most important air cargo hubs. Inditex is the largest fashion company in the world, operating in 93 countries and with over 7,200 stores open and is the main customer for all cargo airlines in Zaragoza. Turkish Cargo, Korean Air Cargo, Cargolux, Emirates Skycargo, Atlas Air and AirBridge Cargo are among the cargo operators expanding their presence in ZAZ to meet the demand for exportation of Inditex-branded clothes.

8. Ground Networks

Key findings:

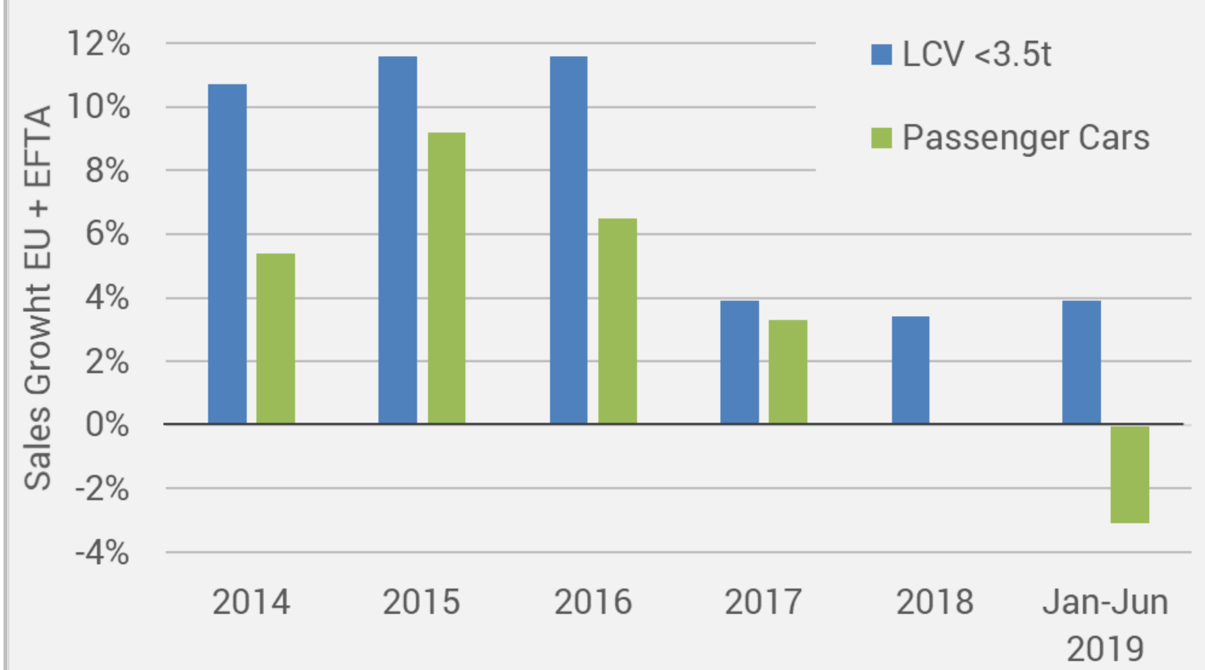
- As with postal and express companies, parcel delivery and courier companies have seen network volumes increase.
- However, in their quest for control and lower distribution costs, the big e-commerce platforms are pushing for cost reductions, insourcing last-mile networks or developing alternative non-courier delivery models.
- However, constraints in finding low-cost labour may prevent platforms from switching to lower-cost dedicated couriers as quickly as they would like.
- Ground logistics providers will need to reassess their exposure to different platforms in assessing future growth opportunities and preparing for potential loss of business.

8.1 Last Mile Network Growth

Strong growth in online shopping has led to increased demand for last-mile delivery services as well as linehaul to, from and between fulfillment centres. E-commerce platforms have made substantial investments in -- and incur significant cost to run -- growing fulfillment networks.

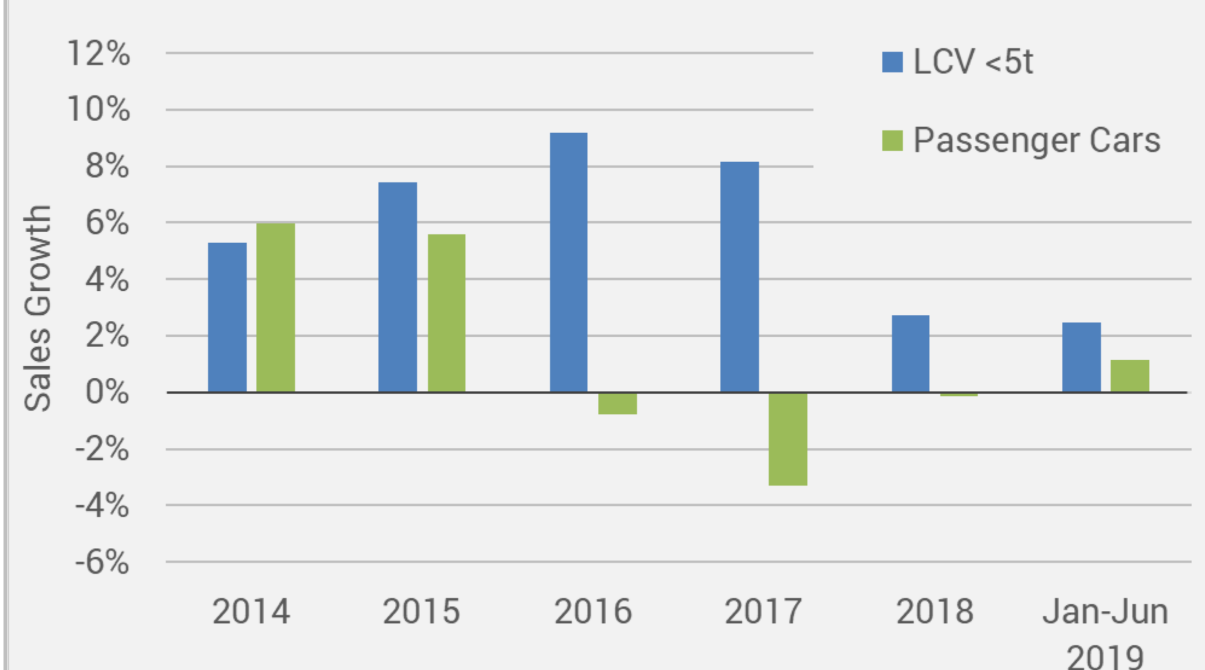
Sales of light commercial vehicles have hitherto been a reasonable proxy for growth in last-mile fulfillment networks. Figure 27 shows a comparative overview of growth in sales of light commercial vehicles (LCVs) and passenger vehicles across the European Union and EFTA Countries (Iceland, Norway and Switzerland). Although LCV sales growth in the past two and a half years has dropped, they have consistently outperformed sales of passenger vehicles in every one of the last five and a half years. LCV sales growth in United State and China has generally outpaced passenger vehicle growth. Figure 28 shows the development for the United States and Figure 29 shows this from China. Meanwhile, in Japan, which is facing labour shortages across multiple sectors, the growth rate of light commercial vehicle sales as well as the ratio of passenger to light commercial vehicle sales have been inconsistent (see Figure 30).

Figure 27 - European Light Commercial Vehicles vs Passenger Car Sales Growth 2014 – 1H 2019



Source: European Automobile Manufacturers Association (ACEA)

Figure 28 - US Light Commercial Vehicles vs Passenger Car Sales Growth 2014 – 1H 2019



Source: International Organization of Motor Vehicle Manufacturers

Figure 29 - China Light Commercial Vehicles vs Passenger Car Sales Growth 2014 – 2018

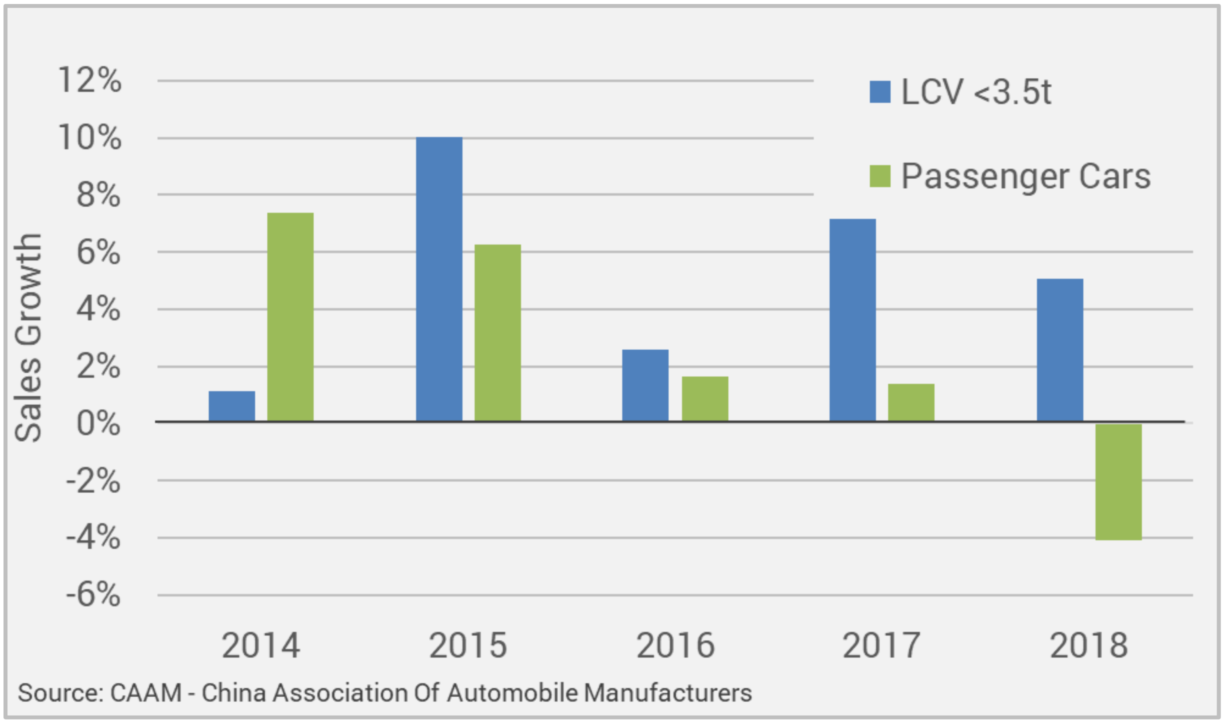
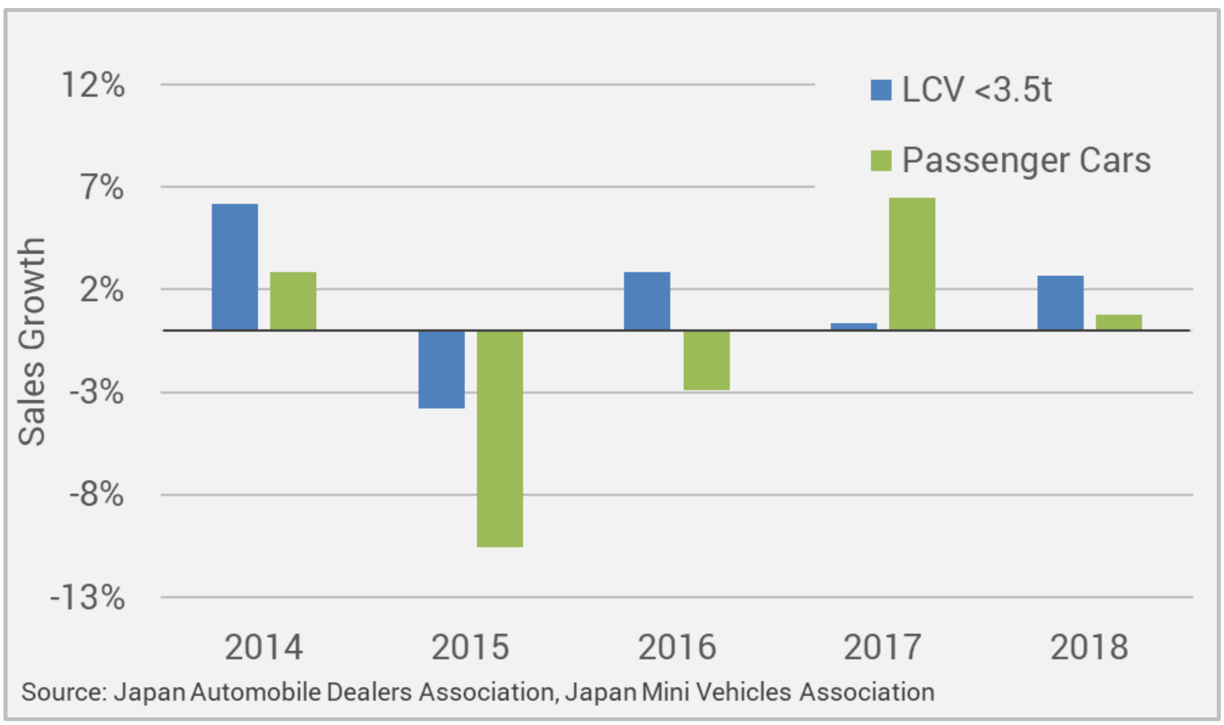


Figure 30 - Japan Light Commercial Vehicles vs Passenger Car Sales Growth 2014 – 2018



The direct impacts from e-commerce growth in storage and fulfillment network shifts have a cascading effect on last-mile delivery as next-day or two-day delivery needs more distribution and fulfilment centres nearby. Urbanization is also aggravating this issue making traditional transportation models more congested and causing companies to rethink their distribution and delivery approaches.

In the context of domestic transportation, smaller shipments now are traveling shorter distances and those couriers with less-than-truckload (LTL) services have been the direct beneficiaries of the rise of e-commerce. As demand goes up, LTL carriers have been expanding their ground networks and using their terminals for short-term e-commerce warehousing and distribution and operators XPO Logistics and YRC Worldwide have recently ordered new equipment to accommodate the demand and therefore, increase capacity.

Couriers and parcel delivery providers also play a major role in meeting the requirements and challenges that e-commerce retailers have by offering a wide array of services such as international transportation management and dedicated contract carriage. Couriers provide expertise that allows retailers to focus on their own competencies and their established networks can help e-tailers scale quickly by providing localized knowledge and specialized services. Our research shows that there is a direct correlation between ground transportation and financial performance and most of the leading courier operators are investing in ground transportation solutions, which has resulted in revenue growth and an expansion in their fleet and road networks.

General Logistics System (GLS) is a subsidiary of the British postal service Royal Mail and today covers 45 countries (42 in Europe), handling 634 million parcels annually. Its revenue in 2018 was $3.7 billion and its business strategy has focused on acquisitions and partnerships in the last decade, creating an array of complete country delivery networks in Europe and internationally. GLS recently partnered with Estafeta, the second-largest logistics provider in Mexico and it acquired Dicom in Canada and Redyser Trasnporte in Spain.

Another example of how road-based B2C parcel networks are expanding into domestic and cross-border e-commerce deliveries is DPD Group’s dedicated strategy for B2C cross-border deliveries. Owned by La Poste, DPD Group operates in 23 countries and has partnerships with local logistic providers in Africa, Latin America and Asia. DPD’s revenue in 2018 was $8.1 billion.

8.2 What Next: Key Trends in Last-Mile Logistics

So far, the parcel and courier business has benefited from this growth and made investments in additional capacity. However, the combination of rising fulfillment costs and logistics insourcing by the big e-commerce platform threaten to shake up the parcel and courier business. While efficiency gains have been made in terms of fulfillment centre operations, last-mile delivery remains costly and labour intensive. And as shipping is often free, e-tailers have generally been unable to recover shipping costs from their customers. Depending on their exposure to individual platforms, parcel and courier companies risk losing business or will be forced to accept lower yields.

For example, in 2018 Amazon spent $27.7 billion on shipping – or about 10% of its GMV. The largest share of this spend is with third parties, although Amazon has been accelerating the development of its own direct-contracted capacity or rolling out alternative delivery models such as parcel lockers. In 2018, the company placed an order for 20,000 delivery vehicles. It is unclear whether this strategy will lead to lower costs, as its delivery partners tend to operate higher efficiency networks.

Other platforms such as Alibaba rely exclusively on delivery partners for fulfillment. Companies like JD.com or Otto deliver primarily through their own-controlled networks and make these available to third parties to increase efficiencies.

There have been a multitude of start-ups focused on last-mile network innovations, as well as trials and roll out of autonomous vehicles, robots or crowd sources services. Finding labour in countries such as Japan, Europe and to a degree in the US is providing constraints on growth of driver-vehicle based delivery networks.

9. About Cargo Facts Consulting

Since 1978, we have been helping the global air logistics industry make better business decisions and investments. We strive to be the most knowledgeable and highly-valued provider of strategic advice to the global air freight transportation and logistics industry. We provide answers and actionable solutions, not just data and research. We are flexible and creative. We have passion for seeing the implementation of advice that drives greater profits and efficiency. Our staff are a mix of industry veterans and analysts with a passion for the air logistics business and deep technical and quantitative skills.

CFC has provided advisory services to a wide range of clients, including airports, airlines, express companies, service providers, aircraft manufacturers and conversion companies, leasing companies, financial institutions and investment firms. CFC's consulting experience spans projects that encompass airline operations, network planning, fleet planning, route development, air cargo and express market analysis, and aircraft technology.

Cargo Facts Consulting (CFC) conducts extensive and ongoing research into various aspects of the air freight, express and logistics business. Key reports available to subscribers include the annual 20-year freighter forecast and supporting analytical tools, this E-Commerce Logistics Report and Air Cargo Customer Experience Report, an analysis of service quality of airlines and airports.

CFC is affiliated with the New York and Seattle based organization that publishes the monthly Cargo Facts Newsletter (www.cargofacts.com), Air Cargo World (www.aircargoworld.com) and weekly Cargo Facts Update and runs the Cargo Facts Aircraft Symposium in the US, Cargo Facts Asia and Cargo Facts EMEA. Through the media organization, CFC has a unique and high visibility insight into industry trends and individual airport and airline developments as they happen.

Since 2019, CFC – previously also known as Air Cargo Management Group (ACMG) – is based in Luxembourg and has offices in New York and Seattle, as well as further staff located in Spain, Israel and Canada.

Appendix A - E-Commerce Platform Profiles

Appendix A contains logistics profiles of the top global and regional e-commerce platforms. In general, data refers to the most recent full financial year, but where specified has been updated to reflect most recent available quarterly filings.

The profiles include a description of the company, information on scale (in terms of GMV), profitability and growth, geographical scope of operations, main competitors, number of active buyers and sellers, percentage of business from third party sellers, number of items and shipments, as well as key information on the logistics setup. This includes information on the type of fulfillment network, whether it is open to third parties, the cost of the fulfillment network and information on the type of dedicated air network the platform operates, if at all.

Platforms have been grouped in alphabetical order for ease of reference. The platforms included in this Appendix are:

- Alibaba
- Amazon, including separate profiles for the company's European and US operations
- Ebay
- JD.com
- Jumia
- Flipkart
- Mercado Libre
- Otto
- Rakuten
- Shopify
- Walmart
- Wish

Data included in the profiles has been compiled from a range of public and semi-public sources as well as being based on our own assessment and analysis. While we have taken great care in preparing these profiles, we take no responsibility for their accuracy. We welcome your feedback and suggestions, including broadening the scope to include additional profiles

Subscribers of the report will have access to periodic updates to these profiles through the Cargo Facts Consulting Insights platform (www.cfcinsights.com) for the first six months following publication of the report.

Table 6 - Alibaba Profile

Company	Alibaba (Year Ended March 2019)
Description	Founded in 1999, World's largest e-commerce platform. Includes Taobao Marketplace and Tmall. Aliexpress is a global marketplace for international consumers buying from Chinese manufacturers and distributors. Tmall Global allows foreign brands to access Chinese consumers. Tmall world is a platform for overseas Chinese to purchase products from China. 1688.com is a platform for wholesale commerce in China. Alibaba.com provides global and cross border wholesale services. Lazada is Alibaba's e-commerce platform across Southeast Asia (particularly Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam).
Headquarters, Employees	Holding Company incorporated in the Cayman Islands, individual subsidiaries incorporated in China. Cainiao is located in Hangzhou.
Gross Merchandise Value (GMV)	$853b/ RMB 5.7t (on China marketplaces). Total Net Revenue $56.2b. Taobao accounts for 54% of GMV.
Profitability and growth	$13.1b. Cumulative profits last 5 years RMB 290.9t ($42.3b). Average annual GMV growth last 2 years 23%. Tmall has grown faster than Taobao. In the quarter ended June 30 2019, revenue was RMB 115b ($16.7b), an increase of 42% YOY
Main markets	Revenue Share: China Retail (Taoboao, Tmall/ Tmall World) 66% ; International Retail 5%, includes Aliexpress (mainly Russia, USA, Brazil, Spain and France), Lazada (Southeast Asia) and Tmall Global; Chinese wholesale 3% (1688.com); International wholesale 2% (Alibaba.com). IN FY19 Acquired Trendyol (Turkey) and Daraz (Pakistan, Bangladesh).
Main competitors	JD.com
No of active buyers/ users (m)	654m (+18% compared to a year earlier). Most platforms cater to consumers but 1688 and Alibaba.com cater for wholesalers and traders. Alibaba.com has 165,000 paying members who tend to be trade agents, wholesalers, retailers, manufacturers and SMEs active in the import/export busines.
No of active sellers (m)	Merchants on Taobao are primarily individuals and small business. Tmall hosts 190,000 Chinese and international brands and retailers.
% of Business from 3rd Party Sellers	Taobao, Tmall, Aliexpress and Alibaba.com are marketplaces for 3rd party sellers. However, Lazada does sell its own products.
No of items and shipments	25.1b packages originating from China retail marketplaces

Company	Alibaba (Year Ended March 2019)
Own controlled fulfillment?	Cainiao Network, owned 50.3% by Alibaba, founded in 2013. Vision is to be able to fulfil everything within 24 hours in China and 72 hours across the world. Uses logistics partners to run this network. Uses 15 “strategic express courier partners” with 1.6m delivery personnel and 190,000 hubs and sorting locations in more than 700 cities and 31 provinces in China. Lazada also has an inhouse logistics network. Internationally, Cainao and the logistics Arm of Lazada support Lazada, Aliexpress and Tmall World. YTO, SF, STO, Yunda, and ZTO each have a 1% stake in Cainiao. Additionnaly, Alibaba holds a minority stake in three of the country’s top logistics companies; ZTO Express (10%), YTO Express (11%), STO (14.60%) and Best Express (29%). These investments strengthen ties with Chinese courier service giants through cross-shareholding.
% of volumes through own controlled logistics?	33% (estimated)
Logistics network open to 3rd parties?	Yes, supply chain and logistics services are geared to fulfillment. Also offers trade financing and customs clearance. Services are billed to merchants.
Logistics Spend	Cainiao Network Revenues: $2.218b (+120% reflecting full consolidation of company as of mid-Oct 2017 after obtaining control). Prior to this Alibaba had commercial arrangements with Cainaio, although it held 47% equity.
Dedicated Airfreight or Aircraft Capacity	No, but Cainiao partner and shareholder YTO operates an air network.

Reflects financial data up to quarter ended in June 2019

Table 7 - Amazon Worldwide profile

Company	Amazon Worldwide (2018)
Description	2nd largest global e-commerce platform.
Headquarters, Employees	Seattle, 647,000 full and part time employees worldwide
Gross Merchandise Value (GMV)	$277 b
Profitability and growth	$10 b net profit in 2018, cumulative profits 2014-18 were $13.1 b. Average annual growth 2014-18: Net Sales 27%. Fulfillment and shipping costs have grown faster than net sales. Net sales increased 17% to $59.7b in Q1 of 2019 and net income increased to $3.6b from $1.6b in Q1 2018. Net sales increased 20% to $63.4b in Q2 of 2019 and net income increased to $3.1b from $3.0b in Q2 2018.
Main markets	All segments (including Amazon Web Services, which accounts for 11% of total net revenues. United States (69%), Germany (8.5%), UK (6.2%), Japan (5.9%), all other markets (10.5%)
Main competitors	Alibaba
No of active buyers/ users (m)	Not available
No of active sellers (m)	Not available
% of Business from 3rd Party Sellers	58% (compared to 49% in 2014).
No of items and shipments	Not available
Own controlled fulfillment?	Yes
% of volumes through own controlled logistics?	100%. However, Amazon uses third party carriers for delivery.
Logistics network open to 3rd parties?	To third party sellers.
Logistics Spend	Fulfillment costs: $34 billion (compared to $25b in 2017). Shipping costs accounted for a further $27.7b (compared to $21.7b in 2017).
Dedicated Airfreight or Aircraft Capacity	Yes, dedicated air network capacity in North America and Europe, as well as use of integrator capacity.

Reflects financial data up to quarter ended in June 2019

Table 8 - Amazon USA profile

Company	Amazon USA (2018)
Description	Largest market for based online retail and marketplace platform
Headquarters, Employees	Seattle, WA.
Gross Merchandise Value (GMV)	$191 million
Profitability and growth	$56 million
Main markets	United States
Main competitors	Ebay, Wal Mart, Target
No of active buyers/ users (m)	Not available
No of active sellers (m)	Not available
% of Business from 3rd Party Sellers	Not available for USA. Overall Amazon Group figure is 58% (compared to 49% in 2014)
No of items and shipments	Not available
Own controlled fulfillment?	Yes, through network of 75 fulfillment centers across the continental US
% of volumes through own controlled logistics?	100% Sellers can choose to fulfil or use fulfillment by Amazon
Logistics network open to 3rd parties?	To 3rd party sellers.
Logistics Spend	Estimated spend with FedEx $900 million, UPS $6.5 billion, USPS $5.8 billion.
Dedicated Airfreight or Aircraft Capacity	Yes, mainly through Atlas Air and ATSG. Estimated 2018 dedicated air network spend $625m. Has been growing this air network throughout 2019.

Table 9 - Amazon in Europe profile

Company	Amazon in Europe (2018)
Description	Largest international market for US based online retail and marketplace platform. Lux company was incorporated in 2004
Headquarters, Employees	Luxembourg. Transport and logistics employment across main markets in Europe is approximately 48,000. Overall employment across main markets is approximately 57,000
Gross Merchandise Value (GMV)	Not available. EUR 27.9b (net revenue), which accounts for approximately half of international revenue
Profitability and growth	Loss of EUR 259m (EUR 876m in 2017)
Main markets	Germany and UK account for an estimated 80% of European revenue, followed by France (10%) and Italy (6%) and Spain (2%)
Main competitors	Otto, Zalando, Rakuten
No of active buyers/ users (m)	Not available
No of active sellers (m)	Not available
% of Business from 3rd Party Sellers	Not available for Europe. Overall Amazon Group figure is 58% (compared to 49% in 2014)
No of items and shipments	Not available
Own controlled fulfillment?	Yes, through network of 50 fulfillment centers across Europe, primarily in the UK (20), Germany (10), Italy (7), France (5), Poland (4), Spain (4), as well as Slovakia (2) and the Czech Republic (1)
% of volumes through own controlled logistics?	100% Sellers can choose to fulfil or use fulfillment by Amazon
Logistics network open to 3rd parties?	To 3rd party sellers
Logistics Spend	EUR 4.2 billion ($4.7b) in Germany, UK, Italy, France and Spain. EUR 730 million includes road linehaul between sites
Dedicated Airfreight or Aircraft Capacity	Yes

Table 10 - Ebay profile

Company	Ebay (2018)
Description	Global commerce leader, specialized in facilitating C2C and B2C sales through its website
Headquarters	San Jose, USA
Gross Merchandise Value – GMV	$24.6 billion
Profitability and growth.	$10.7 billion in 2018 with net income of $2,305, a 7% increase from previous year. Revenue for Q1 2019 was $2.1b, increased 2% from Q1 2019. Net income was $608m. Revenue for Q2 2019 was $2.7b, increased 2% from Q2 2018. Net income was $589m.
Main markets	United States (40%), Germany (15%), United Kingdom (13%), South Korea (11%), Rest of the world (21%)
Main competitors	Shopify, Alibaba, JD.com, Amazon
No of active buyers/ users	180 million users
No of active sellers	25 million sellers
% of Business from 3rd Party Sellers	100%
No of items and shipments	Not available
Own controlled fulfillment?	Previously, no. Recently ebay has made moves into own controlled fulfillment.
% of volumes through own controlled logistics?	Not available
Logistics network open to 3rd parties?	Yes, Ebay plans to use third-party providers to offer fast delivery and logistics savings to help the site's seller compete for online consumers
Logistics Spend	Not available
Dedicated Airfreight or Aircraft Capacity	No

Reflects financial data up to quarter ended in June 2019

Table 11 - Flipkart profile

Company	Flipkart
Description	Founded in 2007. Largest Indian E-commerce Platform. Walmart acquired 77% of Flipkart in August 2018 for $16b.
Headquarters	Bengaluru, India. Company is incorporated in Singapore.
Gross Merchandise Value	Marketplace: $7.5b (Year ended March 31 2018). Total revenue of $4.6b. Flipkart's financials have been fully consolidated under Walmart.
Profitability and growth.	Not available
Main markets	India
Main competitors	Amazon
No of active buyers/ users	100 million
No of active sellers	100,000
% of Business from 3rd Party Sellers	Not available
No of items and shipments	500,000 deliveries per day. 180m / year.
Own controlled fulfillment?	1900 e-commerce sort centers. Supply Chain arm eKart has approximately 850 delivery hubs.
% of volumes through own controlled logistics?	Not available
Logistics network open to 3rd parties?	To third party sellers on platform.
Logistics Spend	Not available
Dedicated Airfreight or Aircraft Capacity	No

Table 12 - JD.com profile

Company	JD.com (2018)
Description	3rd largest E-commerce and retail infrastructure company, established 2004. NASDAQ IPO in 2014. Walmart has a 9.9% stake in the company and a non compete agreement in China. JD.com has a controlling interest in JD Logistics, which is 19% owner by outside shareholders. In 2018 Google invested $550m in JD.
Headquarters	Incorporated in Cayman Islands, 124,277 warehouse and delivery personnel in China.
Gross Merchandise Value – GMV	$243.9b (RMB 1,676.9b)
Profitability and growth.	Net revenue growth 40% per annum since 2014. Cumulative losses of RMB 28,514b ($4.1b) in last five years. Does not expect profits in the foreseeable future. 35% growth of user accounts in last 2 years. Net revenues for Q1 2019 were RMB121.1b ($18.0b), an increase of 20.9% from Q1 2018 and net income was RMB 3.3b ($0.5b), an increase of 215% from Q1 2018. Net revenues for Q2 2019 were RMB150.3b ($21.9b), an increase of 22.9% from Q2 2018 and net income was RMB 3.5b ($0.58b), an increase of 644% from Q2 2018.
Main markets	Domestic China. Immediate expansion plans are in Southeast Asia (Thailand, Indonesia, Malaysia) and will research entry into US, Europe and Middle East. This plan should be completed by the 2nd half of 2019. Since early 2019 offers a selection of products via Google Shopping. JD worldwide sources products from 70 countries (particularly the US, Japan and Germany) for Chinese consumers.
Main competitors	Tmall (Alibaba)
No of active buyers/ users	305.3m (310.5 in Q1 2019)
No of active sellers	19,000 suppliers. 210,000 3rd party sellers.
% of Business from 3rd Party Sellers	Not available
No of items and shipments	Not available

Company	JD.com (2018)
Own controlled fulfillment?	Yes, set up in 2007. Now operates through JD Logistics. Views logistics as a core capability. Warehousing facilities in 11 cities and 16 more under construction. Fulfillment centres in 7 cities, front distribution centres in 28 cities and warehouses in a further 46. Jd Logistics has accompanied JD expansion abroad as well. Use 3rd party couriers for some deliveries. Same day and next day delivery in 2146 counties and districts in China. Launched "Flash" delivery in 2Q 18 for delivery in minutes to about an hour for select items.
% of volumes through own controlled logistics?	Most orders are delivered through JD logistics network.
Logistics network open to 3rd parties?	Since April 2017 to businesses and in October 2018 also to consumers for intra China. Clients include Nestle, NetEase and Gree
Logistics Spend	$4.656b (fulfillment expenses)
Dedicated Airfreight or Aircraft Capacity	Partnership with Tianjin Cargo since November 2018. JD notes that road and High Speed Rail in China could reduce the need for air freight in the medium term.

Reflects financial data up to quarter ended in June 2019

Table 13 - Jumia profile

Company	Jumia (2018)
Description	Largest e-commerce platform in Africa. Founded in 2012. NYSE listing in April 2019. Integrated including payment platform and logistics. IPO proceeds $252.8m, including EUR 75 million investment by Mastercard. Pernod Ricard invested EUR 75m prior to IPO.
Headquarters	Headquarters in Berlin, management centre in Dubai, operations centre in Porto
Gross Merchandise Value – GMV	EUR 828.2m ($963m), EUR 507.1m in 2017.
Profitability and growth.	Cumulative losses of $1 billion (EUR 862m) prior to listing. Claims strong growth prospects due to low African e-tail penetration of only 1% and middle class totaling 355 million (in 2016). Revenues in Q1 2019 were EUR 31.8m ($35m), an increase of 12.3% from Q1 2018. Net profit was EUR 15.7m ($17.3m), an increase of 82.3% from Q1 2018. Revenues in Q2 2019 were EUR 39.2m (43.2m), an increase of 58.3% from Q2 2018. Net profit was EUR 17.3m (19.05m), an increase of 93.6% from Q2 2018.
Main markets	Operates across six regions and 13 countries in Africa. Local sites: Algeria, Cameroon, Egypt, Ghana, Ivory Coast, Kenya, Morocco, Senegal, Tanzania, Tunisia, Uganda.
Main competitors	Varies by market. Souq.com (Egypt), Konga (Nigeria), Takealot, Superbalist (South Africa), Global E-commerce companies such as Alibaba and Amazon.
No of active buyers/ users, millions	4.0m
No of active sellers	81,000. Majority of sellers are local but allows Chinese sellers access to platform. 1-4% of sellers are key accounts (major distributors), most are local professional traders, shop owners, manufacturers and individuals. A small percentage of sellers are Chinese cross border sellers experienced in customs formalities.
% of Business from 3rd Party Sellers	90%
No of items and shipments	13.4m (shipments). 50% of packages to primary cities, 25% to secondary cities and 25% to rural areas. Jumia Express product accounts for 30% of all items. Jumia Express involves storage in own warehouses and faster dispatch.

Company	Jumia (2018)
Own controlled fulfillment?	Yes, through Jumia Logistics. Uses over 100 logistics partners across Africa. 380 pick-up stations for consumers. Proprietary delivery fleet for express in select areas. Also operates fulfillment centres.
% of volumes through own controlled logistics?	92%
Logistics network open to 3rd parties?	In the future, yes.
Logistics Spend	EUR 45.7m (EUR 28.2 in 2017). Freight and shipping accounted for EUR 29.9m (EUR15.1 in 2017), other fulfillment costs accounted for EUR 20.5 (EUR 19.3 in 2017). This equates to fulfillment costs of EUR 4.20 / shipment and freight costs of EUR 2.22 per shipment. Spend is set to increase at a higher rate than revenue due to increasing cross border share of shipments.
Dedicated Airfreight or Aircraft Capacity	For cross border inbound freight, but Jumia does not provide commentary.

Reflects financial data up to quarter ended in June 2019

Table 14 - MercadoLibre profile

Company	MercadoLibre (2018)
Description	Largest e-commerce platform in Latin America. Founded in 1999. Integrated including marketplace, payment, logistics, classified, advertising and webshop solution. NASDAQ IPO in 2007. Latest round of capital raising ($1.856b) in 2019.
Headquarters, Employees	Buenos Aires, data centers in Virginia. 7239 employees mainly in Argentina and Brazil.
Gross Merchandise Value (GMV), millions	$12,504.9 ($11,749 in 2017).
Profitability and growth	Company has turned a profit in the last 4/5 years, but lost $70 million in 2018, primarily due to its shipping subsidies. Average annual growth 2014-2018: 14% (buyers), 22% (users), 15% (GMV), 35% (items sold), Q1 2019 net revenues of $473.8m, up 92.9% from Q1 2018. Net profit of $237m, up 45.6% from Q1 2018. Q2 2019 net revenues of $545.2m, up 102.1% from Q2 2018. Net profit of $272m, up 70.5% from Q2 2018.
Main markets	Brazil (60.2%), Argentina (26.2%), Mexico (7.6%)
Main competitors	B2W, Luiza, Amazon (in Mexico and more recently, in Brazil)
No of active buyers/ users (m)	37.4 (buyers), 281.1 (users 1Q 2019)
No of active sellers (m)	10.8
% of Business from 3rd Party Sellers	100%
No of items and shipments	334.7m (items)
Own controlled fulfillment?	MercadoEnvios, fulfillment centers in Axotlan (MX), Louveira (BR). Service available in six countries (Argentina, Brazil, Mexico, Colombia, Chile and Uruguay)
% of volumes through own controlled logistics?	66.1% in 2018 (55.8% in 2017 and 47.8% in 2016)
Logistics network open to 3rd parties?	No, but intends to maximize the utilization of MercadoEnvios
Logistics Spend	Pay local carriers for shipping costs and then decide how much to pass onto their customers. Since 2017, the company has been subsidizing shipping in order to provide free shipping to its customers. The cost of this subsidy amounted $74m in Q12019 and $424.8m in 2018 and $181.6 in 2017, respectively.
Dedicated Airfreight or Aircraft Capacity	No

Reflects financial data up to quarter ended in June 2019

Table 15 - Otto Group profile

Company	Otto Group (12 Months Ended February 2018)
Description	Privately owned multichannel consumer goods retailer, with e-commerce, mail order and physical retail. Other segments include Finance and Logistics. Main companies include Otto.de, Bonprix, About You, Witt, Crate and Barrel Group.
Headquarters	Hamburg. Approximately 52,000 employees across 350 subsidiary companies worldwide. 20,000 are in the service segment, which consists mainly of its logistics business Hermes.
Gross Merchandise Value – GMV	EUR 13.653m ($15.5b, revenue 12 months ended Feb 2018), of which EUR 10.5b were from sales of goods. EUR 7.9b revenue comes from online sales.
Profitability and growth.	Revenue growth 9.1% in 17/18. Otto Group generated and EBITDA or EUR 749m in 17/18 compared to EUR 728m in 16/17. Company goal is to increase revenues to EUR 17b by 2022/23. Expected online market growth for 2018 was 9.3%.
Main markets	Europe, North America and Asia. 60% of revenue comes from Germany, 22% from Europe excluding Russia and Germany, 14% from North America. Russia and Asia account for 2.4% and 1.4% of revenue, respectively.
Main competitors	Amazon, Zalando
No of active buyers/ users, millions	Not available
No of active sellers	Does not host 3rd party sellers
% of Business from 3rd Party Sellers	Not available
No of items and shipments, in millions	Hermes ships over 817m parcels in Europe. One thirds of volumes are generated with Otto Group companies.
Own controlled fulfillment?	Yes, through inhouse parcel and logistics company Hermes. Hermes has subsidiaries and distribution centres in Germany, UK, Italy, Austria, Romania, Russia, Hong Kong, and the US Hermes Fulfillment handles around 300 million items and 60 million orders per year for Otto Group Companies. fulfillment centres in Germany including Haldesleben, Löhne and Ohrdruf and returns logistics center in Hamburg.
% of volumes through own controlled logistics?	100%.
Logistics network open to 3rd parties?	Yes. Parcel services to businesses and consumers. Hermes offers end to end e-commerce solutions to third parties, including pick up, sortation, airfreight, customs clearance. Also provides solution for foreign companies to sell on Chinese marketplaces such as JD.com or TMALL. Hermes claims they

Company	Otto Group (12 Months Ended February 2018)
	deliver one in three B2C parcels in Germany. Hermes key accounts include eBay and H&M, among others. Most Hermes business is with 3rd party clients.
Logistics Spend	EUR 1.13b in 17/18 compared to EUR 1.06b in 16/17. The Services division, which includes Hermes generated EUR 2.3b in 17/18 compared to 1.96b in 16/17 with 3rd party customers.
Dedicated Airfreight or Aircraft Capacity	As a freight consolidator between North America, Europe and China.

Table 16 - Rakuten profile

Company	Rakuten (2018)
Description	E-commerce and Internet company established in 1997. Its B2B2C e-commerce platform
Headquarters	Tokyo, Japan
Gross Merchandise Value – GMV	$34 billion
Profitability and growth.	Rakuten reported $1.31 billion profit (28.4% increase from 2017) and its revenue Revenues of $2.6b in Q1 2019, a 15.9% increase from Q1 2018. Net income of $986m, an increase of 502% from Q1 2018. Revenues of $5.5b in Q2 2019, a 14.55 increase from Q2 2018. Net income of $940m, an increase of 55% from Q2 2018.
Main markets	Japan, Korea. Also active in Europe and the US (through Webgistix)
Main competitors	Amazon, Walmart, JD.com
No of active buyers/ users	95 million
No of active sellers	23,000 suppliers
% of Business from 3rd Party Sellers	Not available
No of items and shipments, in millions	Not available
Own controlled fulfillment?	Yes, Rakuten Super Logistics (RSL) is a leading ecommerce order fulfillment company that provides the scalability, flexibility, and cost savings retailers demand
% of volumes through own controlled logistics?	Not available
Logistics network open to 3rd parties?	Yes
Logistics Spend	Not available
Dedicated Airfreight or Aircraft Capacity	No

Reflects financial data up to quarter ended in June 2019

Table 17 - Shopify profile

Company	Shopify (2018)
Description	Leading cloud-based, multi-channel e-commerce platform. Shopify builds web and mobile based software and lets merchants set up online storefronts, enabling them to manage product inventory, process orders and payments, ship orders, build customer relationships, source products, leverage analytics and reporting.
Headquarters	Ottawa, Canada
Gross Merchandise Value – GMV	CAD $41.1 billion ($31 billion)
Profitability and growth.	Shopify reported revenues of $1.01 billion along with losses of $80.2 million in 2018 and they have accumulated a deficit of $187.8 million. Q1 2019 revenue was $320.5m, a 50% increase y-o-y. Net loss was $24.2m, from $15.9m in Q1 2018. Q2 2019 revenue was $362m, a 48% increase y-o-y. Net loss was $28.7m, from $24m in Q2 2018.
Main markets	Canada, United States
Main competitors	Ebay, Amazon
No of active buyers/ users	n.a.
No of active sellers	820,000 merchants from 175 countries use Shopify, geographically dispersed: United States (55%), UK (8%), Canada (7%), Australia (7%), rest of the world (24%)
% of Business from 3rd Party Sellers	100%
No of items and shipments, in millions	Not available
Own controlled fulfillment?	Shopify is not responsible for the fulfilment and it does not have control of promised service, the platform serves as an agent in the arrangement between merchants and sellers
% of volumes through own controlled logistics?	Not applicable
Logistics network open to 3rd parties?	Not applicable
Logistics Spend	Not applicable
Dedicated Airfreight or Aircraft Capacity	No

Reflects financial data up to quarter ended in June 2019

Table 18 - Walmart profile

Company	Walmart (Year ended Jan 31 2019)
Description	US based omnichannel retailer, 11,300 physical stores. E-commerce websites under 58 banners in 27 countries. Incorporated in 1969. First foray into e-commerce in 2000 with Walmart.com. Acquired Flipkart (India) in 2018 and entered into minority shareholding of JD.com in 2016.
Headquarters	Bentonville, AK. 2.2m employees, of which 0.7m outside the US.
Gross Merchandise Value – GMV	Total GMV of $514.4b (gross revenues), $510.3 (net sales). Online GMV was $28 billion.
Profitability and growth.	Net profit $7.2b. Consistently profitable with operating margins above 4%. US operating income higher than from its international business. Average annual growth 2015-2019: Revenue (1.4%) Revenue in Q1 FY20 was $123.9b, a 1.0% increase from Q1 FY19 Revenue in Q2 FY20 was $130.4b, a 1.8% increase from Q2 FY19
Main markets	US (65% of net sales) and International (24% of net sales) with operations in U.S., Africa, Argentina, Canada, Central America, Chile, China, India, Japan, Mexico and the United Kingdom, as well as Brazil (divested in August 2018) 4769 stores and 156 distribution facilities in US. Main e-commerce markets in US, Mexico, UK, Canada and India. 226 distribution facilities outside the US. One fulfilment centre is located in India.
Main competitors	Target
No of active buyers/ users	275m customers
No of active sellers	Exclusively own retail
% of Business from 3rd Party Sellers	No third party sales
No of items and shipments, in millions	Not available
Own controlled fulfillment?	90 dedicated e-commerce fulfillment centres. 1900 e-commerce sort centers in India.
% of volumes through own controlled logistics?	77% of store merchandise shipped through distribution facilities, the remainder directly from suppliers. 83% of Walmart International volumes through own distribution facilities.
Logistics network open to 3rd parties?	No
Logistics Spend	Free two day shipping on over 2 million items launched 2017.
Dedicated Airfreight or Aircraft Capacity	No

Reflects financial data up to quarter ended in August 2019

Table 19 - Wish profile

Company	Wish (2018)
Description	Privately owned e-commerce platform founded in 2010. One of the most popular platforms for cross border e-commerce, accounting for about 10% of cross border transactions. In 2015, both Amazon and Alibaba offered to purchase Wish for $10 billion.
Headquarters	San Francisco
Gross Merchandise Value – GMV	$2 billion
Profitability and growth.	Not available
Main markets	Globally
Main competitors	Alibaba/ Aliexpress/ Lazada, Amazon, Ebay
No of active buyers/ users	n.a. mostly popular in Europe and the United States
No of active sellers	n.a. but almost the majority (94%) come from China
% of Business from 3rd Party Sellers	100%
No of items and shipments, in millions	Not available
Own controlled fulfillment?	No
% of volumes through own controlled logistics?	None
Logistics network open to 3rd parties?	Not applicable
Logistics Spend	Not applicable
Dedicated Airfreight or Aircraft Capacity	No

Appendix B - Express Carrier Profiles

Appendix B contains e-commerce focused profiles of the top three and selected regional express companies. In general, data refers to the most recent full financial year, but where specified has been updated to reflect most recent available quarterly filings.

The profiles include a description of the activities of each company and key metrics relating to revenue, profitability, number of shipments, and information on the geographical scope of operations, main competitors, and their air and ground networks. In relation to E-commerce, we have included a summary of each company's relevant product offering, percentage of business linked to e-commerce, relationship and exposure to key e-commerce platforms and our assessment on how e-commerce will impact each company's business going forward.

Profiles are displayed in alphabetical order for ease of reference. These include:

- Aramex
- DHL, including a separate profile for Blue Dart Express
- EMS/China Postal Airlines
- FedEx
- SF Express
- UPS

Data included in the profiles has been compiled from a range of public and semi-public sources as well as being based on our own assessment and analysis. While we have taken great care in preparing these profiles, we take no responsibility for their accuracy. We welcome your feedback and suggestions, including broadening the scope to include additional profiles

Subscribers of the report will have access to periodic updates to these profiles through the Cargo Facts Consulting Insights platform (www.cfcinsights.com) for the first six months following publication of the report.

Table 20 - Aramex profile

Company	Aramex (2018)
Description	Middle East focused Express, Freight Forwarding and Logistics company, founded in 1982
Headquarters	Dubai
Revenue	AED 5.086b ($1.39b). Express accounts for 45% of total revenue
Profitability and growth	8% overall revenue growth in 2018 (8.9% 2013-2018), with Express and Logistics growing at 13% and 16% respectively. 1H 2019 growth 4%, with Express and Logistics growth at 9% and 20%, respectively. Net profit margin approximately 8-10% last 6 years. Express has increased its share of total business from 51% to 65% since 2013 while the freight forwarding share has decreased. Q1 2019 revenues of $336m, a 4% increase y-o-y. Profits of $32m, a 4% increase from Q1 2018. Q2 2019 revenues of $348m, a 4% increase y-o-y. Profits of $33.5, a 4% increase from Q2 2018.
Main geographical markets	Middle East (primarily GCC) and Africa (61%), Asia and Others (25%), Europe (11%), North America (3%)
Main competitors	DHL Express, UPS
Shipments and tonnage	68.6m shipments
Air Network Overview	Air capacity provided by third parties. No dedicated air network
Ground and last mile distribution network overview	Own controlled and third-party franchisee fleet. Vehicle maintenance and running expenses accounted for 12% of operating expenses
E-Commerce Strategy and product offering	Focus on micro brands across the Gulf, Levant, Asia and Africa. E-commerce consolidation through shop and ship product providing physical addresses in 24 countries to deliver global online shopping. Fulfillment services to e-commerce platforms. Also operates e-commerce fulfillment centers. Previously operated a joint venture with Australia Post (Aramex Global Solutions)
% of business linked to e-commerce	E-Commerce is the main growth driver of express and logistics business. Focuses on sellers who want a full package or just fulfillment, as well as customers who purchase e-commerce
Relationship and exposure Key E-Commerce Platforms	Not available

Company	Aramex (2018)
E-Commerce Outlook and impact on business	E-commerce growth is central to business expansion. Lower yields on E-commerce vs traditional business expected to depress margins

Reflects financial data up to quarter ended in June 2019

Table 21 - Blue Dart profile

Company	Blue Dart (FY ended March 2019)
Description	South Asia's premier express air and integrated transportation & distribution company, offering secure and reliable delivery of consignments. It is part of the DHL Group
Headquarters	Chennai, India
Revenue	$432 million in 2018
Profitability and growth	$18 million in 2018, 37% lower than profit in 2017
Main geographical markets	India (37% of domestic market)
Main competitors	FedEx, Gati LTD
Shipments and tonnage	233 million domestic and 100,000 international shipments handled and 755,000 tonnes transported in 2018. Of this figure 88,000 (12%) was transported on its air network.
Air Network Overview	Fleet consisting of 6 aircraft providing a network payload of 504 tonnes across 74 route connections each night. Air hubs in Chennai, Mumbai, Delhi
Ground and last mile distribution network overview	11,000 vehicles supporting 3,171 facilities and servicing over 35,000 locations
E-Commerce Strategy and product offering	Primary focus on express delivery only
% of business linked to e-commerce	Not available
Relationship and exposure Key E-Commerce Platforms	Amazon's introduction in India has fueled Blue Dart's growth
E-Commerce Outlook and impact on business	Blue Dart has launched a logistics firm (Ecom Express) that will focus exclusively on Indian's e-commerce support.

Table 22 - DHL Express profile

Company	DHL Express (2018)
Description	Express division of the DHL Group, it provides urgent documents and goods in over 200 countries and territories serving 2.6 million customers
Headquarters	Bonn, Germany
Revenue	16,147 million € ($18 b) in 2018 for the Express division, 25% of DHL's total revenue of 62,951 million € ($70.3 b)
Profitability and growth	1,957 million € ($2.2 b) in 2018 for the Express division, 62% of DHL's total profit of 3,162 million € ($3.5 b) H1 2019 revenues of EUR 8.2b ($9.03b), up 5% y-o-y H1 2019 EBIT of EUR 974m ($1b), down -0.4% y-o-y
Main geographical markets	Germany, Western Europe, Latin America, Africa, Middle East & Asia-Pacific
Main competitors	FedEx, UPS
Shipments and tonnage	1.5 billion express shipments per year of which 70% are time definite international (TDI) shipments.
Air Network Overview	DHL's global air network is present in 500 airports worldwide with 22 major hubs connected through. Their dedicated air network includes a fleet of 250 aircraft with 17 owned and partner airlines with over 600 daily flights. Additionally, DHL Express has agreements with 300 airlines, operating around 1,800 daily flights. Air hubs in Miami, Singapore, Leipzig, East Midlands, Chennai, Bahrain, Panama City, Hong Kong
Ground and last mile distribution network overview	17,000 vehicles servicing over 120,000 destinations in all continents. DHL is focused on developing solutions to help e-commerce companies reach their end-costumers quickly and efficiently, from using machine learning to route shipments to adding automation to delivery networks
E-Commerce Strategy and product offering	In 2019, DHL is redesigning their cross border portfolio of e-commerce services and international parcel shipping. DHL has established a new eCommerce solutions division which is separate to DHL Express
% of business linked to e-commerce	30% of Time definite international volumes are B2C (comarped to 10% in 2013). We estimate 50% of time definite domestic (TDD) volume are B2C.
Relationship and exposure Key E-Commerce Platforms	Limited, but are a key provider to Mercado Libre in LATAM

E-Commerce Outlook and impact on business	Experience shows that growth in the international express market is highly dependent upon the economy. DHL believes that the steadily growing cross-border e-commerce sector will continue to drive growth in the international express market in 2019

Table 23 - EMS (China Postal Express & Logistics Company)

Company	EMS (China Postal Express and Logistics Company, 2018)
Description	Largest integrated express and logistics provider in China. Encompasses China Postal Airlines and China Post Logistics. Service offering covers international and domestic express, contract logistics and trucking.
Headquarters	Beijing
Revenue	RMB 566.4b (China Post Group)/ $84b
Profitability and growth	Net profit in 2018 was RMB 44.917billion, a yoy increase of 0.27%; Profit margin in 2018 was RMB 46.211 billion, decreased by 4.63%.
Main geographical markets	Domestic China, Taiwan, Hong Kong, Macau, and international to Japan and Korea
Main competitors	YTO, SF Express, Yunda, ZTO, 4PX, Best, STO, Deppon, TTK
Shipments and tonnage	Not available
Air Network Overview	489 flights every week between 39 city pairs and 30 cities. Main hub in Namjig (NKG)
Ground and last mile distribution network overview	45,000 business outlets
E-Commerce Strategy and product offering	Domestic e- Commerce product (e-EMS and eYoubao) and added services including warehousing, sorting, delivery and payment
% of business linked to e-commerce	Not available
Relationship and exposure Key E-Commerce Platforms	Not available
E-Commerce Outlook and impact on business	Not available

Table 24 - FedEx Express profile

Company	FedEx Express (Year ended 31 May 2019)
Description	US based express and ground operator. Largest subcontractor to the United States Postal Service.
Headquarters	Memphis
Revenue	$37.3 billion (Express) and $20.5b (Ground)
Profitability and growth	Operating income of $2,58 billion in 2018 (FY2019), -6.8% lower than in FY 2018 due to higher TNT Express Integration expenses
Main geographical markets	United States, Europe, Middle East, Latin America, Africa, Asia-Pacific
Main competitors	DHL Express, UPS
Shipments and tonnage	2.2 billion Express shipments (US + International), 10.5 billion lbs.
Air Network Overview	Fleet of 681 aircraft and 12 air hubs in their air network (Paris, Narita, Cologne, Newark, Guangzhou, Indianapolis, Oakland, Miami, Liege, Dubai, Toronto). Plans to shift more FedEx express volumes to former TNT ground network.
Ground and last mile distribution network overview	85,000 vehicles, 52,250 access points (offices, authorized shipping centers, lockers and drop box locations). By end of 2020 adding 8000 Dollar General stores to ground already consisting of 9000 Walgreens and Walmart outlets. This will replace the SmartPost arrangement with USPS which FedEx announced in May 2019 that it would cancel. FedEx
E-Commerce Strategy and product offering	FedEx Express is focused on e-commerce growth with a new division dedicated to infrastructure improvement across offices and sorting locations. Actions to improve service offering include extending Ground deliveries to 7 days per week beginning January 2020. SameDay bot services to support instant deliveries from companies such as AutoYone, Lowe's, Pizza Hut, Target, Walgreens by Summer 2020. Through FedEx Cross Border Technologies and P2P Mailing Ltd offers cross border e-commerce fulfillment. FedEx Extra hours to allow later cut offs.
% of business linked to e-commerce	Not available

Company	FedEx Express (Year ended 31 May 2019)
Relationship and exposure Key E-Commerce Platforms	Previously FedEx generated less than 1.3% of total revenues with Amazon. In 2019, FedEx cancelled its Express and Ground contracts with the US E-tailer. However, Fedex carries substantial Amazon volumes through its contract with the USPS to move priority mail and priority mail express.
E-Commerce Outlook and impact on business	FedEx believes that the Asia-Pacific region will lead the e-commerce growth in the immediate future with China, India and Indonesia being the fastest-growing markets. FedEx plans to expand their footprint in these geographical areas, choosing the right partners and investing in infrastructure

Table 25 - SF Express profile

Company	SF Express (2018)
Description	2nd largest Chinese Express operator, mainly focused on the domestic Chinese market. Operates both a warehouse and distribution network. SF has the largest domestic air network which is approximately 2x the scale of China Postal Airlines.
Headquarters	Hangzhou, Zhejiang, China
Revenue	RMB 90.9b ($13.6b), 98% of which is from Express and Logistics. Average revenue per shipment RMB 23.18 ($3.55). Express and Economy products accounted for 59% and 22% of total revenue, respectively
Profitability and growth	Overall revenue growth of 28% in 2018 and 23% in 2017. Economy product has growth faster than its express product (37.6% vs 14.3% in 2018). Intra city instant delivery revenue grew by 172% in 2018 (to $149m). Net profit margin last three years between 5% and 7%. International express volumes increased 28.3% in 2018
Main geographical markets	Domestic China. International express accounted for less than 3% of revenue in 2018
Main competitors	China Postal Airlines (EMS), YTO Express are the only other Chinese integrators with dedicated air networks, but there are a multitude of courier operators in the market including Yunda, ZTO, 4PX, Best, STO, Deppon, TTK, US, Sure, 2JS and GTO. SF states that is has a 23% share of total Chinese cargo and mail volumes. Has a JV with UPS for international services.
Shipments and tonnage	Air: 800 million shipments/ 1.24m tonnes (21.5% of total) Ground: 3 billion shipments (77% of total), Rail: 50 million shipments (1.2% of total)
Air Network Overview	43 cities in China (including in Hong Kong, Macau and Taiwan) and 11 international cities. Total of 65 routes. Main hubs in Hangzhou (HGH) and Shenzhen (SZX). 40% of volumes are carried on own and dedicated charter flights
Ground and last mile distribution network overview	15,600 directly-operated service points and 2,600 franchisee network points for Shunxin Express
E-Commerce Strategy and product offering	Offers B2C delivery services in China and abroad. Operates e-commerce warehouses across China. International E-Parcel product which provides customs clearance and delivery for cross border e-commerce
% of business linked to e-commerce	Not available
Relationship and exposure Key E-Commerce Platforms	Not available

Company	SF Express (2018)
E-Commerce Outlook and impact on business	Not available

Table 26 - United Parcel Service (UPS) profile

Company	United Parcel Service (2018)
Description	Multinational package delivery and supply chain management provider
Headquarters	Atlanta, Georgia
Revenue	$71.8 billion, $43.5 b US Domestic Package, $14.4 b International Package, $13.8 b Supply Chain Freight. 78% or $56 b from total revenue is US
Profitability and growth	UPS annual net income was $4.8 billion, a 2.32% decline YOY. UPS Supply Chain division grew by 16% in 2018 while US Domestic and International segments grew by 7%. UPS International segment operating margin of 18% leads the industry Q1 2019 revenues of $17.2b, up 0.3% from Q1 2018. Profit down 17% down to $1.28b. Q2 2019 revenues of $18b, a 3.4% increase from Q2 2018. Net income of $1.7b, up 1% y-o-y.
Main geographical markets	North America, Europe, Asia-Pacific, Latin America, Middle East & Africa
Main competitors	DHL Express, FedEx
Shipments and tonnage	5.2 billion packages and documents annually, serving more than 200 countries and territories
Air Network Overview	Aircraft fleet of 248 aircraft and 2,300 daily flight segments Air hubs in Louisville, Cologne, Shanghai, Hong Kong, Shenzhen, Hamilton, Miami, Rockford, Philadelphia, Dubai, Anchorage, Dallas
Ground and last mile distribution network overview	1,800 operating facilities, 28,000 access points and 14,000 stores, customer centers and outlets. Around 130,000 vehicles
E-Commerce Strategy and product offering	UPS rolled out a new integrated transportation fulfilment solution for small business e-commerce merchants, enabling them to expand and grow their offerings without additional investments
% of business linked to e-commerce	Business-to-consumer shipments represented over 50% of the total US Domestic Package volume

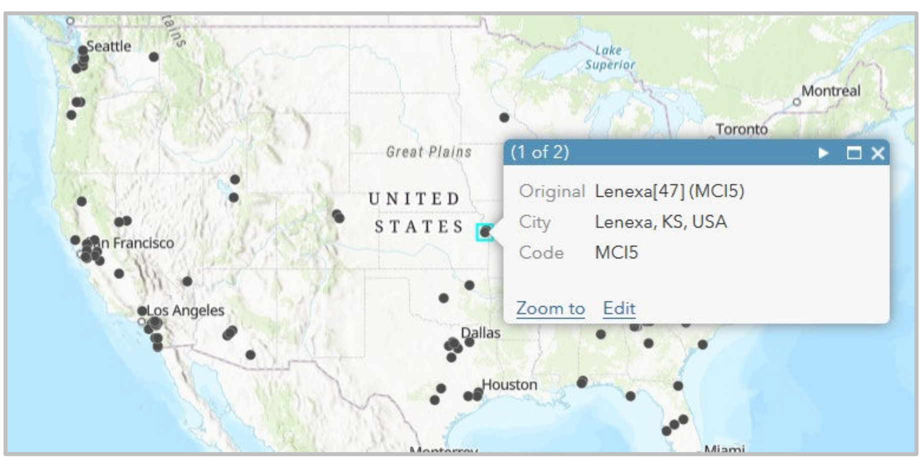
Company	United Parcel Service (2018)
Relationship and exposure Key E-Commerce Platforms	UPS is retaining close ties to Amazon, one of its largest customers. UPS gets close to 10% of its revenue from Amazon and this number could increase after Amazon and Fedex cut ties in August 2019
E-Commerce Outlook and impact on business	UPS recently unveiled a transformation strategy to handle the package handling growth and cross-border e-commerce volumes including renovated facilities and new aircraft

Appendix C - Interactive Map Overview and Tutorial

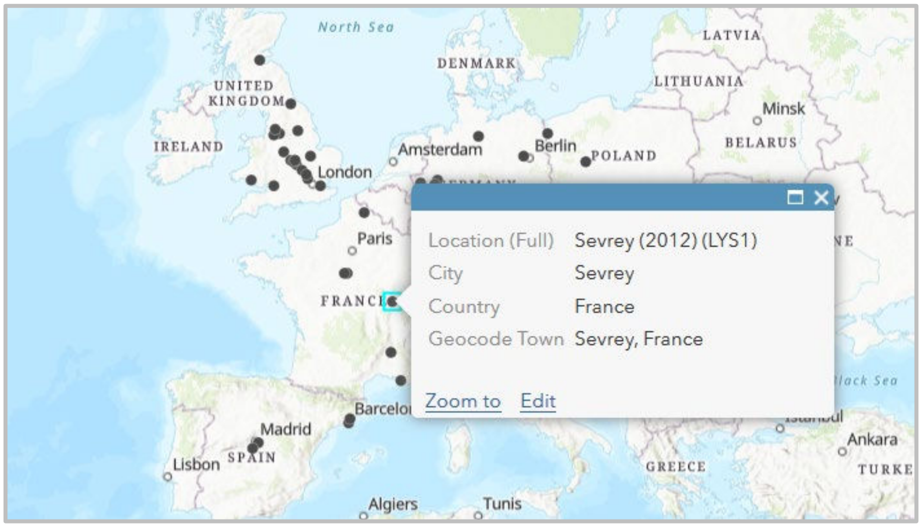
This report is complemented by an interactive map, which can be accessed via the [Cargo Facts Consulting Insights Platform] The map allows you to explore some of the geospatial data contained in the report. The data is organised in different layers, which can be turned on or off. Clicking on individual points or features opens a pop up with more information. Below is a description of each layer and its contents:

Cross Border: Source of Cross Border Purchases by Country: showing the top three sources of cross border e-commerce purchases by country. The data is based on the 2018 International Postal Corporation (IPC) *Cross Border E-Commerce Shopper Survey*.

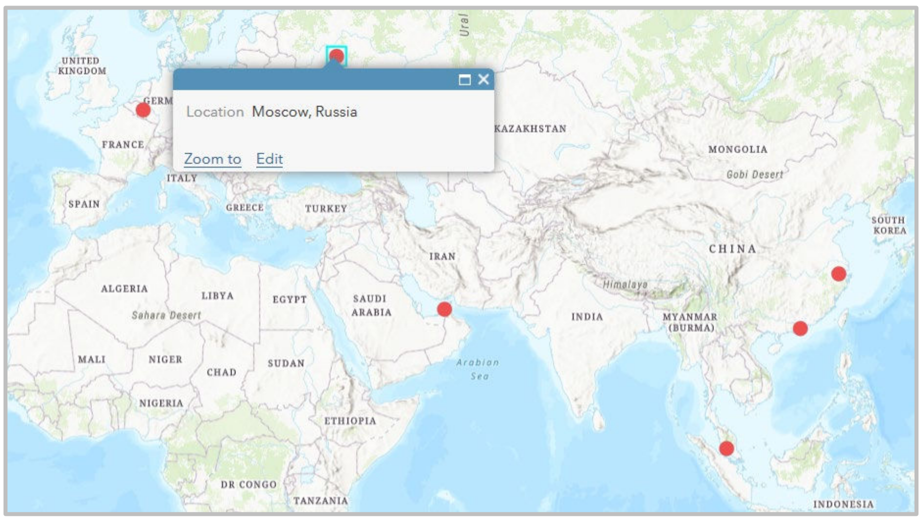
Platforms – Amazon US Fulfillment Centres*:* overview of Amazon fulfillment centre locations across the United States in 2019.



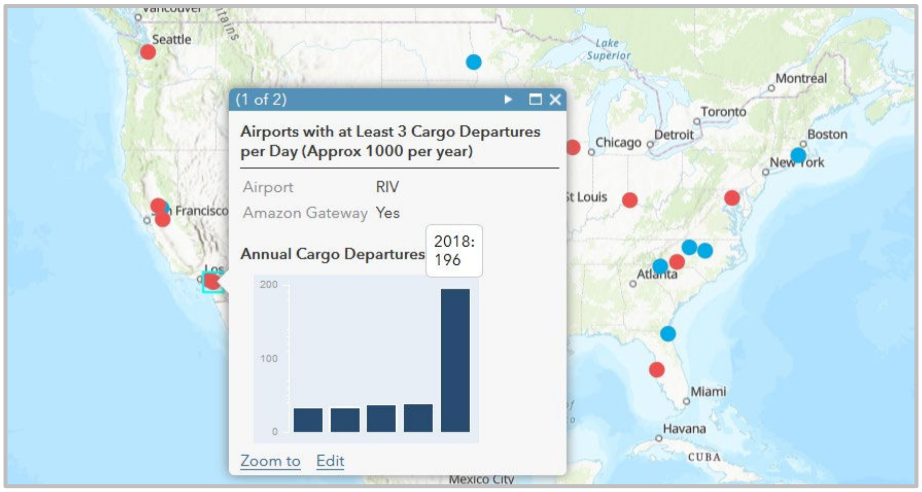
Platforms – Amazon European Fulfillment Centres: overview of Amazon fulfillment centre locations across Europe in 2019.



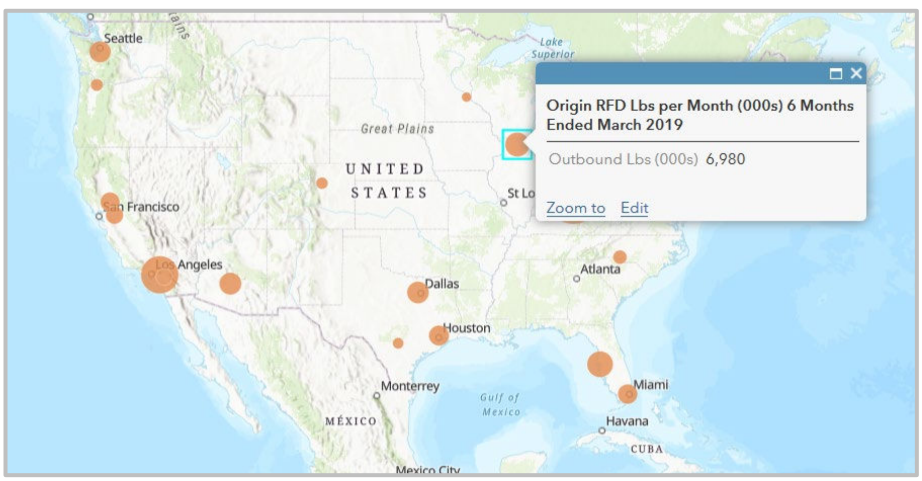
Air Networks – Cainiao Global Network: overview of location of existing and planned Cainiao global hubs.



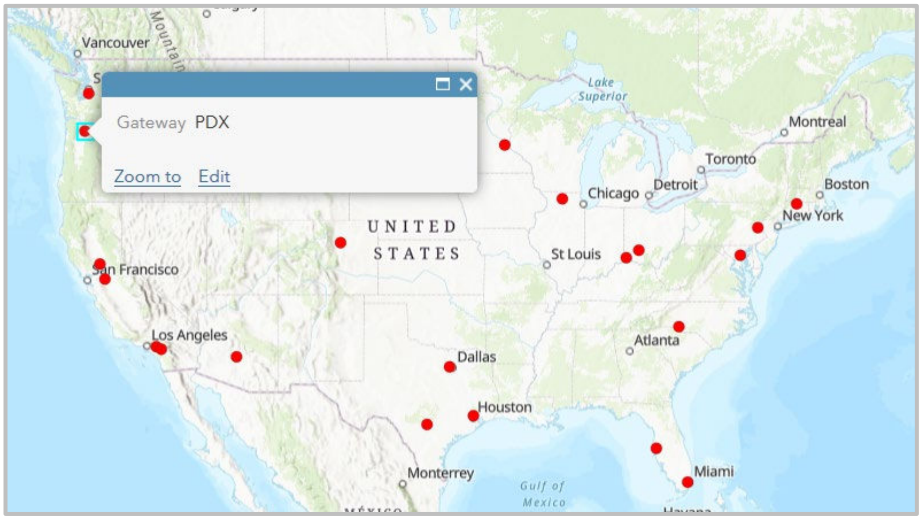
Air Networks – Fast Growing US Airports 2018*: shows all US airports with at least 3 (current) cargo departures per day that grew by more than 20% between 2016 and 2018. Red denotes airports that are Amazon Prime Air gateways and blue denotes airports that are not.*



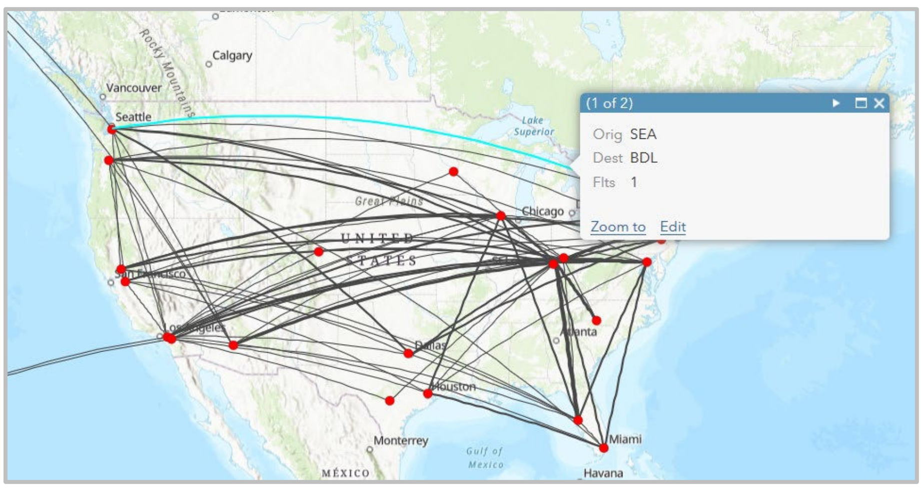
Contract Flying Amazon Air lbs per Month: shows Cargo Facts Consulting estimate of monthly Amazon related air volumes out of each gateway (measured in 000s of lbs). Data is based on an analysis of t100 market data on Amazon flights operated by Atlas Air and ATSG Group airlines.



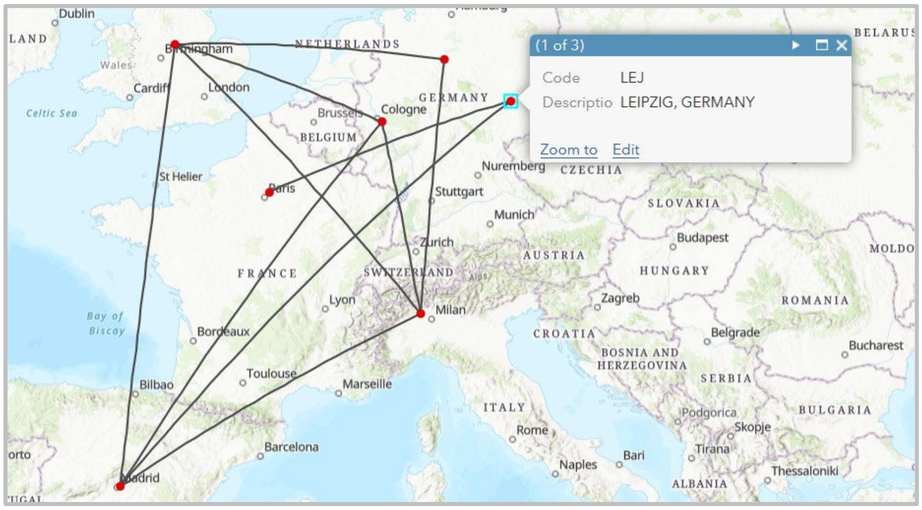
Contract Flying – Amazon Prime Air Gateways July 2019: location of Amazon Prime Air gateways in the United States.



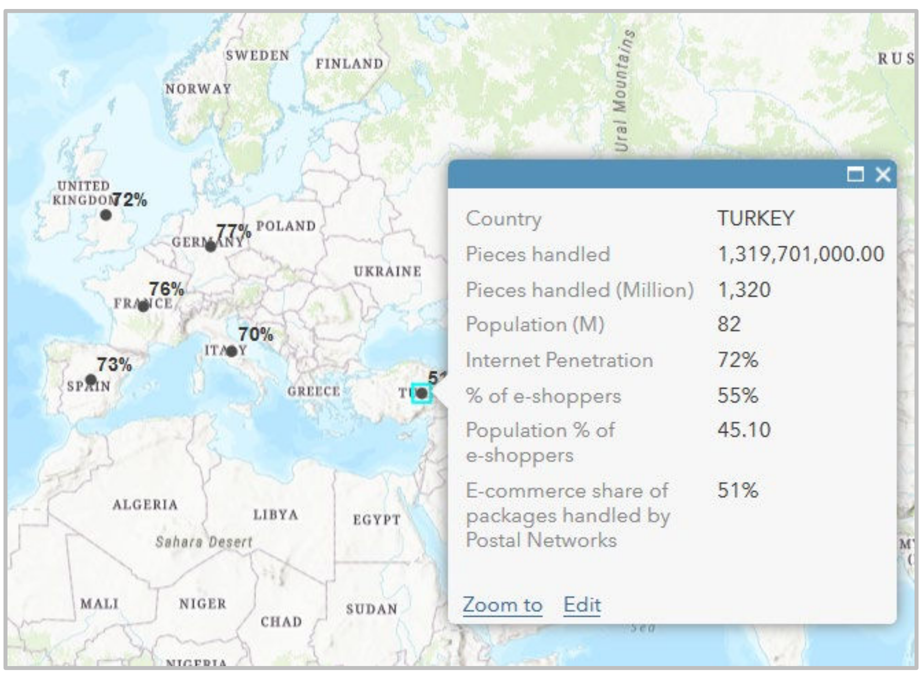
Contract Flying – Amazon US Network July 2019: Current Amazon Air Network with flights per day by sector. Best viewed in conjunction with *Contract Flying – Amazon Prime Air Gateways July 2017* or *Contract Flying – Amazon Air Lbs per month*.



Contract Flying – Amazon EU Air Network July 2019 and ***Amazon EU Air Gateways July 2019****:* overview of Amazon related flying in Europe by ASL Airlines and European Air Transport (EAT) in July 2019 with flights per day by sector.



Postal – Share of E-commerce as a % of Total Package Volumes*:* information on the importance of e-commerce to different postal networks, as well as information on internet penetration, number of e-commerce shoppers. Based on Cargo Facts Consulting analysis of postal reports, world bank and e-commerce market data.



***Postal – Share of Income from Parcel and Logistics**:* an overview of how the important of the parcel and logistics segment has changed for postal authorities around the world between 2008 and 2017. Based on Universal Postal Union (UPU) statistics.