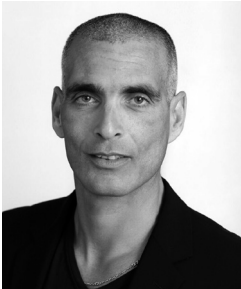


How Amazon's delivery logistics redefined retail supply chains

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Abstract

Amazon is setting very high standards for the entire retail industry with the market-leading ecommerce innovations they are implementing across their delivery logistics infrastructure, as well as the technologies behind it. As customer spend rapidly shifted over the past decade towards online commerce and away from physical stores, customer expectations around convenience, choice and speed of delivery have also changed drastically. The boom of on-demand technologies such as real-time tracking, alongside the widespread adoption of smartphones, means that retailers across the world need to quickly adapt in order to stay relevant with their customers. The implications of this shift towards customer-centric deliveries affect the entire retail supply chain, which needs to be redesigned to ensure companies gain maximum operational efficiency while providing an exceptional customer experience. This new retail landscape is having a huge impact on both the micro and the macro level. On the one hand, retailers need to optimise their fleets, delivery partners, warehouses, stores and customer service. On the other hand, regulators need help creating cities that provide the optimal infrastructure to efficiently manage the flow of goods. The last mile in particular is becoming one of the toughest challenges for retailers to support, and they will need to embrace technology that helps them manage their operations while maintaining a healthy bottom line. It is not a simple task to reach all customers wherever they are, whenever they want — especially in countries or cities with low population density. However, as delivery companies, in-house fleets and crowdsourced resources become more aware of these challenges, we will see the emergence of new models that efficiently utilise multiple tools, technologies and resources. The entire industry is working towards achieving flawless orchestration of a fully-transparent, fully-optimised supply chain, which is driven as much by cost-efficiency as it is by providing end-customers with exceptional brand experiences.

Keywords

last mile delivery, 3PL delivery, 3PL logistics, retail delivery system, retail logistics, Amazon

THE CURRENT MARKET LANDSCAPE

The value of the small parcel shipping market was almost \$300bn in 2016, up from just over \$270bn in 2015.¹ North

America is by far the largest regional parcels market by value, worth over a third of the entire global market. However, the Asia-Pacific region is expected to surpass North America very

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soon, with double-digit growth driven by China, which accounts for 47 per cent of the regional total. Chinese parcel volumes increased rapidly from 1.2bn in 2007 to 20.6bn in 2015.

Growth in Internet retail has been the main driving force behind the increase in parcel delivery volumes. In 2016, retail e-commerce sales worldwide amounted to \$1.86tn, a number which is projected to grow to \$4.48tn by 2021.² However, it is important to put these numbers in perspective, as e-commerce sales currently account for just over 10 per cent of all retail sales worldwide,³ a percentage which is also poised to grow significantly over the next decade.

Amazon has been a driving force behind the evolution of e-commerce. The tech giant currently accounts for 43 per cent of all US online retail sales.⁴ What is more, the company is constantly venturing out into new industry verticals in order to strengthen their market share and their logistics infrastructure. Last year Amazon acquired Whole Foods, gaining

a significant toe-hold in the gigantic \$800bn a year grocery market.⁵ Whole Foods' 431 strategically located stores and 91,000 employees will align with the goals of their new parent company, helping support their expansion into the grocery market.

Besides the new technologies being developed and rolled out by Amazon, it is their Prime subscription programme which really puts the spotlight on speed and value. Amazon Prime members enjoy free two-day delivery across the US. In certain zip codes, they even offer free same-day delivery. What is more, for specific items, some Prime Now customers in high density urban areas can get free 2-hour delivery on thousands of items. Starting February 2018, Amazon began delivering Whole Foods groceries free within two hours to Prime subscribers in four US cities, bringing a new level of competition to the already booming food and grocery delivery business.⁶ In its latest quarterly earnings statement (February 2018),

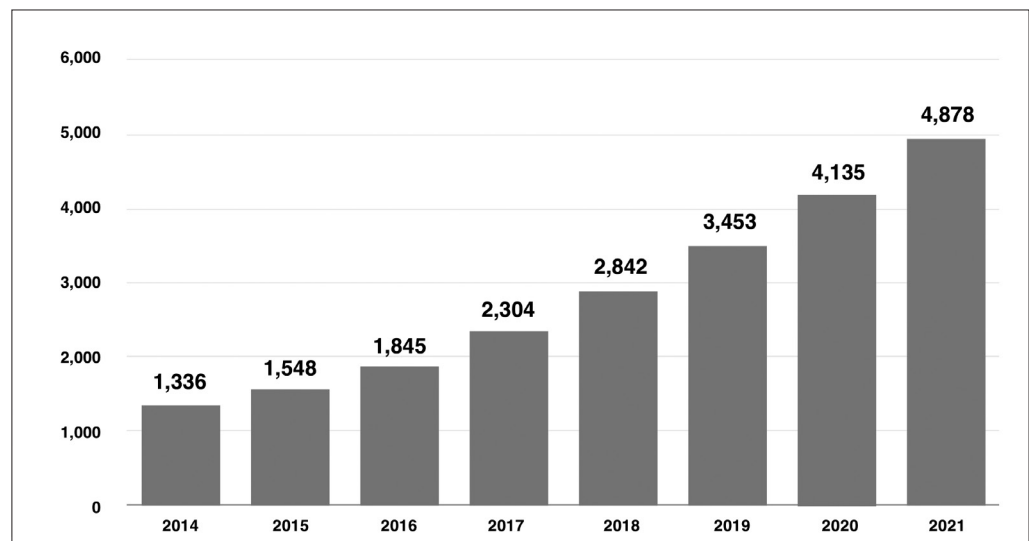


FIGURE 1 Retail e-commerce sales worldwide from 2014 to 2021 (in billion US dollars)
Source: Statista

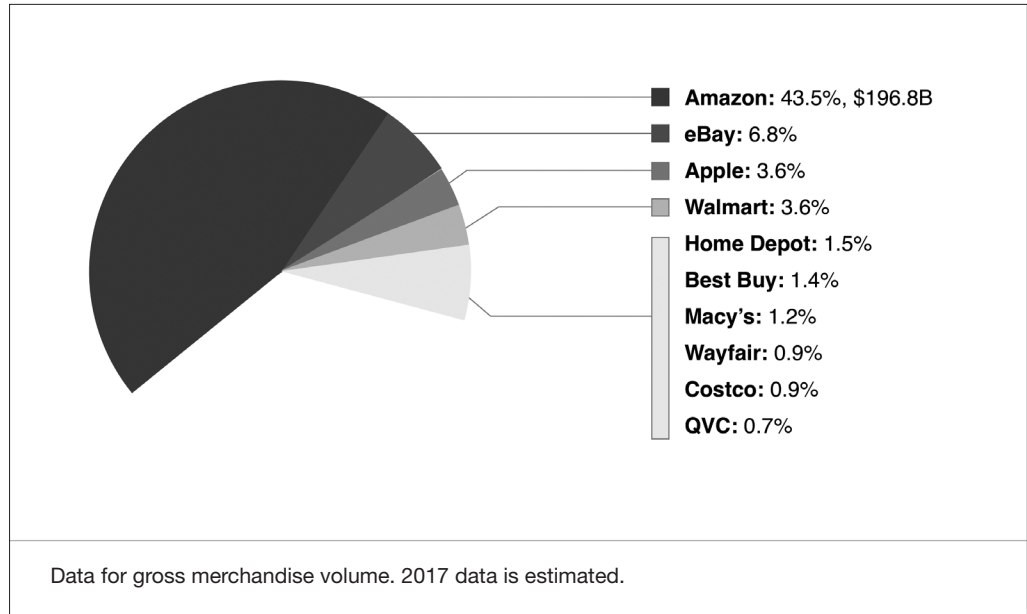


FIGURE 2 Top 10 public companies ranked by US e-commerce sales for 2017
Source: eMarketer

Amazon announced that ‘more new paid members joined Prime in 2017 than any previous year — both worldwide and in the US.’⁷ The company has historically kept its number of Prime subscribers close to its chest. Analysts estimate that there were more than 54m US Prime subscribers by July 2017.⁸ Revenue from subscription services — which includes annual and monthly Prime fees, plus other revenue from books, music, videos, games and non-Amazon web services subscriptions — rose to \$3.2bn, up 47 per cent from the same period a year earlier.

All these changes in the market landscape put an unprecedented amount of pressure on retailers, especially since Amazon is willing to absorb the huge delivery-related overhead costs by focusing on growing revenues and sales. Delivering 1.6m boxes daily to people’s doorstep in record time is a difficult and costly task so it is not surprising that

in 2016 alone, Amazon ‘lost’ \$7bn on shipping.⁹

Putting customer service and convenience at the heart of everything they do is fueling Amazon’s growth, and at the same time shifting customer expectations from their delivery experiences around the world. They established new standards of convenience, ease and efficiency, and now all other retailers have no choice but to face these challenges by finding ways to match or surpass their customers’ expectations. This can only be done by modernising archaic logistical infrastructures in order to create and orchestrate a new breed of supply chain, one that is faster, more transparent and more efficient than ever before.

THE NEED FOR SPEED, CONVENIENCE AND CHOICE

A wide range of delivery alternatives has become one of the main factors in

determining whether an e-commerce operation will succeed. Convenience and flexibility are at the heart of what has made online shopping more appealing than visiting a store for many consumers. Imperial College's Consumer Shopping Survey shows that 74 per cent of UK online shoppers consider delivery convenience the most important factor influencing their purchase.¹⁰ What is more, 47 per cent of respondents said that they are willing to spend more with a retailer that offers them the flexibility they need when it comes to delivery, pick-up or return alternatives.

Although these numbers might make it seem that embracing a broader range of delivery options in order to increase conversion rates would be a no brainer for retailers, the reality is far from it. Radial's eDelivery Index of 2017 provides shocking numbers highlighting the failings of retailers from the UK, Germany, France, Italy and Spain. Surprisingly, only half of them offer an express delivery option.¹¹ Also, just 6 per cent of the retailers surveyed offer their customers a 'same day' delivery alternative.

While it is true that only a small proportion of users would choose to pay for faster delivery, it is essential for retailers to provide that option. Choice is what today's customer craves, and when a shopper needs something urgently, they want it asap — even if that means paying a premium for the delivery. Retailers should consider having a minimum of three delivery options if they want to cater to most consumer purchasing decisions: a standard delivery option when cost is the deciding factor; an express option when time is of the essence for the customer; and an alternative delivery destination when home collection is an issue (ie a pick-up locker or click and collect).

Going back to Amazon as the gold standard, they are constantly innovating to make their deliveries faster and more convenient. In October 2017, Amazon introduced the Amazon Key service, which relies on their new Cloud Cam and a compatible smart lock,¹² that allows their couriers to open your front door and place your packages safely inside your home. Since customers are not always home and available to receive their packages, the purpose of this service is to avoid missed deliveries when the customer is not home and eliminate the growing problem of package theft.¹³ The camera connects to the Internet via your home Wi-Fi, and 'talks' to the lock over a wireless protocol that is utilised by many smart home devices. When a courier arrives with a package for in-home delivery, they scan the barcode which sends a request to Amazon's cloud. If everything checks out, the cloud grants permission by sending a message back to the camera which starts recording. The courier then gets a prompt on their app, swipes the screen and the customer's door unlocks. They drop off the package, relock the door with another swipe and are on their way. The customer gets a notification that their delivery has arrived, along with a short video showing the drop-off to confirm that everything was done properly.

THE DEATH OF THE SHOPPING MALL?

Putting speed, convenience and value at the core of e-commerce has redefined the entire customer experience — and, as the clear market leader, Amazon is setting new standards and creating new customer expectations which have had a huge impact across the entire retail landscape. One of the biggest casualties

of this changing landscape are shopping malls, which are at the epicentre of the shifts in consumption models from shopping centres to the web. By 2022, analysts estimate that one in every four malls in the US could be out of business, victims of changing tastes, a widening wealth gap and the embrace of online shopping for everything from socks to swing sets.¹⁴

For many people, the bedroom has become the new fitting room.¹⁵ A recent study showed that among apparel and footwear shoppers 'bracketing' is becoming increasingly popular, namely ordering products in multiple sizes or colours knowing that they can try everything, keep what they like and return the rest. In a way it could be seen as the evolution of 'showrooming', the shopping strategy where people try garments or see products in-store before finding the best deal online. In fact, Amazon launched a pilot for its Amazon Prime Wardrobe¹⁶ in June 2017 which proactively encourages Prime subscribers to order multiple items without paying so they can try them at home before buying. This demonstrates a huge shift in the mindset of the online shopper, one where a new 'delivery dialogue' is established between consumers and online retailers, and where the role of delivery becomes a two-way street.

LEVERAGING NEW RETAIL CHANNELS

As online retail grows, retailers have to leverage every single touchpoint in the delivery process in order to continuously build customer loyalty. One of the touchpoints that does not get as much attention as the rest is the returns process. What once was a necessity for online retail is fast becoming a pivotal

part of the overall experience. In the UK, the online returns channel is set to rise by 34.6 per cent to over £5bn by 2022¹⁷ — with similar growth rates forecasted across the rest of Europe and US. On the one hand, as people get accustomed to shopping online, they are also returning more items. Indeed, research shows that return policies play a key role in the decision-making process for many online shoppers. On the other hand, providing return alternatives that give customers the confidence, flexibility and convenience to order and then return unwanted items, can also become a gateway to improving customer loyalty through exceptional customer service.

A recent survey by Narvar shows that nearly half of all US consumers said they returned an online transaction in the last year. What is more, 49 per cent of them actively check the retailer's return policies before completing an online transaction. Returns go beyond convenience and tap into shopper psychology related to customer care and value. When online retailers go the extra mile to provide easy return options, they are making a marketing statement which can instantly draw customers to purchase more than they had planned. After all, brands are building trust, and customers need to feel secure that if they are not satisfied with their online purchase, the return experience will be as enjoyable and seamless as the shopping experience itself.

Additional research shows that 47 per cent of shoppers find it easier to return an item to a store.¹⁸ One of the key advantages to this from a customer standpoint is that they receive immediate credit to shop for an alternative to the item they returned. This also puts the retailer in an advantaged position since the customer may opt to spend more money in their

shop. As shops struggle to grow their footfall, partially due to the growth of e-commerce, returns give retail chains an opportunity to bring people back to their physical stores. Similarly, the growth of 'click & collect' is helping retailers bring customers through their doors, where they can experience what the brand has to offer in-store and buy even more.¹⁹ Using the physical stores of a retail chain as a distribution and fulfillment network for online deliveries gives the retailers more opportunities to increase the number of visitors to their stores and extend the customer's brand experience — whether they want to buy, return or collect an item.

Nearly one third of shoppers purchased products online and subsequently picked them up at a store during the 2016 holiday season. What is more, while the percentage of total purchases completed through click & collect is still relatively low, the study found that it is a growing trend with 49 per cent of Americans trying it in 2017.²⁰ Retailers are able to offer click & collect according to item availability either in-store for quick turnarounds, or in the system so that the item can be sent to the customer's local store (the always-in-stock option).

Cost is by far the key driver for people choosing to use this delivery method, with 76 per cent of click & collect shoppers saying that saving on shipping was the most important factor for them. Other key drivers include needing an item that day and proximity to a store. Furthermore, 49 per cent of respondents said they were likely to occasionally purchase an additional item when picking up their online order.

The click & collect trend is picking up across the world, including countries such as UK where estimates suggest that usage will double by 2025, generating 10 per

cent (or £23bn) of UK retail sales.²¹ The global share of click & collect orders has been steadily increasing each year with a 155 per cent increase between 2011 (8.8 per cent) and 2015 (22.5 per cent).²² This means that retailers must take click & collect into account when developing their growth strategy, especially since it can help them leverage their existing distribution network, increase sales and make the most of an increasingly challenging retail environment. Click & collect is also a way for retailers to leverage their stock delivery network. Since they already need to deliver items to their stores for replenishment, they can make more efficient use of existing vehicles and reduce transportation costs by delivering click & collect orders at the same time.

VISIBILITY AND AGILITY IN THE LAST MILE

Conquering the last mile has quickly become one of the biggest challenges for any retailer, and it is poised to become the industry's next big disruption.²³ As e-commerce grows and the retail landscape shifts to a much faster and more dynamic environment, led by speed and convenience factors, the entire industry is looking for solutions to satisfy customers. Retailers are facing the challenge of offering an array of delivery alternatives while keeping healthy margins by implementing efficient supply chain operations.

Most revolutions, which are often triggered by a specific event or technology, are followed by action from the mass-market. The evolution of on-demand deliveries and the technologies surrounding them has led to shoppers becoming tougher to please than ever before, demanding the implementation of the new and improved

standards. In fact, for many retailers the delivery experience is becoming just as important as the product itself — especially when customers have multiple alternatives to buy the same product.

The landscape may be tough, but any new challenge brings with it numerous opportunities, and companies are now able to leverage their last mile processes in order to differentiate themselves from the competition. Establishing operational excellence throughout the supply chain can give retailers an edge with their customers — and the last mile is fast becoming the battlefield they need to win in order to earn their customers' loyalty.

A decade ago, next-day delivery seemed like a luxury reserved for urgent business couriers. Today, companies such as Amazon are offering free 2-hour deliveries for certain products in some cities, while other e-commerce companies such as Farfetch offer 90 minute deliveries from the boutique to the customer's door for certain brands in key capitals around the world including London, Paris and New York.²⁴ This is pushing the rest of the industry to keep up with such an unprecedented pace, but these levels of speed and urgency come at a cost. While these offerings might be feasible for high fashion retailers selling higher-value products with traditionally higher margins, they can prove extremely challenging for small orders or for businesses that need to creatively batch orders and orchestrate their delivery logistics in order to ensure that their transactions remain profitable.

Today, whether an order is loaded on a bike for last-mile delivery, sitting in a warehouse ready for pick up or still on a container ship somewhere in the Atlantic, companies and customers have unprecedented real-time visibility

regarding the status and location of their orders. Consumer demand for visibility, and the industry's ability to provide it, has exploded over the last 12 months, which signals that we may be very close to reaching full real-time visibility for both the sender and the recipient.²⁵ The vendor/supplier can then leverage this knowledge to optimise and streamline their operations.

In a way, it is actually the customers who are indirectly demanding and defining the creation of next generation supply chains. Efficient logistics are impossible without efficient communications. They are two sides of the same coin. Besides having the ability to track a delivery and to connect with whomever is holding the package at any stage of the supply chain, communication through technology is also about bringing a new layer of transparency and visibility. This empowers each and every stakeholder to find out what they need to know, exactly when they need to know it. Full transparency and real-time visibility are new business imperatives required for supply chains to succeed — from both an operational standpoint and a customer-facing one.

CITY INFRASTRUCTURE

Fifty-four per cent of the world's population lives in urban areas, a proportion that is expected to increase to 66 per cent by 2050.²⁶ The UN projects that urbanisation combined with the overall growth of the world's population could add another 2.5bn people to urban populations by 2050, with close to 90 per cent of the increase concentrated in Asia and Africa. In the US alone, data shows that all but one of the nation's 20 largest cities saw their population grow in 2016.²⁷

This unprecedented growth, alongside the rise of e-commerce, is having a significant impact on urban traffic patterns. Most cities were not built to handle the current volume of delivery bikes, cars and lorries. Congestion and mobility are issues that cities all over the world must address. While the concept of 'Smart Cities' might not be a new one, the struggle to adapt has never felt more real. The rise in online shopping and on-demand services is also creating new challenges for city managers and policy makers that must equip their cities to handle the increase in traffic. Online shoppers are starting to expect that the urban freight delivery system will be able to bring them whatever they want, wherever they want it, within an hour or two.

The Supply Chain Transportation and Logistics Center at the University of Washington created the Urban Freight Lab²⁸ to research and develop projects to improve the operations of urban goods delivery systems. The core problem facing cities is that they are trying to manage a sophisticated data-powered 21st century delivery system with tools designed for the 1800s.²⁹ Consumers can order groceries, clothes and electronics with a click, but most cities only have a stripe of coloured paint to manage delivery vans parking at the kerb. The Urban Freight Lab brings building managers, retailers, logistics firms and tech companies, as well as city governments together to perform applied research and develop advanced solutions.

The global urban population is expected to grow approximately 1.63 per cent per year between 2020 and 2025, and 1.44 per cent per year between 2025 and 2030.³⁰ Policy makers, retailers and delivery companies will need to work together to find solutions that will

support business growth by creating new infrastructure capabilities for cities that take into account the increase in the flow of goods — and the impact it has on traffic and the overall city environment.

PROFIT MARGINS AND THE BOTTOM LINE

Amazon shipped more than 5bn items worldwide in 2017, up from 1bn items shipped during the 2016 holiday season, according to the company. And while the number of Prime members is still a closely guarded secret, tens of millions of households are likely programme participants.³¹ The sheer scale of Amazon's operation means they will have an even greater ability to squeeze margins throughout the supply chain. Their goal is to gain market share and increase revenues across many retail verticals, having the muscle to absorb overheads associated with deliveries by focusing on growing revenues and sales. In 2016 alone, Amazon 'lost' \$7bn on shipping³² yet their sheer volume of sales (plus other very profitable businesses such as Amazon Web Services) puts them in a prime position to keep expanding their empire far and wide.

It is estimated that the online grocery shopping alone, is a vertical which could grow five-fold over the next decade, with American consumers spending upwards of \$100bn on food-at-home items by 2025, according to a report from the Food Marketing Institute and Nielsen.³³ Every retailer, from restaurants to fashion, is facing similar challenges and are well aware that they have to streamline their logistics infrastructure in order to create a more agile supply chain — which is as much about customer insights and real-time visibility, as it is about speed

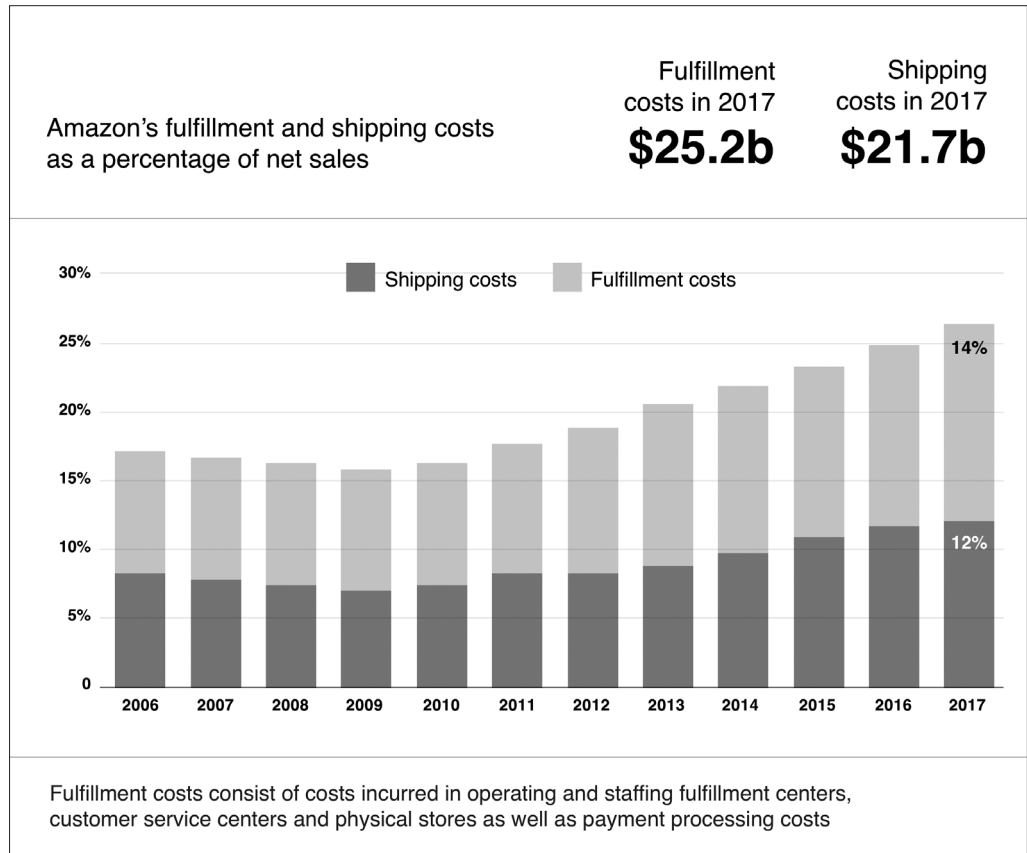


FIGURE 3 The growing weight of Amazon's logistic costs
Source: Statista

and convenience. Retailers will have to move fast, and they cannot rely on their current logistics tools and infrastructure to evolve at the same pace. They must embrace new technologies, tools and platforms in order to transition at lightning speed if they want to match Amazon's logistical excellence.

For a customer, the end choice and result comes down to value and convenience — but behind the attractive prices and speedy service that Amazon provides, lies an exceptional infrastructure which they have built and perfected over the past decade. Retailers must review and revise their logistics infrastructure — from the first mile to the last, since

having agility and visibility throughout the supply chain is no longer a differentiator to win new customers, but an expected baseline to retain your existing ones.

The last mile in particular is a sticking point³⁴ that retailers will have to embrace and perfect — thinking about it less like a nice 'expensive addition' to delight their customers, and more like an integral part of the purchasing experience. Just as nobody would question the cost attached to renting property for brick and mortar retail, nobody should question the cost attached to running logistics for online purchases. They are both valuable and necessary.

THE NEED FOR TECHNOLOGY

Technology plays a crucial role for retailers looking to improve their logistics capabilities and the efficiency of their entire supply chain. Many companies take into consideration the option of building their delivery logistics technology in-house, an important strategic decision that will impact many people across the ecosystem — from management to operations, through dispatch, warehouse and drivers, and all the way through to partners, customers and recipients. However, as the delivery logistics landscape expands, so do the technologies available to manage and optimise various aspects of the supply chain.

Planning is imperative when creating or deploying a new operational system. Developing a bespoke software platform is not an easy task and requires significant time and investment. While many companies will be initially lured by the idea of creating a ‘made-to-measure’ solution, it is important to set realistic expectations about the time it will take to build and complete it. And, not just a minimally viable product. In addition, future iterations, software updates and maintenance can be extremely time consuming with the build model, in many cases holding back company growth and speed to market. The bottom line is that while an in-house development team may be capable of developing a delivery logistics solution, it is likely not their core competency.

On the flip side, an out-of-the-box solution is immediately ready and can typically be customised to the client’s needs. When purchasing a purpose-made solution from a tech vendor that specialises in the field, you are buying technology that has been tried and tested by a team that understands the challenges

from multiple points of view and client use cases. Purchases of this type go way beyond buying software — it is also about tapping into the know-how of experts who are able to assess, advise and even pre-empt future issues or challenges with significant foresight.

Technology needs are constantly evolving and one key consideration for companies is to be realistic about their budget, for both short-term and long-term costs. Maintaining a platform takes ongoing resources which often are not accounted or planned for. While having full ownership over the scope and scale of a platform will suit some companies, it is important to take into account the ongoing maintenance costs and resources required throughout the entire life cycle of the product.

Adding a new technology solution does not end with creating or choosing the perfect platform. Onboarding and transitioning over to a new system can cause disruption to process, operation and mindset. From our experience this is enhanced within the logistics space because of the direct impact changes have on the day jobs of many employees, and ultimately on the customers and recipients.

Companies must carefully consider what the onboarding or rollout for their technology will look like. Implementing it swiftly and with minimal disruption is essential. Onboarding staff and getting buy-in from all internal stakeholders and employees is key. Everyone should be well informed as to the added value the new technology brings to the entire operation and to their specific role.

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