

Automation in intralogistics

White Paper 2019



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Key Research Findings:

- Automation is happening - within two years the majority of organisations plan to have automated at least 50% of their supply chain operations - an increase of 15%
- Productivity (48%) is the key driver for automation, followed by lower operational costs (42%)
- The goal is collaboration, with companies looking at semi and partial automation in tandem with a more highly skilled workforce to drive efficiency (84%)

Executive Summary: Automation Gains Momentum

Automation is firmly on the UK business agenda: within two years, the majority of organisations plan to have automated at least 50% of supply chain operations, according to Automation in Intralogistics research undertaken by Sapio Research, on behalf of Jungheinrich.

However, the way in which automation is being considered is not the stark - and unrealistic - man versus machine vision. Companies are looking to transform efficiency through highly focused collaboration between automated systems and an increasingly skilled workforce. The workforce of the future will no longer be required to undertake repetitive mundane activities. These tasks will be handled by machines, potentially 24x7; individuals instead will require new skills and expertise to undertake far more complex and valuable roles throughout the supply chain.

Automation is not just about driving small incremental efficiency gains. Automation is increasingly a platform for change as companies explore the smart, connected warehouse in tandem with Artificial Intelligence and improved forecasting to embrace more personalisation and anticipatory demand.



50%

Within two years organisations plan to have automated at least 50% of their supply chain operations.

70%

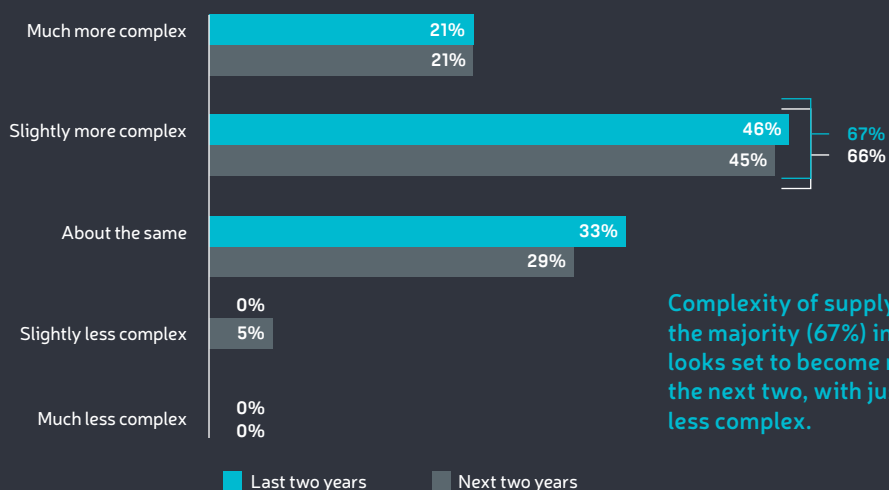
The cost of order picking is estimated at 70% of distribution operations.

Automation in Response to Supply Chain Complexity

There is widespread acknowledgement that supply chains have become more complex in the past two years - and that trend will continue. The business implications for both cost and profitability are significant: with increasing SKUs, consumer demand for more flexible deliveries and faster shipping, the cost of order picking is estimated at 70% of distribution operations.

Has your supply chain become more or less complex within the last 2 years?

Do you expect your Intralogistics to become more or less complex within the next 2 years?



Just 11% of UK organisations can claim to have automated more than half of all processes.

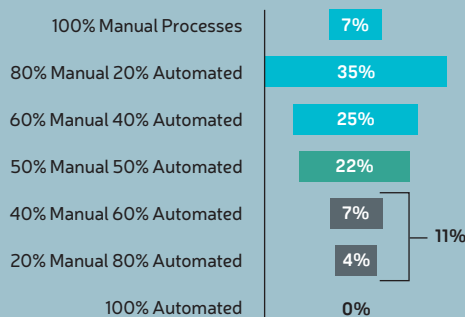
11%

There are also clear signs that consumer expectations are evolving. The focus is no longer exclusively on next day, even same day, delivery; environmental awareness is creating a far more socially aware consumer base. Customer choice is still an essential component of service delivery, but increasingly that choice will include a 'green' delivery option as well as different delivery timelines. This is potentially adding another layer of complexity to the intralogistics model, as companies must consider the environmental impact of activities alongside speed, efficiency and accuracy.

Today, just 11% of UK organisations can claim to have automated more than half of all processes - a fact that underlines the UK's less than impressive standing within the global productivity rankings. However, while many companies have relied on a flexible labour force over the past decade to manage increasing customer demands, this research reveals a clear change in attitude.

What proportion of processes in your organisations supply chain are automated vs. manual?

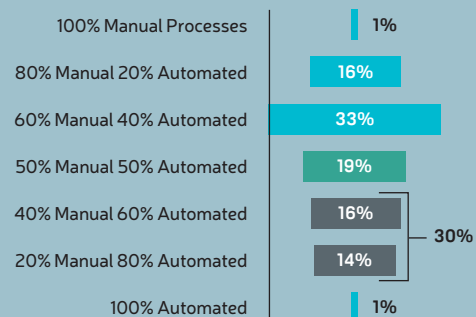
NOW



MEAN: 60% Manual vs. 40% Automated

What proportion do you expect to be automated vs. manual in 2 years?

IN 2 YEARS

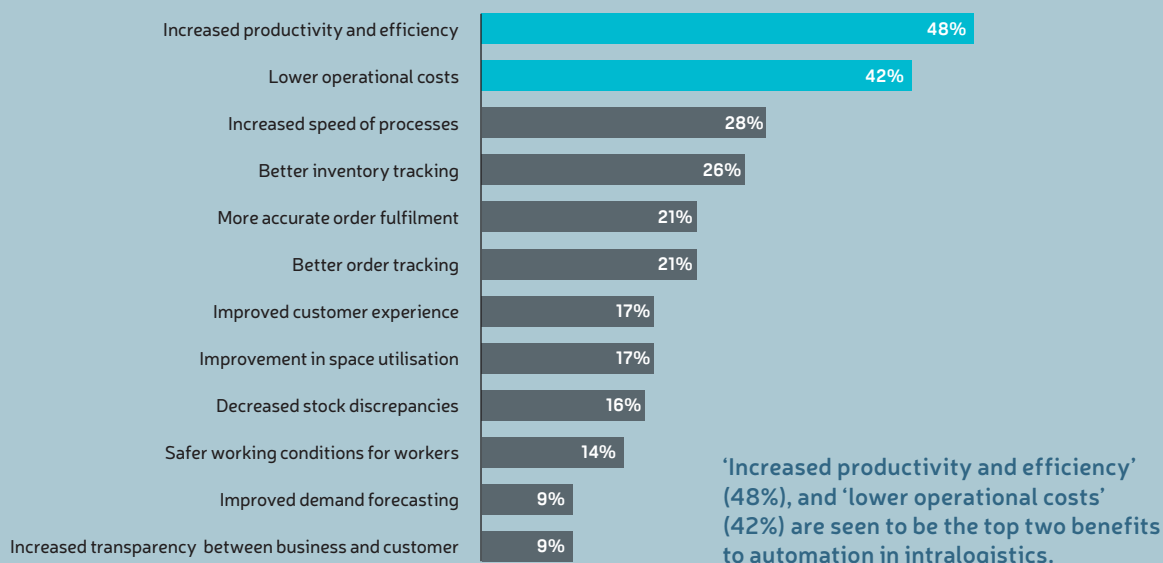


MEAN: 45% Manual vs. 55% Automated

Currently the majority of organisations have more manual processes than they do automated - on average 60% of processes are manual. However, this is expected to change in the next two years, when on average more processes are expected to be automated (55%) than manual (45%).

Growing numbers of companies now recognise the value and importance of automation: 50% expect to have automated at least half of all processes within the next two years; 31% to have automated 60% or more. Furthermore, increased productivity and efficiency (48%) are cited as the primary benefit of automation within intralogistics, closely followed by lower operational costs (42%).

What are the largest benefits to automation in Intralogistics?

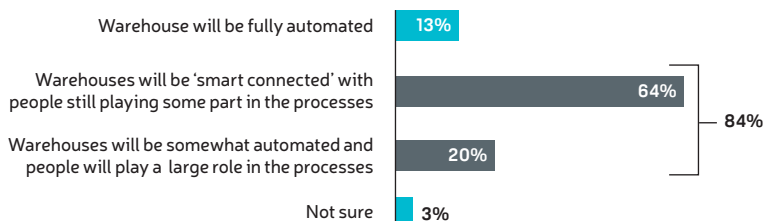


Defining a Vision of Automated Intralogistics

While automation is on the agenda, the goal is not always a fully lights out operation. As the research reveals, very few organisations have a vision of total automation. Indeed, just 13% believe the warehouse will be fully automated over the next five years. Instead, almost two thirds (64%) think warehouses will be 'smart connected' with people still playing some part in the processes; and 20% expect warehouses to be somewhat automated, with people playing a large role in the processes.

Given this collaborative vision, it is interesting to discover the priority areas for automation. To date many companies have focused on the administrative tasks, with the majority already using ERP and/or Warehouse Management System (WMS) systems. As a result, 66% of companies have fully or partly automated inventory updates, with a further 18% expecting to achieve this within the next two years. Payments and invoices (64% fully or partly automated) and customer package tracking (62% fully or partly automated) are also areas that have already been widely addressed.

Thinking about the warehouses of the future, what do you expect to happen within 5 years?

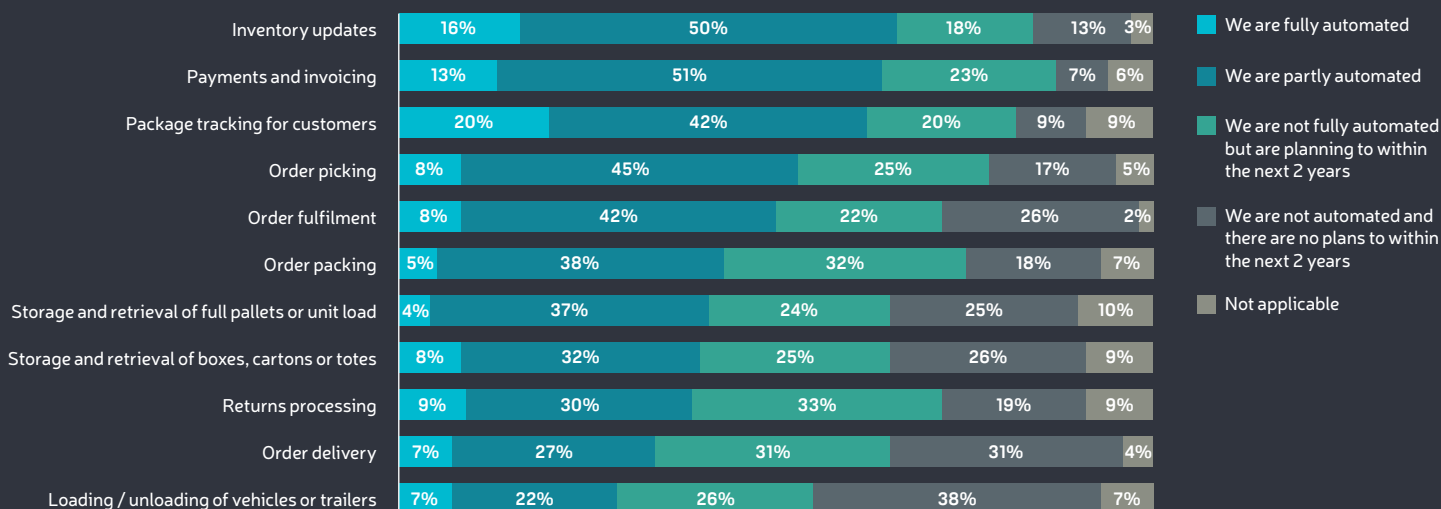


The key areas for development over the next two years are within order picking (25%), fulfilment (22%) and packing (32%) - with returns processing (33%) and order delivery (31%) reinforcing the clear demand to gain efficiency and improve responsiveness within the warehouse operation.

“The workforce spends too much time walking - in the average distribution warehouse today, more than 50% of your labour is doing nothing but walking. We have got to use that limited resource better.”

Mark Batchelor, Operations Director, Hafele

What aspects of your Intralogistics operation are automated, and which do you plan to automate within the next 2 years?



Package tracking for customers is the most likely operation to be fully automated (20%), whilst inventory updates and payment and invoicing are most likely to be fully or partially automated (66% and 64% respectively).

Embracing Collaboration Between Man and Machine

How are companies planning to achieve automation?

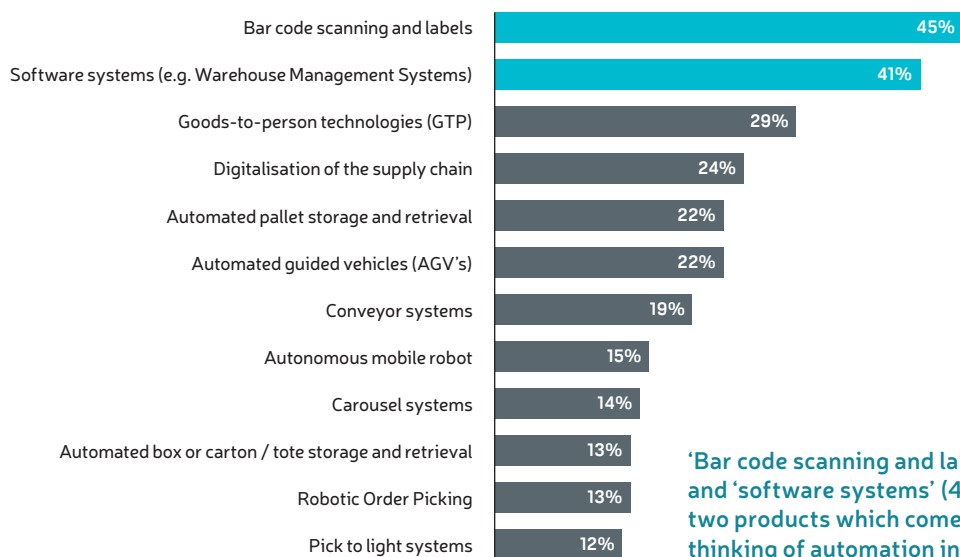
Organisations across the board still recognise the importance of software systems, including WMS, and that these form the basis of future migration and transformation into automation projects. Within the distribution sector almost two thirds (62%) of companies are considering Goods-to-person (GTP) technologies; but companies have many automation options, from automated pallet storage and retrieval to automated guided vehicles (AGV), conveyor systems and autonomous mobile robots. With so many opportunities to improve accuracy, reduce costs and enhance speed of response, companies need to be very clear about the specific business objectives - and the way the technology will work within a partial or semi-automated environment.



“The automation of VNA trucks is a godsend. We can effectively put an automated truck in the same space as a manual truck. Automated trucks have filled a gap, met a need and increased the potential and utilisation of the building.”

Keith Fernandez, Director Warehouse Consultancy, CBRE.

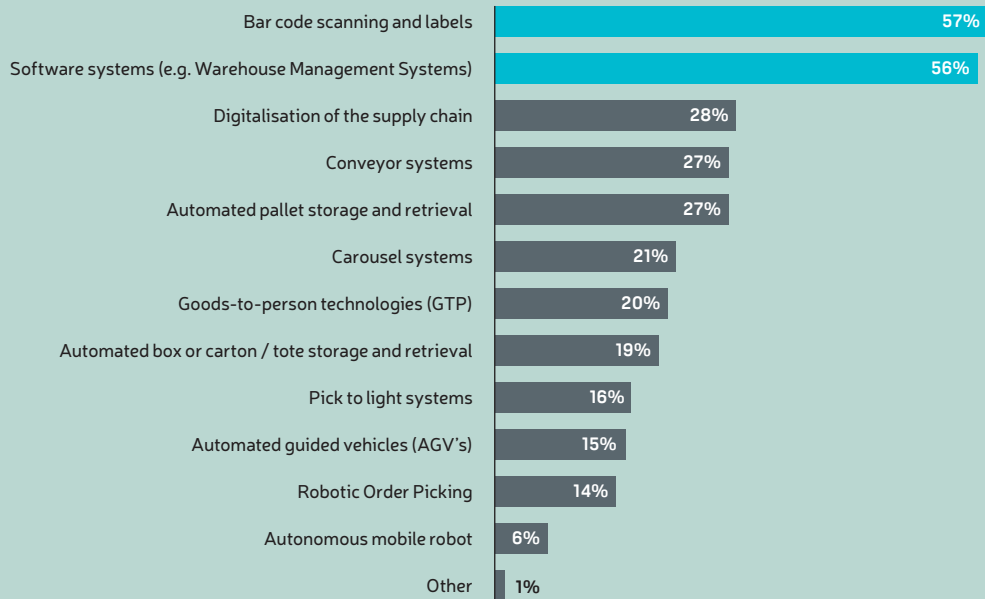
When you think of automation in Intralogistics, which of the following products / services come to mind most?



65% selected at least one of the top two

‘Bar code scanning and labels’ (45%) and ‘software systems’ (41%) are the top two products which come to mind when thinking of automation in Intralogistics.

Which of the following does your organisation currently use?



78% use at least one of these already

With this strong drive towards the use of technology to automate repetitive operations and release the existing workforce to focus on added value tasks, the strategic thinking is collaborative. This fact is reinforced by an expectation that the workforce demographic and skill set will change: over the next two years there will be a gradual increase in skilled staff - from 52.5% today to 56.5%.

Roughly what proportion of your employees fall into the following categories currently?

And what proportion of your employees do you expect to fall into the following categories in the next 2 years?

Currently

Unskilled manual staff - 47.5%
Skilled staff - 52.5%

Next 2 years

Unskilled manual staff - 42.5%
Skilled staff - 56.5%

Unskilled manual staff are expected to decline over the next two years by around 5 percentage points from 47.5% to 42.5%.

Automation is not just about reducing headcount; companies are looking to combine automation with a skilled workforce to drive up productivity and manage increasing supply chain complexity. Indeed, given the lack of skilled available talent in the market today, one of the compelling benefits is that growth can be achieved with the same headcount: automation can deliver the essential workforce flexibility required to manage business scale.

“If staff are working more collaboratively with automation and technology, then the role becomes more interesting, it becomes slightly more technical, a bit more aspirational - the repetitive tasks that we’re trying to automate or semi-automate will not disappear, but they will diminish, and you will see a more fulfilling role left. Roles will change in conjunction with technology. “

Steve Richmond, Director Logistics Systems, Jungheinrich UK

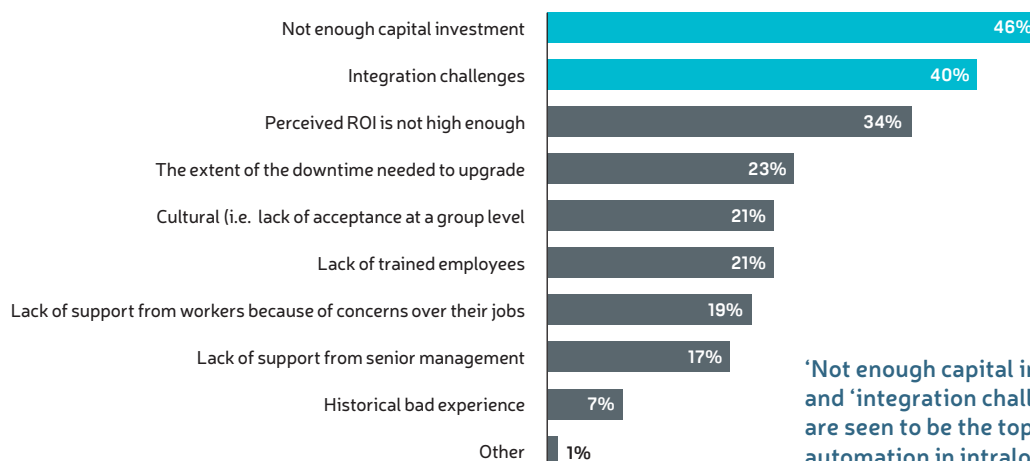
Understanding and Combatting Barriers to Change

Historically there has been a perception that automation can be expensive, so it is no surprise that the lack of access to capital investment (46%) remains the primary barrier to realising the automation objectives.

46%

46% say lack of capital investment remains the primary barrier to realising automation objectives.

What are the largest barriers to automating processes in your organisations supply chain?



‘Not enough capital investment’ (46%), and ‘integration challenges’ (40%) are seen to be the top two barriers to automation in intralogistics.

Given the short term nature of contracts and speed of change, it is important to make a compelling business case for investment that reflects both immediate and future business needs.

The complexity of integration is considered a major barrier for many (40%), especially for larger companies. Over the past decade, there has been a lack of investment in some sectors, so it is important for companies to recognise the significant changes in both hardware and software that have occurred over recent years, changes which simplify and ease the integration process.

The widespread adoption of standard WMS and ERP systems plus the availability of application programming interfaces (API) has made the integration of systems far more flexible, which can significantly reduce implementation time. With the right approach, concerns regarding cost, complexity and fear of business disruption can be allayed.

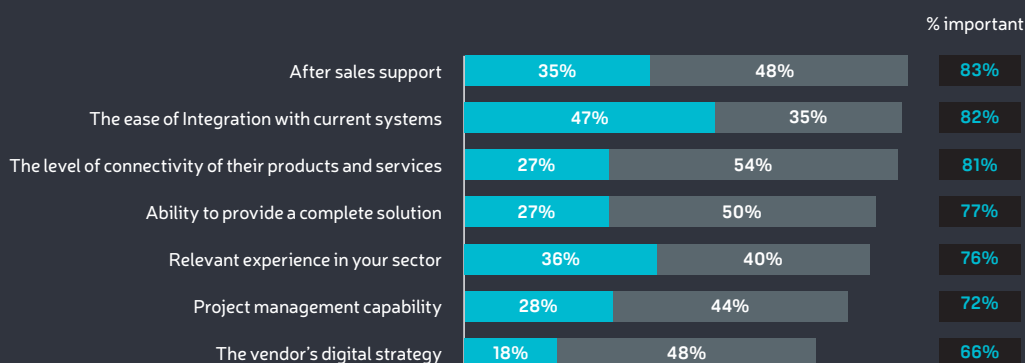
40%

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Hands-on Support

Indeed, it is interesting to note the priority requirements for organisations with considering an intralogistics solution with 83% citing after sales support as important, following by ease of integration with current systems (82%) and the level of connectivity of their products and services (81%). The ability to provide a complete solution (77%) and relevant sector experience (76%) are also important considerations.

When considering a vendor for your organisation's Intralogistics, how important are the following?



Very important Quite important

'After sales support', 'ease of integration' and 'level of connectivity' are the top three considerations when choosing a vendor for intralogistics, all considered by over 80% of respondents.

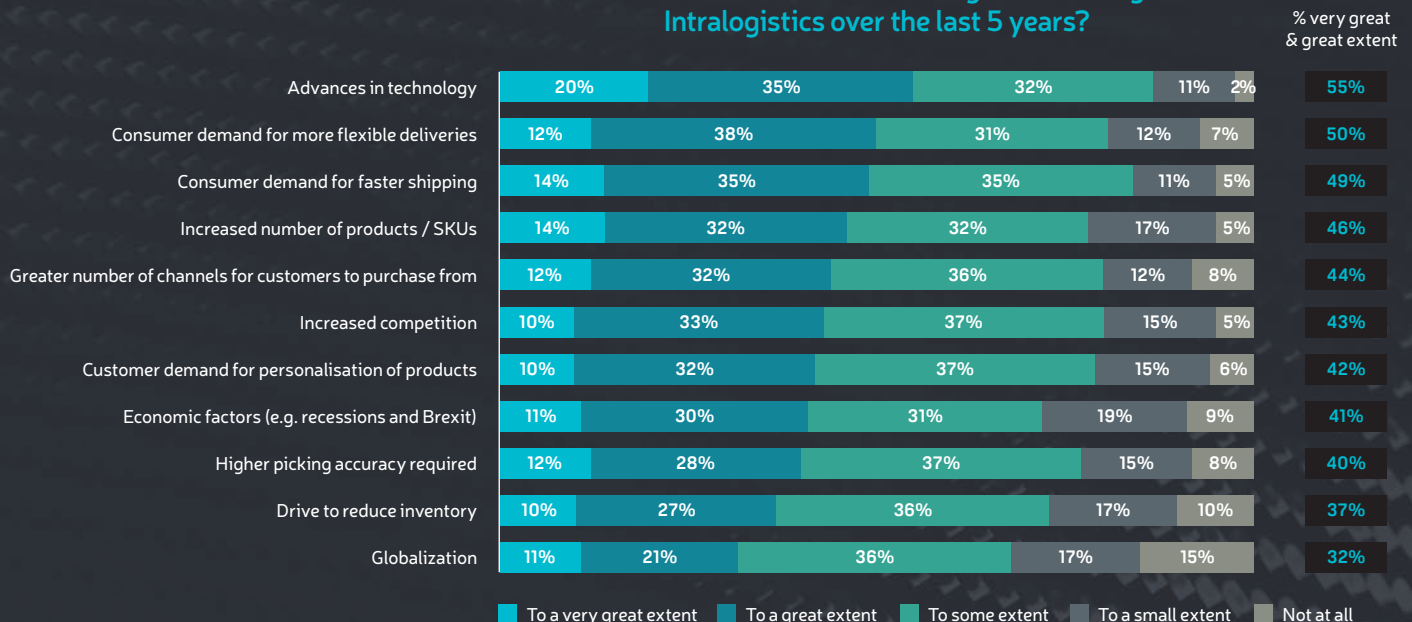
Given the collaborative automation vision, rather than focusing on the challenge of plugging different systems together, the real issue that companies need to consider is that a successful automation project combines people, process and technology. Every automation project should be viewed with a company's long term objectives in mind, as well as a recognition of the changing customer expectations and the emerging technology solutions, including artificial intelligence.

Well over half (55%) say that advances in technology have, to a great or very great extent, driven change within intralogistics over the past five years. And that technology led change is likely to continue to accelerate, from robotics to artificial intelligence.

55%

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To what extent have the following driven change in Intralogistics over the last 5 years?



Advances in technology has been the main driver for change in intralogistics over the last five years (55% to a great extent), whilst globalization has been the least likely to be seen as driving change

Automation Considerations

An automated world at any level creates new operational challenges, that companies will need to consider within the strategic planning.

Power Demands

Companies are rapidly moving from diesel powered to electric equipment, embracing the inherent flexibility and efficiency enabled by Lithium Ion powered trucks. Add in the rapid adoption of electric cars by employees and power consumption is going up. Organisations need to plan and think about smart power strategies, monitor power consumption and have conversations with the relevant authorities about adding providing additional power if possible, before hitting a limit.

“Smart energy logistics is a key component of any intralogistics strategy. Companies need to consider not just what power is consumed today but what will be needed in five years and how that can be delivered.”

Steve Richmond, Director Logistics Systems,
Jungheinrich UK

Workforce Safety

While automation can minimise the number of workers required on the shop floor, reducing accidents and enabling these individuals to be redeployed to other, more low-risk areas of the operation, a collaborative man/machine environment where the workforce is operating alongside robots and AGVs, creates new issues regarding safety.

“As good as it is to have robots that work with people, a major barrier to adoption is not the robots, the problem is integration and safety. How do you make a robot - that works with a person - safe if the person isn't trained to use it?”

Matthew Rayment, Chief Engineer,
The Manufacturing Technology

Innovations in sensor technology combined with a greater emphasis on ergonomics and real-time communication are transforming safety but organisations must consider the way in which machines and the human workforce work together to ensure a safe environment.

The Smart Workforce

In this collaborative intralogistics environment, the workforce of the future will require very different skillsets.

Automation will increase the complexity of roles, creating new demands for employee recruitment and training. There will be increasing focus on data scientists, as companies look to explore the power of Artificial Intelligence to drive operational efficiency.

“The question is not only how do we solve this challenge through the increased use of technology, but more importantly, how do you develop and retain the people working in these new environments?”

Maria Torrent-March, Logistics Director,
Europa Worldwide Group (EWG)

“When you look at what the future landscape looks like, and you’re thinking of which graduates to employ, I’d say software engineers and data scientists are the ones that you want.”

Matthew Rayment, Chief Engineer,
The Manufacturing Technology



Automation as a foundation for intelligent intralogistics

Increasing supply chain complexity is not the only trend driving automation strategies. Companies are also exploring the growing importance of technologies such as augmented reality and artificial intelligence and the role such platforms may play in meeting evolving operational challenges.

For example, with the increasing connectivity of equipment within operations, the use of big data to better predict the point of consumption - anticipatory logistics - offers significant opportunities to improve performance and drive down wastage. Furthermore, the shift towards convenience logistics, such as customers ordering groceries and drugs online 24/7, is also set to create another shift in intralogistics demands. Companies that can leverage data to better understand trends, forecast more accurately and respond effectively will have an advantage.

"I think artificial intelligence is around the corner. It's in our daily lives but we're not really using it within warehousing and transport and I think there's such a big opportunity."

Danielle Drozd, Kuehne-Nagel

"Sometimes I feel that we are better at forecasting than our customers. And I think the better that you are at forecasting, the better you can be at fulfilling orders and reducing costs."

Maria Torrent-March, Logistics Director, Europa Worldwide Group (EWG)

Conclusion

Automation will play a vital role in enabling organisations to meet the evolving intralogistics complexity. As customers' demands for choice and speed continue to grow, along with environmental concerns, trends such as anticipatory demand and intelligent power consumption will be facilitated by the current shift away from manual processes towards the smart, connected warehouse. But technology alone is not enough: to enable a truly seamless and effective collaborative intralogistics model, companies must also inspire staff with new opportunities and create a highly motivated and skilled workforce.

84% of respondents expect people to still be playing at least some part in the warehouse of the future - most think they will be 'smart connected' (64%).

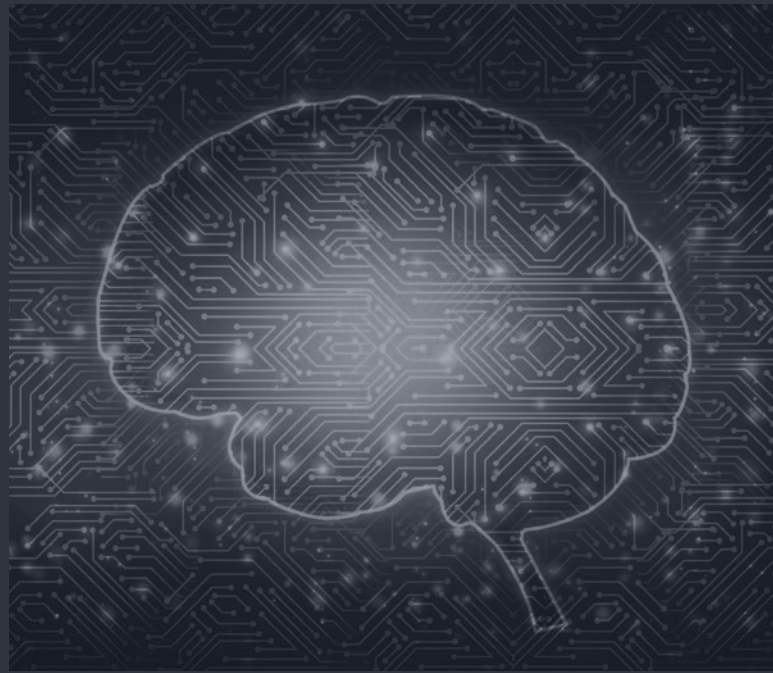


84%

To maximise the value of any investment there are some essential considerations, not least: Who is going to support the business throughout this process? Does the supplier understand the business processes of today and the future vision? Can it develop, deliver and support the entire automation life cycle? And can it help to make the business case for each stage of the automation journey? This is where a partner, rather than a supplier is vital.

With the speed of change, not only in customer expectations but also perceptions and attitudes, organisations will have to wrestle with a constantly evolving business model. The shift towards electric powered vehicles, including forklift trucks, opens new opportunities for efficiency and meeting environmental pledges, but also raises previously unforeseen issues regarding power consumption. New workforce skillsets are essential; companies need to consider the challenges of ensuring safety in a collaborative man: machine environment.

Automation raises a raft of new questions as well as delivering an extraordinary foundation, providing businesses with the flexibility and agility to rapidly embrace innovation and change.



Increased **Automation**

Skilled staff are key

The future of logistics

Increasing complexity

A big opportunity

Consumer expectations

productivity
Lower operational costs
A platform for change
The smart workforce
Gaining Momentum
of supply chain
Improve responsiveness
are evolving
The connected warehouse

