



Executive Insights

Ecommerce, Automation and the Future of Intralogistics

Intralogistics, the business of organizing and optimizing the flow of goods within a facility from reception to shipping, has experienced significant disruption over the past decade. Changes in end markets, including the ecommerce-driven growth of B2C volumes in courier, express and parcel, and the increasing penetration of automation technology, have resulted in booming revenues for equipment manufacturers, systems integrators and other intralogistics automation players.

Demand is projected to remain strong in the near term, but uncertainties about its future evolution are emerging. In this *Executive Insights*, L.E.K. Consulting examines the impact of ecommerce on intralogistics automation and the effect this will have on the market, and explores the strategic choices companies must make to position themselves for the next phase of growth.

The beginning

Historically, many companies have seen intralogistics as a cost item that contributes very little to their value proposition. While the full automation of processes provides numerous advantages to users, there are significant drawbacks that have limited its full adoption. These include the significant capital expenditure required for the system installation, a lack of flexibility in the types of operations performed or goods handled, and the hard-to-accept risk of complete shutdown in the case of system failure.

For many years, the most highly automated intralogistics facilities were the large sortation hubs of courier express/parcel players — the volume handled, the relative uniformity of goods' sizes and the predominance of efficient intralogistics operations in these companies' value proposition have made automation a must-have. Airport baggage handling systems use similar technologies for the same reasons.

In other industries, the benefits of automation have been more limited, with the majority relying mainly on manual operations and automating only very specific steps of their process, allowing for smaller investment, faster return and limited risk (AGV — automated guide vehicles — for transporting goods are a good example). The outsourcing of warehousing and logistics to third-party providers has also limited the development of automation, as those players were dealing with strong price pressure, a variety of clients and short-term visibility, making investments in automation unsuitable for their business model.

The explosion of ecommerce

Ecommerce has seen significant global growth, driven by demand from increasingly connected consumers, expanded ecommerce platforms and the digitalization of the retail sector. While ecommerce still represents a relatively limited share of sales across categories and regions, growth is expected to continue at 18% per year between 2017 and 2023 (see Figure 1).

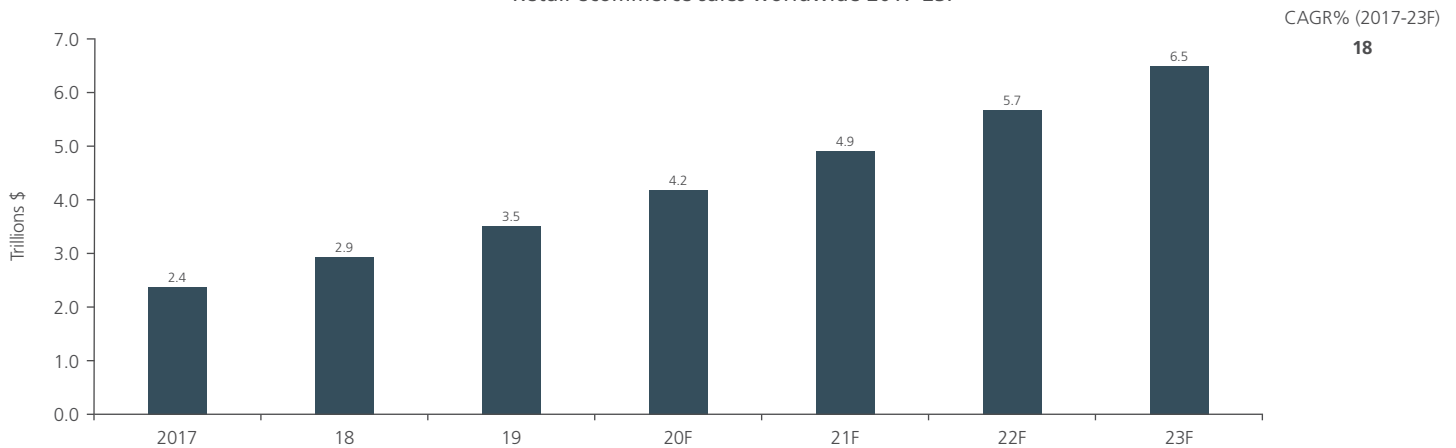
Ecommerce has had a huge impact on intralogistics, transforming its historical position as solely a cost item into a critical component of a company's value proposition. The impact of ecommerce on intralogistics can be seen in six key trends (see Figure 2).

Ecommerce, Automation and the Future of Intralogistics was written by **Serge Hovsepian, Stéphane Claquin, Florian Funke**, Partners and **Adrien Korniloff**, Director at L.E.K. Consulting. Serge, Stéphane and Adrien are based in Paris and Florian is based in London.

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Figure 1
Retail ecommerce sales worldwide 2017-23F



Source: eMarketer

Zero-defect objectives

Quality has always been a KPI of intralogistics performance, but it has been managed from a cost/benefit point of view. Moreover, in the past the point of sale was able to correct the majority of potential errors from the intralogistics process before the end customer purchased the product. In the world of ecommerce, goods are delivered directly to the end customer, and any defect can immediately be shared on the internet, rapidly damaging the company's image and reputation. Intralogistics has moved from an "under the radar" internal process to the front end of the company's relationship with its end customers, where no defects are permitted. Ecommerce giant Amazon's intransigence on end-customer services demonstrates intralogistics' criticality.

Increasing variety of parcel weights and sizes

Pallet sizes used to be standardized and were easily dealt with by intralogistics. The development of ecommerce has increased the range of goods being delivered to end customers, so intralogistics needs to navigate the added complexities of a wider variety of package shapes and sizes.

Seasonal peaks

Ecommerce has exaggerated the seasonal peaks seen in many industries. Christmas, Black Friday and Single's Day in China drive extreme peaks of demand on a very limited number of days. Alibaba, for example, made over €27 billion in sales on Singles' Day in 2018, with the first billion reached in 1 minute, 25 seconds. Companies need to ensure their intralogistics systems are prepared to handle such levels of demand.

Figure 2

Main ecommerce trends affecting intralogistics needs



Source: L.E.K. analysis and research

¹PostNord, Ecommerce in Europe 2018

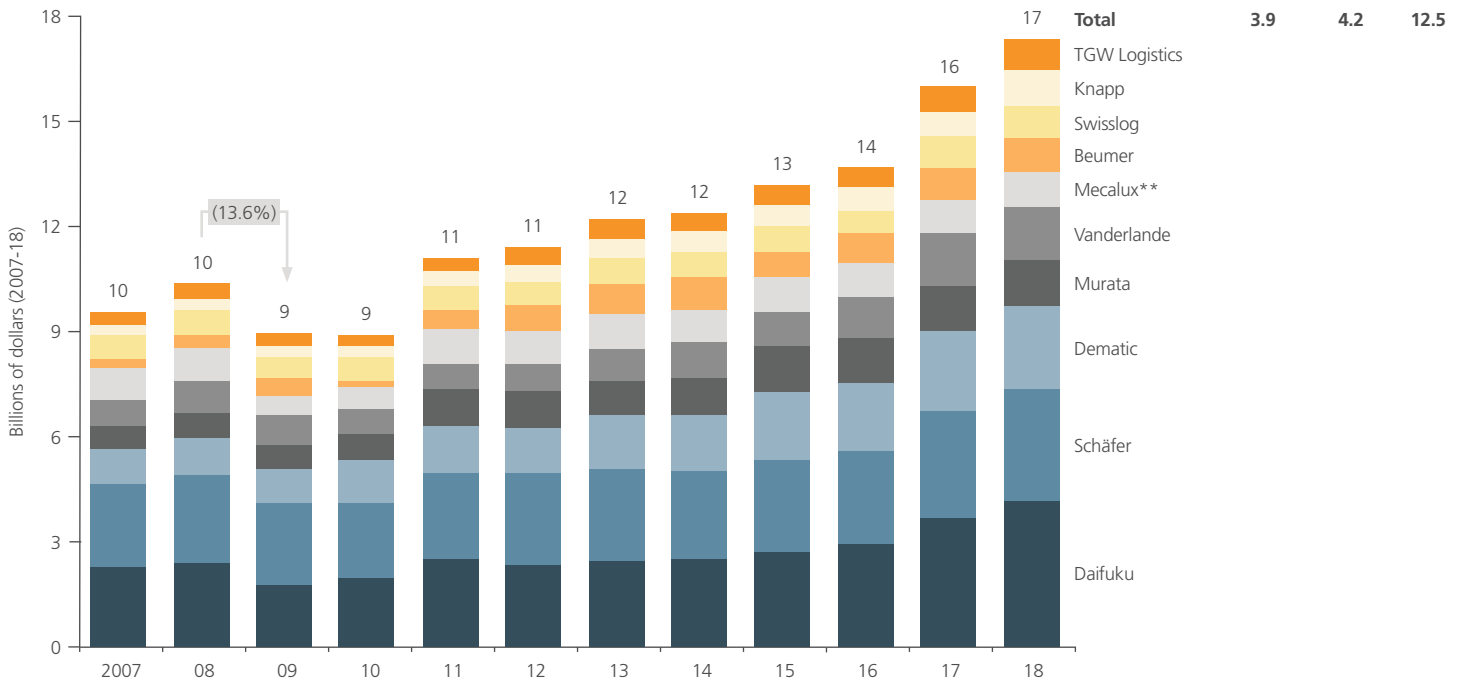
Bidirectional flows

Logistics flows are increasingly bidirectional, due to the rising number of ecommerce end customers returning their orders. Being able to return ecommerce purchases is now a key purchasing criterion for many ecommerce customers — about 45% of consumers in France returned at least one of their orders in 2018 (that number was about 53% in Germany)¹. Bidirectional parcel flows bring an additional layer of complexity, with the inbound flow having specific characteristics and processes (e.g., packaging by the end customers is not standardized, and quality assessments of returned goods can differ) that cannot easily be molded into the traditional intralogistics model.

Specific delivery slots and shorter delivery time

The excellence of some ecommerce players, such as Amazon, has raised end customers' expectations and consequently logistics standards. The standard delivery time has fallen from two days to one — or even two hours in some cases. Yesterday's top performance is fast becoming the market standard.

Figure 3
Revenues of selected top system integrators*



Note: *10 selected system integrators among top 15; **Mecalux financials updated to 2011
Source: *Modern Materials Handling*, Orbis annual report; L.E.K. analysis and research

The impact on automation

Considered the best way to improve reliability and efficiency, and to match the ever-growing expectations of end customers, automation is increasingly adopted to address the disruption caused by these trends. The cost of automation solutions has also decreased over recent years, and effectiveness has improved, leading to large, fully automated systems being deployed in a variety of industries beyond the historical vanguard of courier express/parcel players and airport baggage handling. Equipment manufacturers and system integrators have fully benefited from this.

Intralogistics end users are looking to automatize a larger share of their processes and warehouses (and not just through implementing simpler systems such as an ASRS — an automated storage and retrieval system), and automation, once limited to larger facilities, is now being implemented in warehouses of all sizes. This will impact the market in multiple ways:

- Demand for automation is expected to remain high in the coming years, putting market players under significant stress to find staff with the required skills to meet clients' needs — especially in an environment where track record is one of the main purchasing criteria for clients, and where project failure is not an option.
- The broadening portfolio solution offering has grown in importance as clients increasingly look for solutions covering multiple difficult processes, including unloading, singulation and picking.

- The historical market practice of short-term/price-driven selection of third-party logistics is no longer compatible with automation. Clients looking to outsource their logistics but wanting to benefit from the advantages of automation will have to negotiate longer contracts with their suppliers to allow them to invest in automation. The risks are too high to invest without long-term visibility.

Many companies in the sector have experienced significant growth in recent years (12.5% per year between 2016 and 2018; see Figure 3), putting them under significant pressure to find the resources to deliver their projects. At the same time, they need to invest in R&D to develop new solutions and broaden their portfolio, enabling them to answer new clients' needs and become a one-stop shop for their clients.

Many companies in the sector are faced with the challenges of lack of resources or market coverage and incomplete solution offerings, and they use M&A to combat this. Examples include Fives acquiring Syleps and Honeywell acquiring Intelligrated and Transnorm. Not only does M&A allow companies to augment their solution portfolio, and therefore their addressable market, but it also offers the opportunity to strengthen the internal team by integrating staff.

Automation has historically been viewed as "a robot performing human tasks", but a new way of imagining intralogistics has emerged, redefining how a warehouse could work. AGVs, which

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were initially used as “automated forklifts,” are now used to create a “moving” warehouse, where the shelves move to the operator rather than the other way around (e.g., the Kiva AGV used by Amazon).

Other players have redefined warehouse layout — AutoStore, for example, provides a highly dense warehouse without alleys, helping reduce the size of the building while increasing its capacity. There are also numerous technologies under development, from exoskeletons to robotics, that could change the way intralogistics will perform in the future.

Intralogistics automation has significant potential, but there is still no “one size fits all” solution. Market players need to keep a close eye on emerging technologies and market trends to ensure they do not miss this opportunity.

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