



COURIER, EXPRESS AND PARCEL 2023 OUTLOOK: CHALLENGES AND PERSPECTIVES

LETTER FROM THE DIRECTOR

Welcome to the 2023 CEP Outlook report. This is the third year we have published this report and we hope our findings will give you useful insights to help strengthen your CEP business in the year ahead.

What can we expect in 2023 for the CEP industry?

While it's possible we are leaving the Covid pandemic behind us, there clearly remains volatility in the sector as new challenges appear. Companies around the world are grappling with disruptions in supply chains brought on by geopolitical conflicts and energy insecurity, inflation and nervousness about a pending global recession. At the same time, some markets are becoming more protective.

We are already witnessing a stagnation in parcel volumes and some major logistics service providers are reporting financial losses and tumbling shareholder values. For an industry that has relied on volume growth, it will be difficult to attain revenue increases in these circumstances. In addition, consumers are mak-

ing more localised and sustainable purchasing decisions, assessing where their products are sourced and who is shipping them.

Amidst the fears of a global economic slowdown, the CEP sector is also having to grapple with a very difficult labour market as the talent shortage in the supply chain, end to end, reaches a crisis point. Distribution centres are struggling to ensure timely and cost-effective last-mile deliveries in the face of an unprecedented lack of workers. Investing in collaborative automation will be essential to meet the demand for quick and convenient delivery. At the same time, the industry will need to deploy strategies that attract, retain, develop and motivate its workers in the digital era.

In light of this, we expect to see CEP companies being more conservative when it comes to capital investments, while the focus on digitalising their processes – both back and front-end – will be even stronger, with the adoption of automation tools and advanced data analytics. We have seen much development in the digitalisation of the costly last mile, but CEP



hubs will be looking to find ways to digitalise all their processes and become less dependent on human resources through digital insights. More and more are turning to subscription and other financial models as a way of achieving their digitalisation goals.

While the parcel volume may not be at the same levels as during the pandemic, we also can see a healthy growth in the parcel industry, particularly in the movement of e-commerce and cross-border parcels. Omnichannel is more mainstream and this will benefit CEP businesses as they acquire more customers.

We may also see CEP companies seeking to help their customers with add-ons to complement existing infrastructure, such as trade compliance software. We anticipate that more distribution hubs will be looking to generate new revenue streams by diversifying their businesses beyond delivery, such as the initiatives

we're already seeing in loans and banking services by Canadian and An Post and in health-care by Royal Mail and Swiss Post.

Our final word for the year ahead? CEP companies shouldn't be nervous. The decline in parcels volumes is a hiccup for now but won't be a long-term trend with e-commerce and cross-border trade expected to continue to drive growth. They should be looking to get the customer experience in order, prepare themselves to service the huge potential of the Gen Z market and work on optimising the processes they already have through digitalisation.

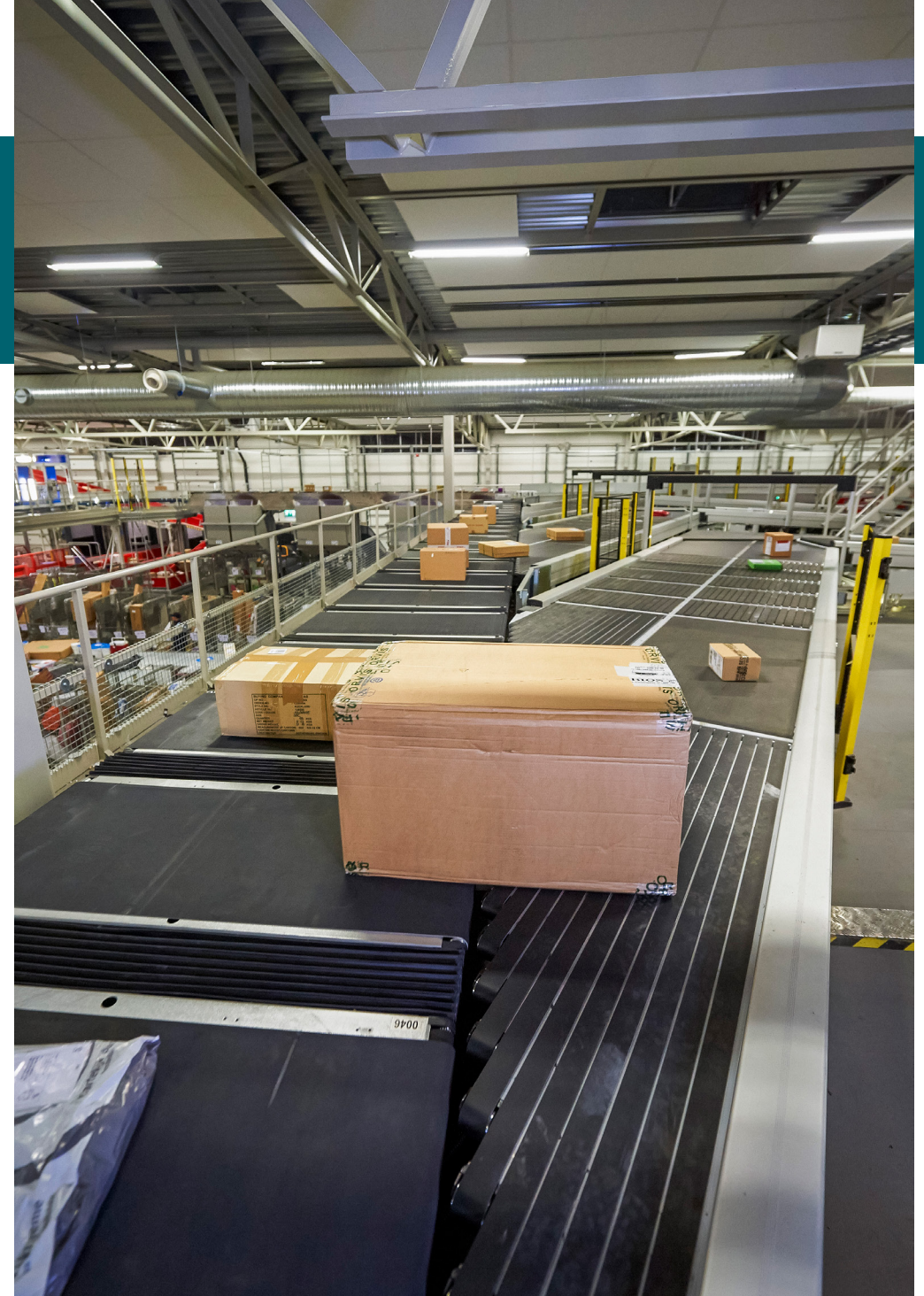
I hope you enjoy reading the report.

Best wishes

Stephan Heessels
Divisional Director Logistic Systems,
BEUMER Group

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CHAPTER 1:
The CEP industry
right now



In previous years, online retail has clearly been the driver of growth in parcel delivery volumes. Long-term projections looked very healthy for the CEP industry, with the market expected to progress at a CAGR of about six percent between 2021-26.

So, how is the present situation looking for the industry?

The current situation: A snapshot

By all accounts, 2021 proved a highly successful year for the global parcel industry.

According to the [Pitney Bowes Parcel Shipping Index](#), 2021 saw the highest global parcel volume on record, being a 21 percent increase from parcels generated in 2020.

Of this buoyant global volume, the top volumes in 2021 were as follows:

- **China:** exceeded 100 billion parcels in one year, being the first market in the Index's seven-year history to do so
- **US:** generated 22 billion parcels
- **Japan:** generated 9 billion parcels
- **UK:** generated 5.4 billion parcels
- **Germany:** generated 4.5 billion parcels

In terms of parcel shipping revenue, these figures reveal that the total carrier parcel revenue increased, reaching \$ 491.5 billion globally in 2021, up 17 percent from \$ 420 billion in 2020. Of this revenue, the US generated a total of \$188 billion, China \$160 billion and Japan \$31 billion.

It appears that despite facing some headwinds in the economy, the healthy growth in parcel volumes continued unabated in 2021.

The forecast: Expect a slowdown but continuing growth

Looking ahead, however, we are noticing a number of mixed messages.

On the one hand, we are seeing market research suggesting the CEP market will exhibit a CAGR of **4.7 percent between 2021-2027**, a decline from the previous five years' unprecedented growth as economic slowdown and soaring inflation start to bite into the parcel market.

According to Accenture, all postal companies registered a decline in parcel volumes in Q1 2022, with brick-and-mortar sales (\$ 702 billion) expected to exceed e-commerce (\$ 604 billion) in 2022, despite its slower growth rate.

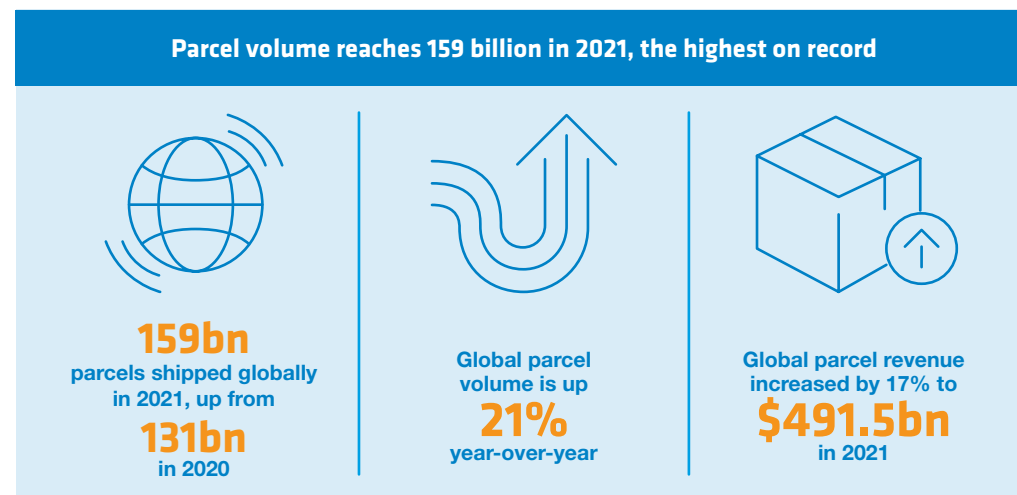


Figure 1 - Source: Pitney Bowes Parcel Shipping Index

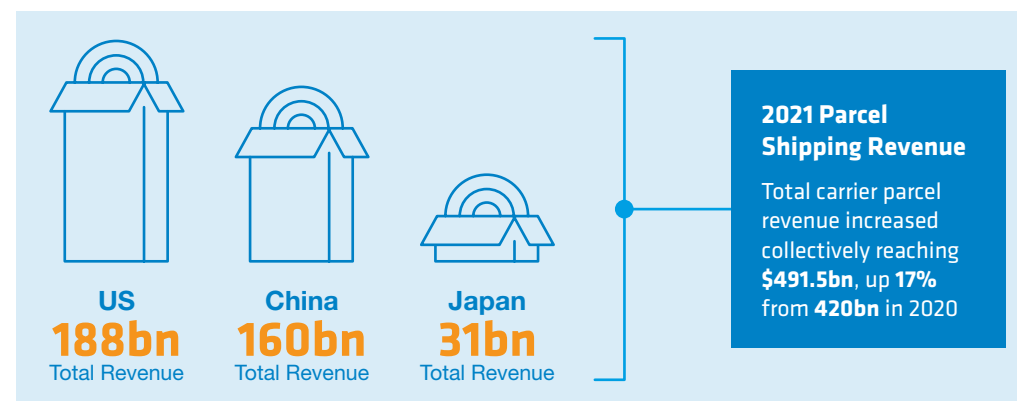


Figure 2 - Source: Pitney Bowes Parcel Shipping Index

Global Courier, Express and Parcel (CEP) Market

Market forecast to grow at a CAGR of 4.7%

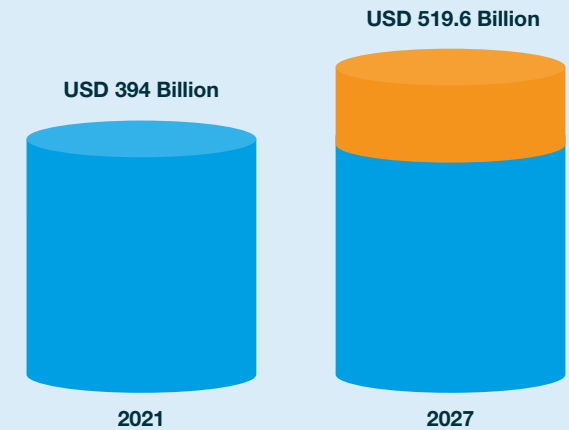


Figure 3 - Source: Research and Markets

In addition, with energy hikes, cost of living crises and climbing interest rates, global spending has decreased. The double digit growth in parcel volumes just a year or two ago is now waning.

On the other hand, others are projecting a continued healthy growth in parcel volumes, suggesting we will see between **5.5 percent and 11.5 percent CAGR** from 2022 to 2027.

In fact, despite market uncertainties, global parcel volume is likely to double the 2019 pre-pandemic level by 2024, from 104 billion parcels in 2019 to 205 billion parcels. By 2027, the global parcel volume is estimated to reach between **216 billion and 300 billion parcels**.

A difficult operating environment ahead

With this ambiguity breeding uncertainty in the CEP market, it is undeniable that the industry faces a difficult operating environment ahead.

The fiscal quarterly earnings of logistics services provider FedEx reflect these difficult market conditions. Often viewed as a bellwether for market trends, FedEx reported negative earnings for the first **fiscal quarter in September**

2022, attributing the result to an 11 percent annual decline in global package and freight volume due to weakening economic conditions.

FedEx is now looking to strengthen its business and customer experience while also pulling its cost, commercial and capacity levers to adjust to the impacts of reduced demand.

HOW TO FORWARD-PLAN: IT'S COMPLICATED

With the nervousness and lack of transparency in how the market is going to develop, CEP companies are stepping into a difficult era in which to develop business plans premised on volume growth.

Some hubs are already looking at cutting costs as well as reshaping their organisations in terms of functions and layers. Others are taking conservative approaches to their future investments, with some postal organisations already putting a few of their roll-outs on hold, for example.

CUSTOMER EXPECTATIONS HAVE NOT CHANGED

Meanwhile, however, end-customers are demanding faster and more reliable deliveries. They may be willing to wait longer for foreign

Parcel volume is decreasing...

Y-o-Y parcel volume growth Q1'21 – Q1'22, %

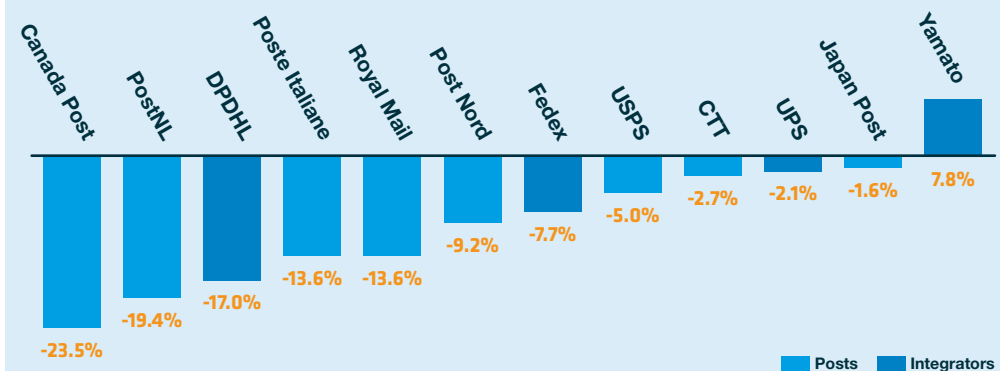


Figure 4 - Source: Accenture

Further, inflation is adding to uncertainty

% of consumers planning to stop purchase of items due to price June'22, %

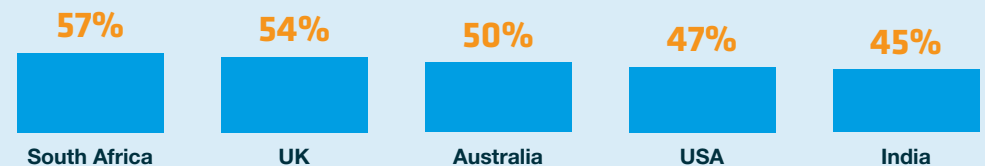


Figure 5 - Source: Accenture

deliveries but they nevertheless expect delivery times to be shorter year on year. [Source: Mckinsey](#)

Moreover, customer expectations around transparency and reliability are becoming more exacting. Customers are taking for granted the ability to track the exact whereabouts of their purchases and expect companies to communicate this information to them. They also demand the option of customised delivery services according to their needs. [Source: McKinsey](#)

The need to reinvent: Look to Gen Z

In this unpredictable market, the CEP sector must look to stay relevant to the end-customer, as well as capture future markets.

Preparing for Generation Z customers is one opportunity that CEP companies can seize. As this cohort migrates into the workforce and acquires spending power, CEP businesses need to keep a close eye on this group that will form the major source of future revenue.

This means all parcel services must be digital, personalised to fit individual customer needs

WHO IS GEN Z?

Generation Z is the cohort of people born from 1995 to 2010. They're born digital: from their earliest days, they have been exposed to the internet, to social networks and to mobile systems. Gen Z is a hypercognitive generation that's very comfortable with collecting and cross-referencing many sources of information and with integrating virtual and online experiences.

Gen Zers have a truly global focus and climate change is their number one long-term concern. They consider diversity and inclusion more important than fashion or reputation and have an entirely unique perspective on careers and how to define success in life and in the workforce. They place particular importance on working at organisations whose values align with their own.

Today's young people differ from yesterday's.

	B Baby boomer 1940 – 59	X Gen X 1960 – 79	Y Gen Y (millennial) 1980 – 94	Z Gen Z 1995 – 2010
Context	<ul style="list-style-type: none"> • Postwar • Dictatorship and repression 	<ul style="list-style-type: none"> • Political transition • Capitalism and meritocracy dominate 	<ul style="list-style-type: none"> • Globalisation • Economic stability • Emergence of internet 	<ul style="list-style-type: none"> • Mobility and multiple realities • Social networks • Digital natives
Behaviour	<ul style="list-style-type: none"> • Idealism • Revolutionary • Collectivist 	<ul style="list-style-type: none"> • Materialistic • Competitive • Individualistic 	<ul style="list-style-type: none"> • Globalist • Questioning • Oriented to self 	<ul style="list-style-type: none"> • Undefined ID • "Communaholic" • "Dialoguer" • Realistic
Consumption	<ul style="list-style-type: none"> • Ideology • Vinyl and movies 	<ul style="list-style-type: none"> • Status • Brands and cars • Luxury articles 	<ul style="list-style-type: none"> • Experience • Festivals and travel • Flagships 	<ul style="list-style-type: none"> • Uniqueness • Unlimited • Ethical

Figure 6 - Source: McKinsey

and adaptable. Gen Z is less loyal and willing to switch services in order to get the best customer experience. This mobile generation is adapting all the time and CEP companies need to ensure their technologies can meet evolving expectations.

Innovations, therefore, must be fast and can no longer take ten years to reach the market.

Optimising current processes

CEP companies must also look to optimise their existing operations with the adoption of digital tools and use of data.

Distribution hubs can achieve greater operational excellence using digital technologies to exploit every percentage of their existing operations. Data captured in a centre's typical processes can provide CEP professionals with visibility into their operations through real-time process optimisation and simulation.

In the near future, data sources will join to create data pools which will enable tighter integration with third-party data so that CEP business can gain perspectives over their entire systems, end to end. The need for digitalisation and interoperability, is therefore, stronger than ever.

CHAPTER 2:
**Meeting the labour
shortage challenge
with collaborative
automation**



The labour shortage from end to end of the supply chain is an ongoing problem around the world. Companies everywhere are struggling to ensure timely and cost effective deliveries amidst an **unprecedented shortage of workers**.

In Europe, there will be 95 million fewer people of working age in 2050 than there were in 2015, but by 2023, there will already be a need for 44.6 million warehouse employees.

The labour shortage issue is not limited to Europe, nor the CEP industry. It is a problem many companies are experiencing worldwide. According to the U.S. Chamber of Commerce, 47 million U.S. workers quit their jobs in 2021. The labour shortage has, in fact, been a gathering storm for many years that was exacerbated by the COVID-19 pandemic.

Using AI to combat a shortage of drivers

Major CEP players have lost over **10,000 delivery people** over the past months.

AI and other technology can help CEP operators deal with the driver shortage, with services such as dynamic routing helping businesses deliver cargo more efficiently. AI is more adept at matching loads with drivers because it can

analyse more data than humans. This guarantees that the best routes are used, allowing more deliveries to be completed with fewer workers. One driver may accomplish the work of two by delivering more in less time.

The use of these tools by more enterprises will increase overall industry efficiency.

Delivery by drones

Drones are a logistical technology that is continually evolving. Until self-driving vehicles become more common, drones can help automate last-mile deliveries.

According to Amazon, Alphabet, and other digital titans, drone delivery could play a key part in e-commerce fulfilment in the future. A number of big logistics businesses around the world are exploring drone delivery systems and services to tackle the problem of "last mile" deliveries and deliver more products with fewer drivers.

Shrinking workforce, increasing demand

Alongside a shrinking workforce, e-commerce and customer demands continue to rise. The e-commerce market worldwide is projected to grow annually by **12.4 percent (2022-2027)** and

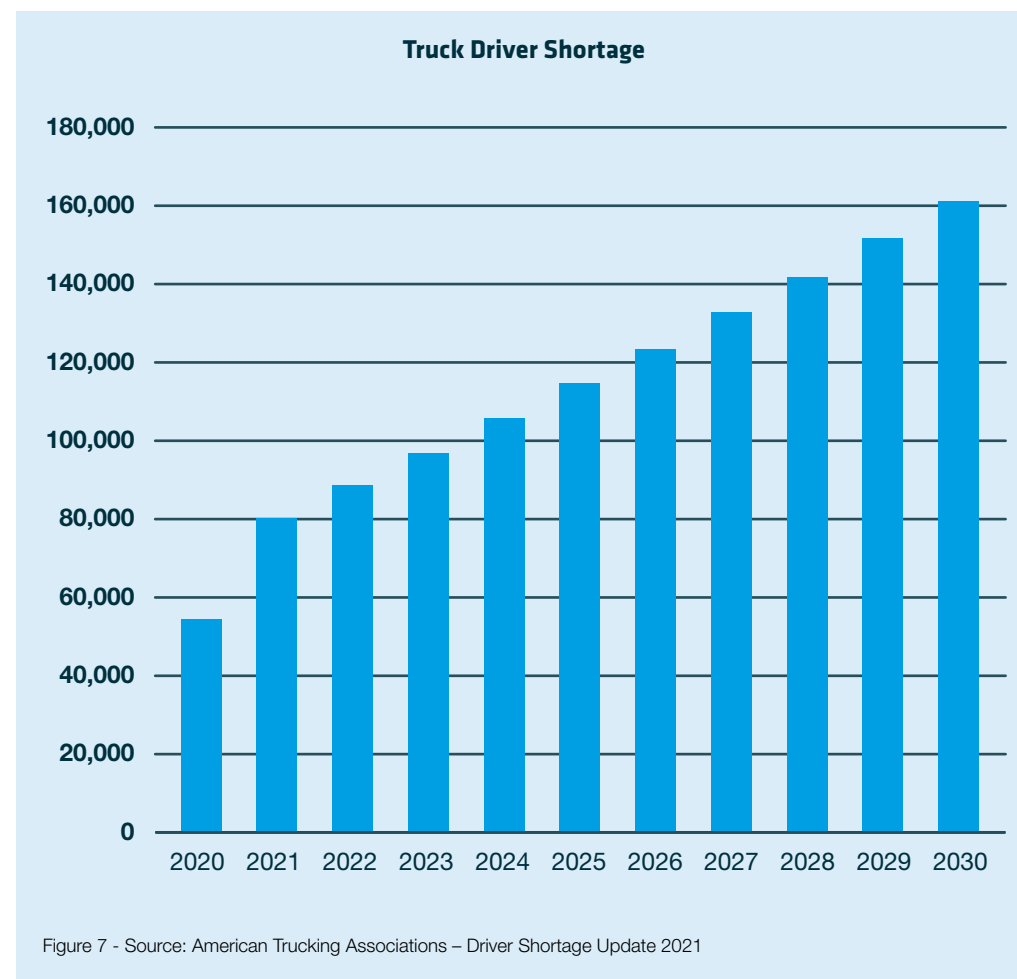


Figure 7 - Source: American Trucking Associations – Driver Shortage Update 2021

customers are seeking quick and convenient delivery. A lack of employees compounds issues such as processing mistakes in the goods receiving area and can result in ineffective and inaccurate loading and shipping.

CEP executives are beginning to acknowledge that investing in collaborative automation will be crucial to satisfying the ever-growing demand for quick and convenient delivery.

A digital solution to staffing problems

In a [recent study](#) by enterprise software supplier UiPath, 80 percent of the CEP executives polled said they would invest in automation to compensate for the lack of staff.

Companies are turning to technology such as AI, delivery robots and robotic process automation (RPA) software. As Jeff Burnstein, president of the Association for Advancing Automation (A3), said in reply to the UiPath survey:

"When companies can't find people, what are they going to do to maintain productivity and product quality?"

ROBOTS AND PEOPLE WORKING TOGETHER

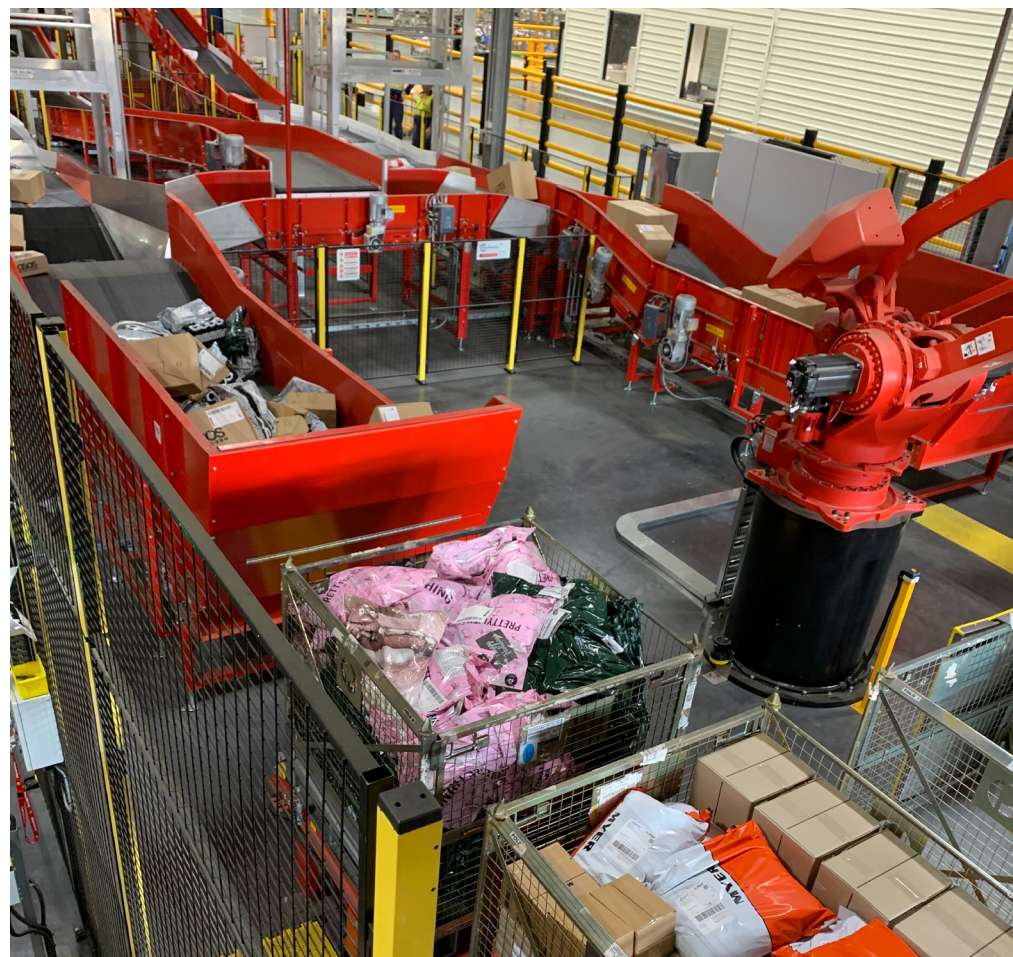
CEP companies are also turning to autonomous mobile robots (AMRs) to perform pallet movement, robot-to-goods picking or delivery to put walls, sortation and case or tote handling, seeing them as a continuum of development.

With this advancement, distribution centres can focus on enhancing customer service, while [collaborative robots](#) that work alongside humans provide workers with more lucrative employment opportunities. As more robots come online, CEP operators can [train and get certified](#) into more rewarding roles.

It's not a question of replacing people, however. According to the World Economic Forum, the [division of labour](#) between humans and machines across all industries may change by 2025, replacing 85 million jobs; yet, as more people adapt to this divide, 97 million new jobs may be created.

The use of robotics is picking up

More CEP businesses are seeing the benefits of [incorporating robotics](#) into their daily warehouse and logistics operations.



Automated robotic arms, for example, are performing a variety of tasks such as assisting with picking, sorting and transporting goods. The introduction of advanced sensors in recent years has enabled even more advanced processing capabilities. Robotic tipping arms, robotic pickers and automated guided vehicles (AGV) are also being integrated into distribution centres.

The objective of this robotic intelligence is to digitise human efforts in order to streamline the workflow and produce a more efficient, safe and cost-effective solution for operators. As robotic technologies become more common-place in today's modern CEP businesses, the future of parcel handling robotics appears promising.

Collaboration, not substitution

As the ongoing labour shortage shows no sign of letting up, further automation of parcel handling and delivery processes will provide significant benefits to distribution centres. For example, in situations where it makes sense, technologies like drones, [robot deliveries](#) and autonomous vehicles could be of tremendous assistance to parcel delivery companies.

Moreover, as the industry seeks more robotic technological solutions, the technology will only

advance with limitless potential. Despite the widespread fear that automation in the workplace brought on by advancements in robots and AI will lead to the elimination of millions of jobs, research reveals that firms that adopt such tools instead attract a different kind of worker.

This alternative narrative was reinforced by a recent [Wharton study](#) showing that investing in robots improves work efficiency and quality, with the corresponding lower costs often creating more jobs for their human counterparts.

The rise of Gen Z

Gen Z is entering the labour force at a critical juncture. Historically, a first job was seen as a rite of passage: it meant starting at the bottom of the ladder and doing tedious but necessary work to gain more useful professional abilities. However, technology and automation have removed many of the more laborious and repetitive duties.

With employment changing and the labour force diminishing, competition for talent is severe. To compete, employers should think about restructuring these occupations so that they can both attract and engage Gen Z while also generating a pipeline of future talent.



Gen Zers [approach work in a very different way](#) than people in earlier groups did. To attract them, organisations will have to personalise career experiences as much as they person-

alise offers to their customers. Personalisation will not only help to attract this generation, but it will also help attract and keep talent across the board.

CHAPTER 3:
Cross-border
challenges and
the case for new
technology





Cross-border e-commerce as share of total e-commerce worldwide in 2016 and 2022

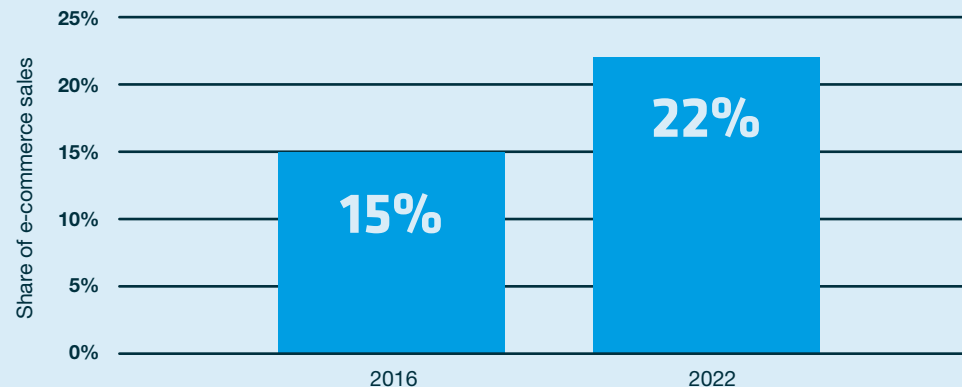


Figure 8 - Source: Statista

The volume of cross-border commerce continues to proliferate, with international deliveries now growing twice as quickly as domestic ones. Out of 9.3 billion cross-border orders in 2020, 60 percent of them were intercontinental. [Source: McKinsey](#)

The COVID-19 pandemic did much to accelerate the unprecedented rate of online purchases and package deliveries, with e-commerce fueling cross-border growth which saw an increase from 15 percent to 22 percent between 2016 and 2022.

And even as the pandemic ebbs, the success of globalised e-commerce ensures international online sales continue to grow and there is a robust demand for parcel logistics.

What's driving cross-border commerce?

The primary motivation behind cross-border commerce is price: consumers are looking to foreign countries for cheaper goods or lower delivery costs. In addition, the unavailability of certain Western-made products in Asian countries is stimulating the growth in parcel deliveries in trade lanes from both the European

Union and the United States to China. [Source: McKinsey](#)

Another explanation for the growth of the cross-border delivery market is that the direct-injection model is gaining popularity. In this model, multiple orders are transported in bulk to the destination country before being separated into individual packages that are passed on to domestic logistics players responsible for last-mile deliveries. [Source: McKinsey](#)

The opportunity in cross-border logistics

[McKinsey](#) projects that even by conservative estimates, cross-border e-commerce will expand to around \$1 trillion in merchandise value by 2030, from its current value of approximately \$300 billion.

This growth in cross-border e-commerce parcels represents an opportunity for postal services, international express shipments and commercial-parcel operators, particularly if they can guarantee fast delivery speeds, reliable service, reasonable prices and 'track-and-trace' visibility.

Cross-border e-commerce will grow to a \$1 trillion-2 trillion market by 2030, depending on scenario



Figure 9 - Source: McKinsey

The challenges

But there are inherent challenges in cross-border e-commerce that could hinder the potential of this growth opportunity for CEP businesses. In a 2022 survey of 91 postal houses, 63 percent noted they were struggling with the challenges of cross-border e-commerce.

Source: Escher

On the consumer level, an IPC Cross-Border E-Commerce Shopper Survey researching cross-border online shoppers found that 21 percent paid customs fees, significantly higher than in previous years.

These challenges are, in part, due to the fragmented nature of supply chains. But the main obstacle lies in the complexity of trade and customs regulations and inaccurate or inadequate documentation preventing products from clearing customs.

THE COMPLEXITIES OF TRADE RULES AND CUSTOMS

As the world continues to see a more volatile global trade environment, the trading landscape is growing increasingly complex and is constantly evolving. Bilateral and regional trade regimes continue to proliferate, which means different standards, rules of origin,

and tariff and non-tariff measures, which are difficult and costly to navigate.

Simply understanding the regulations is very challenging, as they are encapsulated in dense and elaborate legal texts, requiring expert trade compliance departments for large companies or blogs and internet searches by individuals.

THE PAPERWORK REQUIRED

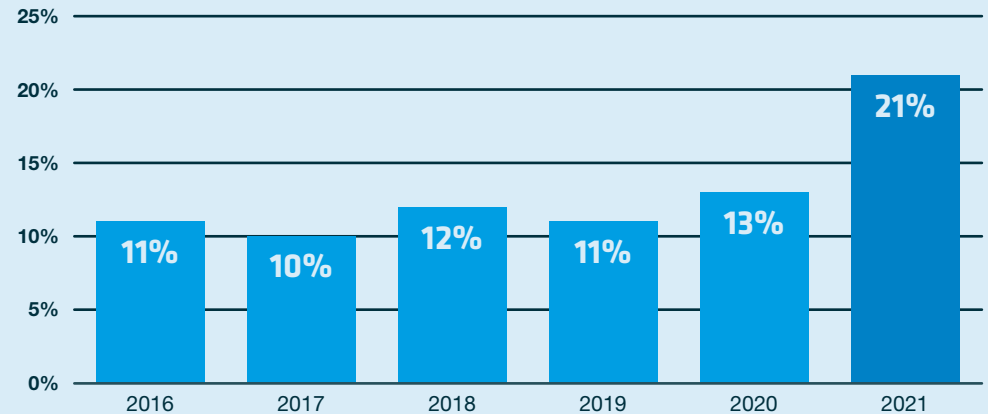
Understanding regulatory regimes is one thing; full compliance is another. Cross-border trade involves significant documentation which varies by the market and other factors.

CN22 and CN23 customs declarations, for example, are essential for shipping a parcel outside of the EU and must indicate the contents of the parcel, their value, the shipper and the receiver and the parties involved in the shipping. Whether a CN22 or a CN23 form is required, however, depends on the weight and value of the package.

WHAT COULD POSSIBLY GO WRONG?

In the absence of standardised rules and regulations – and the substantial paperwork required to accompany cross-border goods – customs clearance issues easily happen, with costly consequences.

Percentage who paid customs fees on their most recent cross-border online purchase



Question: Did you have to pay customs duty / customs clearance fees on this particular purchase?
 Sample: 33,179 and 22,700 (trend)

Figure 10 - Source: IPC Survey

Customs Declaration

May be opened officially

Package, Registered Package outside the European Union and Letter / Package with Insured Service outside the European Union (up to 20kg)

CN23

To:

Your name: _____

Company: _____

Street & house #: _____

Postal code & city: _____

Country: _____

From:

Name: _____

Company: _____

Street & house #: _____

Postal code & city: _____

Country (in capital letters): _____

Telephone / E-mail: _____

VAT code (if known): _____

Customs Declaration

This item contains:

Gift

Documents

Commercial sample

Return goods

Other

Invoice

Invoice number: _____

Certificate

Certificate number: _____

License

License number: _____

Total # of packages: _____

Detailed description of content	Amount	Net weight(kg)	Value (€)	HS Tariff Number	Country of origin of goods

Comments or special mentions:

(For example, goods are subject to quarantine, sanitary/health or other important restrictions)

Date (dd/mm/yyyy): _____

Signature: _____

I declare that the details stated on this customs declaration are correct and that the mail item does not contain any dangerous substances that are prohibited by law or postal regulations

Misdeclarations lead to additional taxes and the holding of goods, resulting in mandatory modifications, or even destruction, along with possible non-compliance sanctions. A parcel stating it is destined to Kuwait, for example, instead of the 'State of Kuwait' could be blocked, as errors in country of origin or destination are amongst the most frequent – along with errors on values, descriptions and HS codes.

For a CEP company, non-compliant parcels mean significant disruption to the flow of goods, reducing throughput, compromising speed and full utilisation of its system's full capacity, which jeopardises the ROI of its capital expenditures.

Then there is the extra manpower needed to manually deal with the non-compliant parcel, which is critical in an era of labour shortages in the sector. Not least, there is the perception value as customers start to see the CEP company as unreliable.

Overcoming the obstacles

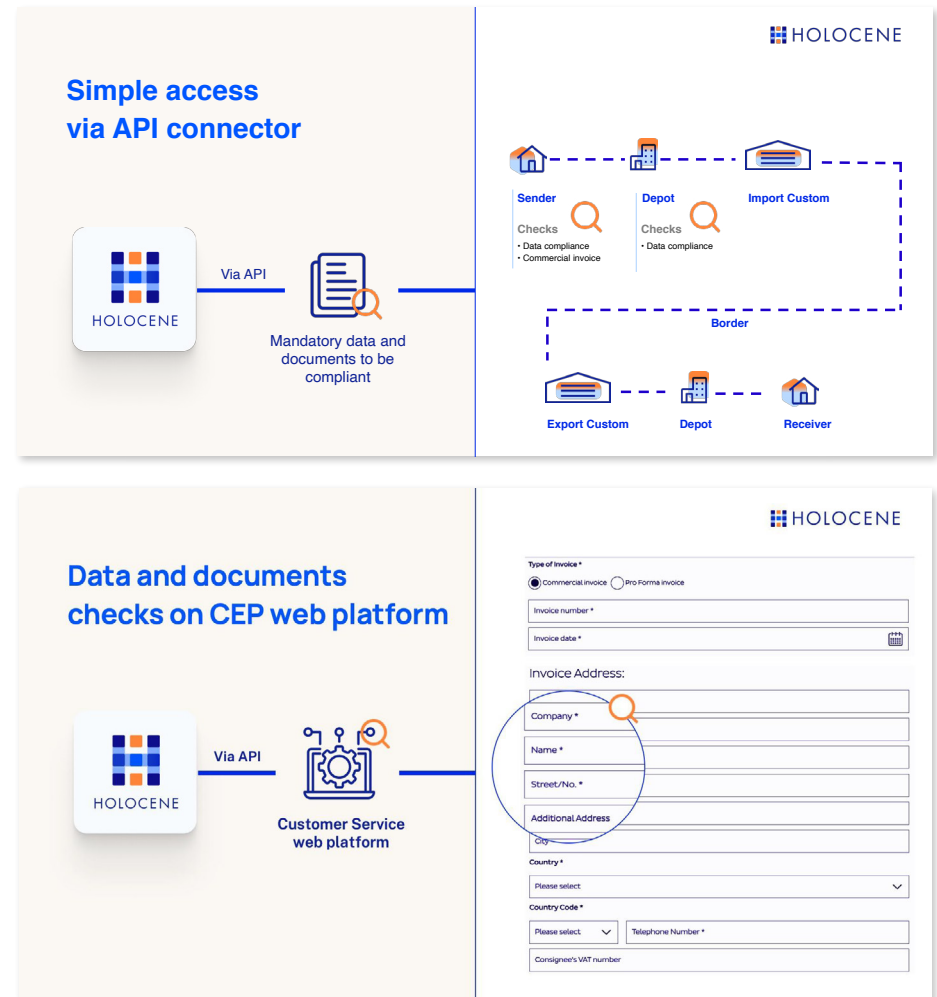
The call for a digital solution with the ability to remove the obstacles that still impede frictionless and efficient deliveries across trading blocs is now stronger than ever.

TRADE COMPLIANCE SOFTWARE TO THE RESCUE

One such technology, a digital trade compliance API integration to access analysis capabilities by Berlin-based Holocene, is currently being piloted in a European CEP company.

Holocene has developed trade compliance analysis capabilities based on machine learning to check parcel data and ensure it is trade and customs-compliant. The solution reads the data to analyse which regulations apply to the parcel and checks the data compliance accordingly. Through OCR technology, the CEP operators are able to extract the data and send it through a Holocene analysis via API for controls.

When its algorithms identify incorrect data input in the CEP product or on the parcel labels, Holocene sends an alert that something is wrong. For example, if the product description stipulates a computer but the HS code is incorrect, a notification is sent on the shipment and the parcel can be put aside at the CEP sorting facility. The sender can change the data on the shipment, or the CEP operator can print another label with the correct information directly at the sorting centre and put it on the parcel so that it will clear customs.



The benefits of trade-compliance software

Holocene's digital solution has huge potential to facilitate cross-border trade flows. By identifying problematic parcels before they are placed on the system, the CEP company can avoid bottlenecks and use its full capacity. It improves throughput rates and increases its quality service.

It is good for the end customer who doesn't want to pay a fee for further handling of their parcel. It is good for governmental authorities/regulatory entities seeking to prevent the importation of dangerous goods.

The solution, founded in logistics knowledge and expertise, is premised on a licence model, calculated on the volume the CEP company processes in its international operations and the number of data compliance requests it makes.

This specialist technology will help manage trade and customs requirements efficiently, reducing the likelihood of incurring fines and compliance issues, while automatically flagging customs declaration production and identification and responding to new regulations.

A dynamic answer to a dynamic environment.



CHAPTER 4: Shortening the last mile



Although CEP providers have made significant progress over the past years, the last mile remains increasingly complex: it's time consuming and the costs and labour requirements continue to be substantial.

A package may have travelled across continents, but the final journey to the customer's door – or close to it – consumes a **staggering 53 percent** share of the total shipment cost. And there's no turning back from the changes that the pandemic made to the last mile: consumers' shopping habits and supply chains have changed.

CEP operators must adapt. Indeed, according to a recent study, companies that don't enhance last-mile delivery can lose up to **26 percent in net profit** over three years.

Negotiating the last mile requires knowing the ins and outs of last mile delivery optimisation. Last-mile enhancements help control costs and improve customer service, while outdated techniques affect end-to-end shipment performance and can lead to miscommunication, higher transportation costs, delivery delays and overall customer dissatisfaction. Even one bad experience with a CEP company can make a

business decide not to use that company again and choose a competitor instead.

Last mile technology tools

Fortunately, last-mile delivery issues can be handled via readily available technology. Cloud-based storage, collaborative dashboards, global platforms and creative technologies are now the standard rather than the exception in the CEP space. These technologies improve the shipping supply chain and consumer experience.

Last-mile optimisation also involves the use of drones, robot deliveries and autonomous vehicles to enhance delivery efficiency and cut costs.

The use of robotics in the workforce, increased local presence, the development of alternative delivery models, and the use of digital technology in the fulfilment and delivery processes are all topics that will continue to be of significance to CEP operators.

ROUTE OPTIMISATION BENEFITS PARCEL SORTATION

One of the most efficient and cost-effective ways to make deliveries is using technology to optimise delivery routes.



Figure 11 - Source: OptimoRoute

The increase in the quantity of goods delivered daily to far-flung addresses now requires more travel and stops by drivers. Conventional sortation methods that sort parcels by destination means that drivers must then arrange the parcels in a van, which is very time consuming. And if the CEP operator allows rerouting up until a few hours before delivery, that adds even more to the driver's workload.

But a sophisticated automated system that can sort products into a van based on delivery sequences can save driver time and reduce the number of miles travelled. Optimised routes will help drivers navigate both crowded cities and rural areas, but they're also better for the CEP company, given that driver salaries and fuel costs can account for over half of operational costs per mile.

Diverting the last mile to collection points

With the explosion in e-commerce, more companies are looking at introducing lockers into centralised locations. Rather than arriving at the customer's home, the final delivery is completed at a convenient collection site.

The Pick-up/Drop-off (PUDO) locker business is expanding, with the incumbent post office



being the market leader in several countries. In Australia, for example, the postal service has distributed around 1,100 lockers. The German postal service has taken a similar approach.

In other countries, private companies like Amazon and Doodle are supplying PUDO lockers. InPost provides more than 20,000 parcel lockers in Poland, the UK and Italy.

During the pandemic, home delivery was the norm, but with more and more people working outside of the home again, delivery lockers in busy areas such as train stations, bus stops,

superstores, or town centres make sense. Companies are realising that giving consumers the option of out-of-home (OOH) alternatives provides them with a collection point that may actually be more convenient than receiving delivery at home.

Localised delivery networks offer flexibility, connectivity and convenience to help streamline the last mile.

A greener last mile

The UN's COP26 goals and the European Union's Green Deal have set benchmarks to reduce net greenhouse gas emissions by at least 55 percent by 2030, and to achieve net carbon zero by 2050. CEP leaders will play an important role in achieving these goals.

The growth of e-commerce has made the amount of carbon emissions skyrocket, making sustainable last-mile more crucial than ever. According to Statista, the total emissions caused by parcel shipping may generate 25 million tons of carbon dioxide by 2030.

The demand for green CEP services is increasing and businesses are under increasing scrutiny, particularly by certain target markets.

Today's customers are more environmentally-conscious than ever. Gen Z shows the most concern for the planet's well-being and influences others to make sustainability-first buying decisions, according to the World Economic Forum.

As customers care more and more about environmental initiatives, those shippers who can provide sustainable solutions will be more competitive. According to a survey from airqualitynew.com, 43 percent of consumers said they would prefer to shop with a retailer if they offer sustainable delivery options.

HITTING THE SUSTAINABLE SWEET SPOT

The 'sweet spot' for CEP companies creating the sustainable last mile will be the combination of electric vehicles and out of home delivery, according to the report 'Green Last Mile Europe, 2022'. The report concludes that a combination of e-vehicles and parcel lockers and other out-of-home delivery locations could realise an 87 percent reduction in CO2.

Researchers at the University of California Institute of Transportation Studies found that fossil fuel powered delivery vehicles account for more than half of certain types of emissions



in urban areas. The range and performance of electric vehicles as replacements has sometimes been seen as a problem, but since 95 percent of parcel deliveries are under 100 miles, zero-emission vehicles can be viable. Some cities are already testing bike, drone, and robot deliveries.

A combination of electric vehicles with local micro-fulfilment centres, automated lockers, and click-and-collect locations could reduce emissions and travel congestion, according to an [Accenture](#) study on creating a sustainable last mile.

The future of the last mile

To absorb adjustments and market shifts in the last mile while mitigating costs, it's critical that [CEP companies have an appreciation of the role](#) played by automation, real-time data prediction and management, as well as flexible delivery networks.

Given that infrastructure, regulations and business environments vary significantly from market to market, however, there is no one solution for all businesses. DHL suggests the Flexible Networks, Automation, Data Prediction and Management model (or the FAD triangle)

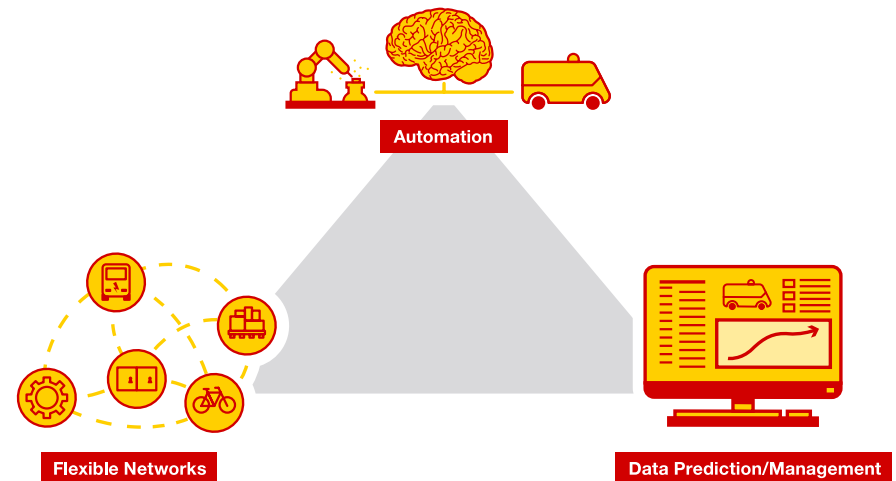
as a framework to assess the most efficient way to adjust to the logistics market of the future.

Essentially, the model describes three focus areas in which CEP operators should develop their operations in last-mile delivery:

- **Flexible transport networks**, including more efficient use of available transport capacity in a market, as well as different modes of transport such as bicycles and vans to improve connectivity.
- **Automation** that includes higher levels of automated processing at fulfilment centres, as well as autonomous vehicles and robotics to bring down labour costs, increase productivity and enhance services.
- **Data prediction and management** enhancements that allow CEP operators to better forecast, get greater visibility on inventory and transport flows, manage routing more effectively and provide tracking to enhance the customer experience.

However, not all three elements require equal investment. For example, a company facing increasing pressure from its customers to

THE FUTURE OF LAST MILE LOGISTICS: A RACE TO THE URBAN CONSUMER



The FAD Triangle describes three focus areas for logistics operators to increase their competitiveness in last-mile delivery.

Figure 12 - Source: DHL

narrow the delivery timetables offered to them may prioritise investing in data analytics tools with predictive and prescriptive abilities to help optimise their operations.

It is clear that e-commerce is shaping parcel delivery in a very dynamic way. As Lee Spratt, CEO DHL eCommerce Americas, says:

"What is .. critical to our future is being more agile in adjusting to market trends, maintaining an openness towards learning and reinvention, and promoting a newfound flexibility as a baseline for the transport industry."

CHAPTER 5: Insights into how CEP companies are adapting their operations

We asked a number of CEP companies and consultants in the industry about how they are meeting the new e-commerce demands, the technological initiatives they're now exploring and how they are tackling the calls for sustainable business practices. Here's what they had to say:



Ivan T Hofmann, retired past president and EVP/COO of FedEx Ground, and Principal at ETC & Associates LLC, a transportation consulting group specialising in executive-level assistance in management development, organisation, budget planning, costing, network optimisation and labour relations

What are the biggest challenges the CEP industry sees in the year ahead?

I think one of the biggest challenges facing the CEP industry in the coming year is the labour shortage. It's currently difficult to hire people and labour costs are at a premium as wages have increased considerably over the last three years. In fact, we are seeing the greatest wage increase since the late 1970s. Another challenge is that the next generation of workers – the Generation Z labour force – are less inclined to want to work in logistics but see brighter futures elsewhere, such as software development. Another problem the industry is facing is the cost of diesel; we are now seeing a great disparity between the price of gasoline and diesel, with diesel prices per gallon being over a dollar more expensive than gasoline. I also see the transition to green energy as being one of the biggest challenges for the industry, as more CEP companies look to electric trucks and autonomous, or semi-autonomous, vehicles.

How has the CEP industry managed the continuing growth in parcel volumes and adapted its operations to the e-commerce demands?

From a transportation point of view, everyone thought the conversion from bricks and mortar

retail to online retail would be permanent and this is not the case. The volume of e-commerce parcels has actually declined and we can see the impacts of this if we look at Amazon's recent announcement that it plans to retrain employees and FedEx's decision to furlough employees in the US. The experience of shopping in-person has returned, although I don't believe this trend will be permanent. I think e-commerce will stabilise and grow again, but we may not see the same growth rates as we saw during the COVID-19 pandemic.

The global pandemic forced many parcel operators to accelerate their digital transformations. What are the biggest obstacles to CEP companies fully digitalising their operations?

A lot of CEP providers are still using slow IT systems, such as the old IBM AS400 database and operating system. To try to make the transition from this type of legacy hardware to more up to date, state-of-the-art IT systems is a big change. There are a lot of legacy systems that have served their purpose well and there is a reluctance to change. IT skills – such as systems architects – are also difficult to find and availability of IT labour is a big issue. Moving forward, I think we are going to see incremen-



tal small changes and a lot of stand-alone systems rather than integrated systems such as Salesforce. Take, for example, a business intelligence software that is being deployed by a direct-to-restaurant wine delivery company. The data analytics that this software provides is exceptional. But it stands on its own and is not totally integrated into the company software. It utilises data visualisation dashboards to manage day-to-day operations but will need more business intelligence analytics that can use this information to move the company into the next century. I think this will be typical.

There is a lot of talk about digitalising the last mile. Can you highlight one technological initiative you recommend taking in this regard?

I think there are two aspects to the last mile which can benefit from technological initiatives. The first part is facility optimisation. Technology can take all the packages that are going to be out for delivery on a certain day and route the packages by geographic area, telling the CEP operator how many routes it will need to run. The second piece is route optimisation. Now that the operator knows how many routes it needs to run, technology can then tell the operator how to run them – turn by turn. This enables the operator to know when, in that sequencing, a package is going to be delivered, using real-time traffic data. If parcel recipients are not at home or there is a detour, technology automatically re-sequences the delivery and lets the driver know when they will be done. By optimising this through the use of technology, CEP providers can reduce costs and driver time.



What are the biggest changes you see in end-customer expectations and what is the industry doing to meet them?

The end customer wants predictability. In fact, predictability is more important to the end customer than speed of delivery. If a CEP operator tells a customer their parcel will arrive in two

days, that's one thing. But if the CEP operator says the parcel will be delivered at a specific time on a specific day, the customer will expect it. Predictability and meeting that predictability is very important. The next most important thing to the end customer is free shipping and free returns. We can see the growth in this re-

cently; more online shopping baskets are being abandoned due to shipping charges or returns policies. If e-commerce is to grow, free shipping must be available, along with fast and efficient returns possibilities.

Deutsche Post

Deutsche Post – Germany

What are the biggest challenges Deutsche Post sees for the year ahead?

The pandemic has accelerated the structural transformation in the postal sector. Yet we have successfully met this challenge and transported a record volume of over 1.8 billion parcels in 2021. While volumes in letter mail communication as a whole continued to follow a downward trend, business with advertising mailings picked up noticeably, but still the share of letters constantly decreases. This means we have to continue linking our mail and parcel networks to ensure maximum flexibility and have to keep pushing the expansion of our sorting capacities for goods-carrying shipments.

How has Deutsche Post managed the continuing growth in parcel volumes and adapted its operations to the e-commerce demands?

As mentioned above, we have continually improved the linkage between our mail and parcel networks and will continue to do so. Additionally, we have increased our sorting capacity massively, for example, by launching new sorting centres near Berlin and Munich in 2022.

The global pandemic forced many parcel operators to accelerate their digital transformations. According to Deutsche Post, what are the biggest obstacles to fully digitalising operations?

We are driving various digitalisation initiatives throughout our post and parcel operations.

Most of our efforts go into technology exploitation in order to optimise our core businesses processes – enhancing both the customer and employee experience, as well as achieving greater operational efficiency. For example, we are expanding the use of data analytics to even better predict daily volumes for our delivery bases and develop digital solutions to support our site managers. We're also accelerating digitalisation in HR functions, for instance, by

implementing tools for mobile learning, such as a dedicated language learning app for our employees.

There is a lot of talk about digitalising the last mile. Can you highlight one technological initiative Deutsche Post has taken in this regard?

For our millions of private customers in Germany, our Post & DHL app offers a complete one-stop-service. Customers can easily track letters as well as the status of parcels and can also pay their postage online.

What are the biggest changes you see in customer expectations and what is Deutsche Post doing to meet them?

For business customers, there's still a need for different package size solutions, injection delivery times and more package delivery flexibility to end customers. Consumers demand reliable shipping and 24/7-tracking solutions. We also see an increasing demand for delivery time slots. Our live-tracking solution for DHL consumers in Germany is well established after its first year and will be expanded for postal shipments in 2023.





bpost Group – Belgium

What are the biggest challenges bpost sees for the year ahead?

Getting our new sorting system up and running to process 25,000 parcels per hour in an operational environment will be a serious challenge. We're expanding the system in an environment that's in daily operation and this type of implementation requires a lot of attention. We have to continue to look after and manage our customers' demands during the implementation to meet market requirements but this can be challenging.

In addition, we have to manage the decision process for handling the extra system capacity after the installation so that our operations are tuned according to volume forecast. The challenge will be how to manage growth while adjusting to volumes that may not increase as much as previously.

How has bpost managed the continuing growth in parcel volumes and adapted its operations to the e-commerce demands?

Our main driver is to provide sufficient capacity to sustain our customers' growth, while keeping a high level of quality. Therefore we are expanding our parcel sorting capacity according to our expansion plan. We're also adding short-term technological enhancements to increase efficiency and quality in various parts of the parcel process – such as the last mile –

which have increased our capacity, in addition to the system capacity expansion.

Moreover, bpost keeps looking for longer-term technological game changers having impact on how we use the surface area of our building, how we can make the best use of investments long-term through flexible and modular expansion and how to handle various types of shipments in the most efficient way to increase throughput.

All of this entails looking at the use of pouch sorter technology, robotics for in-feed, culling and sorting purposes and the use of AGVs and AMRs.

The global pandemic forced many parcel operators to accelerate their digital transformations. According to bpost, what are the biggest obstacles to fully digitalising operations?

It's one thing to have the data. But the other and almost more important thing is making the machine data available, understandable and actionable for the shop floor. So, we're very interested in and currently focussing on transforming data to valuable and accessible information – not only for management use but also through the available monitoring screens at the sorting systems. In our opinion, the data has to be transformed in a flexible, configurable



and easy manner. For example, to optimise and improve the quality of end-of-chute sortation, the data must be able to provide information and guidance on how to improve the chute operations to make this particular touch point more smooth and precise.

There is a lot of talk about digitalising the last mile. Can you highlight one technological initiative bpost has taken in this regard?

We have installed a new parcel sorting system and have made a number of add-ons and enhancements. For example, we have implemented screens in the production, to ensure

the right data is available to the right operator at the right time – and in real time. Making data available on the floor in this way has helped the operators monitor, plan and optimise their work instantly. We have also installed a guide to help the operator fine-sort the parcels at the end-of-chute position accurately through the use of camera and data technology. Finally, we're also monitoring our stock and estimating how long it will take to process our parcel production by using cameras and image processing that is powered by machine learning. Taking images of roller cages with machine learning tools has really enabled us to fine tune our daily operations.

CONCLUSION

After two years in which the pandemic was the force shaping the immediate future, CEP companies are now moving into another 'new normal' – one of unpredictability, shaped by geopolitical conflicts and insecurity, high inflation, chaos in energy markets and China's uncertain post-pandemic path. To complicate matters further, the industry is facing unprecedented labour shortages.

In retrospect, we could say the pandemic marked the end of a period of relative stability in both geopolitics and economics. Certainly for CEP companies, it ushered in a booming era of e-commerce that provided a very healthy growth outlook for the industry. As the pandemic recedes into the background, however, the growth in parcel volumes has stagnated, although indications of e-commerce and cross-border parcel movements support the possibility that this slow down is temporary.

But while the economy is highly unpredictable, we believe that some factors nevertheless hold

firm: customer expectations and demands remain high, CEP companies must continue to stay relevant – whether that's through diversifying or capturing new markets – and the need for digitalisation and interoperability is stronger than ever.

Digital technologies and the use of real-time data will be fundamental for CEP businesses wanting to overcome and remove obstacles to frictionless and efficient parcel handling and delivery.

It will be especially relevant in dealing with the unprecedented shortage of labour. Parcel handling operations that deploy smart technologies, intelligent systems and collaborative robotic assistance will not only drive greater efficiency with less need for human intervention but provide opportunities for employees to engage in other rewarding work. In addition, they will have greater success in attracting, retaining, developing and motivating Gen Z workers entering the labour market whose digital skills will



be both the foundation of the future workforce and essential to all businesses.

Digital technology will also help CEP companies overcome other challenges such as the pressing issue of cross-border commerce and the continually costly and complex last mile. Many digital solutions that can complement their existing systems with no investment needed are already moving into these spaces, with the introduction of much-needed trade compliance software being a prime example.

Technology is already transforming the last mile and further advancement no doubt will be made through clever PUDO points and autonomous vehicles. One area which can support even greater efficiency is in the sortation end, where automated systems can help cut costs in driver and travel time. Broader use of advanced technologies will support greater value creation, which is why it can be wise to partner with a technology provider to get started.



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