



LogiPharma



The 2023 Playbook



Contents

- 3 | Methodology
- 4 | Key Findings
- 5 | Using Digital Innovation for Continuous Supply Chain Management Improvement
- 6 | Part One
 - 7 | Attaining Data and Digital Maturity in 2023
 - 10 | Quality Assurance and Operational Resilience in Logistics
 - 14 | Simulation-Based Risk Management of Supply Chains
 - 16 | Conclusion
- 17 | Part Two
 - 18 | Utilising Digital Innovation to Continue Supply Chain Management Improvements
 - 20 | Pharmaceutical Supply Chain Resilience in the Age of Geopolitical Instability
 - 23 | Evaluating and Optimising Carrier Networks
 - 25 | Conclusion
- 26 | Key Suggestions
- 27 | About One Network
- 27 | About WBR Insights

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Methodology

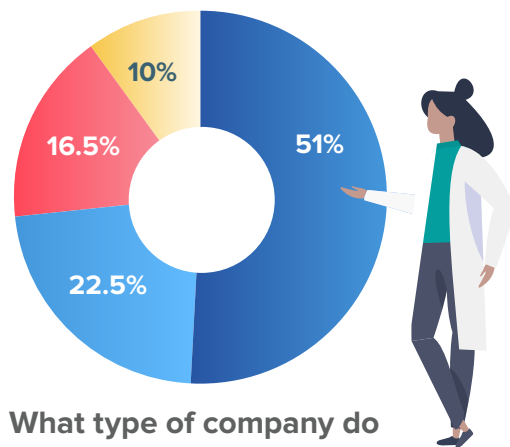
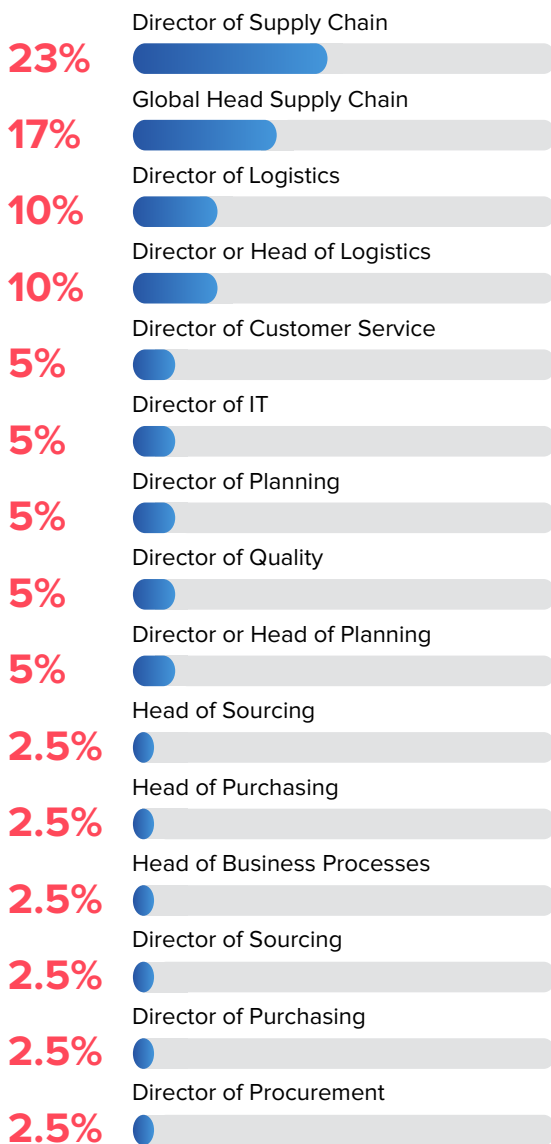
In Q4 of 2022, WBR Insights surveyed 200 Heads of Supply Chain and similar across Europe, the United States, and Canada to find out about the challenges they are facing, and the innovative solutions being brought to the table.

The survey was conducted by appointment over the telephone. The results were compiled and anonymised by WBR Insights and are presented here with analysis and commentary by 7bridges, Kuehne+Nagel, Oliver Wight, One Network Enterprises and the LogiPharma community.

The WBR Insights topics detailed in this report will also be covered in the LogiPharma event, download the agenda [here](#).



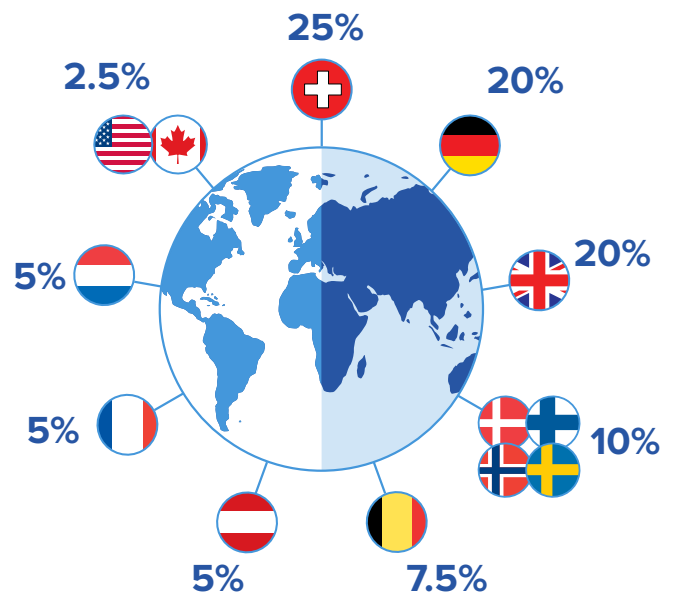
Which of the following best describes your job title?



What type of company do you currently work for?

- Pharmaceutical organisation
- Global/large pharmaceutical organisation
- Biotech organisation
- Mid-size pharmaceutical organisation

Where is your organisation located?





Key Findings

1

56% of respondents either have a culture of data science deeply embedded in their organisation or are on the way to it becoming second nature. This demonstrates the importance of data science for the pharmaceutical industry and how advanced data analytics is essential in a digitally mature supply chain.

2



Our survey reveals that **the work on improving operational resilience and quality assurance over recent years has paid off.** 62% of respondents stated they are confident that their organisations are performing well in these areas. As geopolitical tensions and labour shortages pose risks, it is positive to see that confidence remains high among heads of supply chain.

3



Improving end-to-end supply chain visibility remains a top priority for pharmaceutical firms. To achieve this, working directly with suppliers is enabling heads of supply chain to improve visibility, which is helping to reduce the risk of supply chain shocks by more easily identifying where and when problems arise.

4

For heads of supply chain, visibility (52%), and data modelling (50%) are the key attributes that are supporting the digital supply chain journey. This suggests that for most of our respondents, to predict and mitigate potential risks, having visibility and sufficient data analytics in place is essential in fuelling the necessary technological advancements that will drive resilience.

5



Despite the geopolitical instability that has been impacting the pharma supply chain, **relocating manufacturing (78%) and sourcing (61%) locations away from dangerous regions is not yet a reality.** For some organisations, it is simply too early to decide if relocating is the best option. Heads of supply chain are instead prioritising improving partnerships and will rely more on technology as an alternative to relocating their operations.

6



Our survey shows that **using data effectively, sharing knowledge internally and working closely with partners will be crucial in reducing scope 3 emissions.** Sharing knowledge and insights gathered from data across teams will further streamline the process. This is helping to foster a culture of collaboration internally, and with suppliers, so that emission reduction can be achieved sooner.

Using Digital Innovation for Continuous Supply Chain Management Improvement

By Shirell James, EVP EMEA, One Network Enterprises

The challenges we typically see in the pharmaceutical supply chain are the same ones the LogiPharma Playbook Survey validates. They are familiar to pharmaceutical manufacturers, contract manufacturers, and suppliers, who strive to:

- Have complete visibility of demand, supply, and capacity constraints (without logging into multiple systems)
- Orchestrate and optimise the entire supply chain network to satisfy demand quickly and effectively
- Have a proven road map to digitise and achieve real ROI throughout their digital journey

A fundamental lack of coordination typically underlies problems with visibility, agility, resilience, collaboration, service levels, and high costs. This discord is understandable, given the multitude of systems and portals, each utilising different databases and data models.

This forces pharmaceutical organisations to fall back on increased lead times, higher inventory levels, and more manpower, to manage and interpret data and bridge the gaps between disparate systems and processes.

Outdated standalone and portal systems burden suppliers and contract manufacturers, who must serve their customers through a proliferation of portals. Furthermore, they lack a comprehensive and coherent view of demand across all their customers, and how it comports with their own capacity, material, and that of their suppliers.

Pharmaceutical companies have similar issues. They still struggle to understand capacity, and material availability, as well as to collaborate effectively with contract manufacturers and suppliers. But if we understand the nature of supply chains as ecosystems, rather than serial chains, we can solve it as a network problem far more effectively.

In a true network, each member is a full “citizen” of the community, not subservient to a hub. Each member has access to the full suite of solutions to optimise their internal operations and supply chains, as well as share data and collaborate with customers and suppliers anywhere on the network.

Pharmaceutical companies, contract manufacturers, suppliers, and logistics providers can plan and execute internal and external operations more effectively using accurate and authoritative, real-time data.

Contract manufacturers have one view providing a comprehensive view across demand, capacity, and supply. This enables them to do accurate material and capacity-constrained planning as the system is informed by material and capacity constraints across all nodes and tiers. They can operate more intelligently, significantly lowering manual overhead and raw material costs, resulting in a lower cost of goods sold (COGS).

Similarly, pharmaceutical companies have a single view providing visibility into their supply, and how it impacts their own customers’ demand. They can make better decisions about meeting demand more efficiently, increasing revenue, while reducing unnecessary inventory, and ultimately reducing their COGS.

Together, this greatly increases the agility, efficiency, and resilience, of the network, while lowering costs and increasing the effectiveness of each trading partner.

The network benefits compound.

AI is far more “intelligent” given that it has much more data and considers all relevant resources and constraints across the network. It can autonomously resolve issues and provide prescriptions for users, and ensure problems are completely resolved, across all functions and parties on the Digital Supply Chain Network.

Chain of custody is a natural by-product of the network. With all partners working on a single version of the truth, it is trivial for the network to track products across regions and trading partners, even when lot-splitting and merging occur. Similarly, the network can support secure cold chains by consuming product authentication and temperature data, and logging and issuing alerts when violations occur.

But where do you start? That should be dictated by your priorities and where the most value can be recouped quickly. It could be logistics, inbound supply, or outbound fulfilment. What matters is that you begin the journey where it is right for your organisation. Then you use the returns to fund subsequent phases.

A digital supply chain network, spanning all trading partners, built on a common data model, is the proven path to creating a true community of equal partners, where each can pursue their objectives and priorities, while contributing data and their expertise to partners, to create the highest value for their customers and themselves.



Part One



Attaining Data and Digital Maturity in 2023



Heads of supply chain have responded to recent supply chain challenges by enhancing their digital and data maturity. Most of our respondents state their organisations have either a deeply embedded culture of data science or are on their way to it becoming second nature.

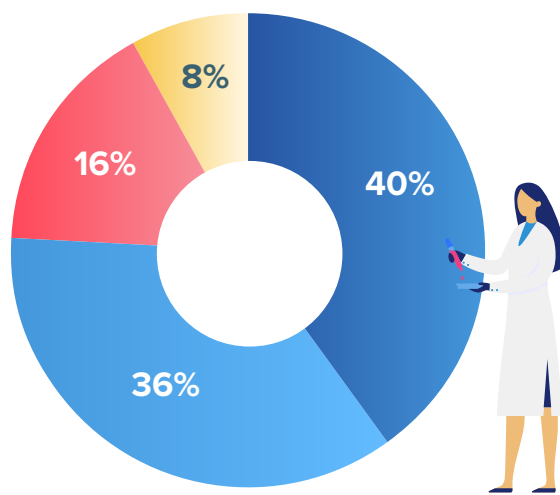
In the past 12 months, the pharmaceutical supply chain was impacted by geopolitical tensions, the energy crisis and workforce shortages. Our survey reveals pharmaceutical organisations are investing more in digital and data maturity in 2023 as a response.

Automation continues to be a key tool in the war chest to collect, optimise and analyse vast amounts of data. Meanwhile, advancements in technologies, from ML to edge computing are transforming the way the pharmaceutical supply chain can think, resolve, and react.

Despite heavy regulatory requirements, and times of immense change, those who are digitally agile enough to predict change, adapt strategy and respond quickly are finding success. From advancing forecasting capabilities and introducing AI, to ensuring suppliers join them on their digital journey, pharmaceutical organisations are prioritising digital agility over the next 12 months.

However, heads of supply chain are still facing challenges when building a digital supply chain. According to 64% of respondents, gaining visibility remains their biggest challenge in 2023. Interestingly, finding the right technology to invest in is a particular challenge for 61% of our respondents. This reflects the complexities surrounding implementing new technologies and processes with the existing infrastructure for many pharmaceutical organisations.

To combat this, heads of supply chain are improving supplier collaboration by working with suppliers that are digital experts. Working with suppliers that mirror their commitment to creating a supply chain that is digital and data mature is providing heads of supply chain with the ability to expand visibility, and identify key technology uses.



How embedded is a culture of data science in your organisation?

- Deeply embedded, part of the business fabric
- Some business lines have data science capabilities
- On the way to becoming second nature
- Very little data science is being done

"Data science is becoming increasingly important in our operations, including supply chain operations. Particularly since the pandemic, and the strain it put on supply chains, optimising timings and costs is critical. We need to have a good view on where we have bottlenecks or potential blockers. Without data, achieving this is impossible. Having a culture of data science is essential in ensuring that you get the most out of your data, and insights can be derived."



Ingrid Marchal-Gérez
EMEA Cell Therapy Commercial Operations Lead
The Janssen Pharmaceutical Companies of
Johnson & Johnson

"The master data management team at Trilink Biotechnologies is deeply embedded within business intelligence to create better insights. This result suggests that respondents are working towards this too, which is a good sign."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"Having a culture of data science in organisations is becoming increasingly important. At my organisation, we currently have a mix of data-based decision-making, while maintaining a healthy volume of decision-making based on experience. Where possible, it is important to use data science to your advantage, especially where organisations are still relying heavily on manual analysis."



Stefano Chiei
Director Operations EMEA/EE
Advanced Bionics

"Establishing a culture of data science has rapidly become a top priority for pharma producers of all sizes (as well as their key partners in the E2E supply chain). The digitalised supply chain has become a mainstay of the industry, and the sheer quantity of data being managed and analysed has grown exponentially. As a result, the culture of organisations and the skill sets of the individuals they are made up of, have needed to transform in step."



Will Robinson
Conference Director
LogiPharma 2023

We asked our respondents how their organisation is upgrading its existing supply chain network to become digitally agile over the next 12 months. Here is what they told us:

"We are improving our forecasting capabilities of the digital supply chain to gain additional agility."

"We are chasing new digital alliances that have expertise in futuristic supply chain solutions."

"We are creating more phases in the supply chain network to deliver better flexibility and reliability."

"The chances of including AI in the supply chain is much higher now than they were ever before."

"We have insisted on our suppliers to gain digital momentum so that we are eventually supported with digital agility."

"The network is being strengthened to gain seamlessness in the supply chain network and reduce threats and breakdowns."

"In my opinion, AI is going to play a big role in helping supply chains to become digitally agile going forward. Currently, we are, as an industry, in the middle of discovery when it comes to AI, and the marketplace is not mature enough yet to buy an off-the-shelf product."



David Ruiz
Global Head of Customer Integration
Merck & Co

"One of the biggest focuses for our organisation has been utilising supply chain mapping solutions and embedding AI into that solution. We have recently partnered with an external provider that has effectively mapped our tier one through to tier three suppliers. They have then overlaid AI to manage any risks that take place.

Should any delays occur at a port, or airport, we are seeing real-time alerts and can respond sooner. Getting supplies has been incredibly difficult over the past two years and knowing immediately how to react to disruptions in the market has been essential."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"The implementation of a range of automation technologies, from RPA through to more advanced AI and ML is a huge area of development for the industry. This is freeing up personnel to focus upon strategic tasks, and allowing for a more responsive and agile self-driving supply chain.

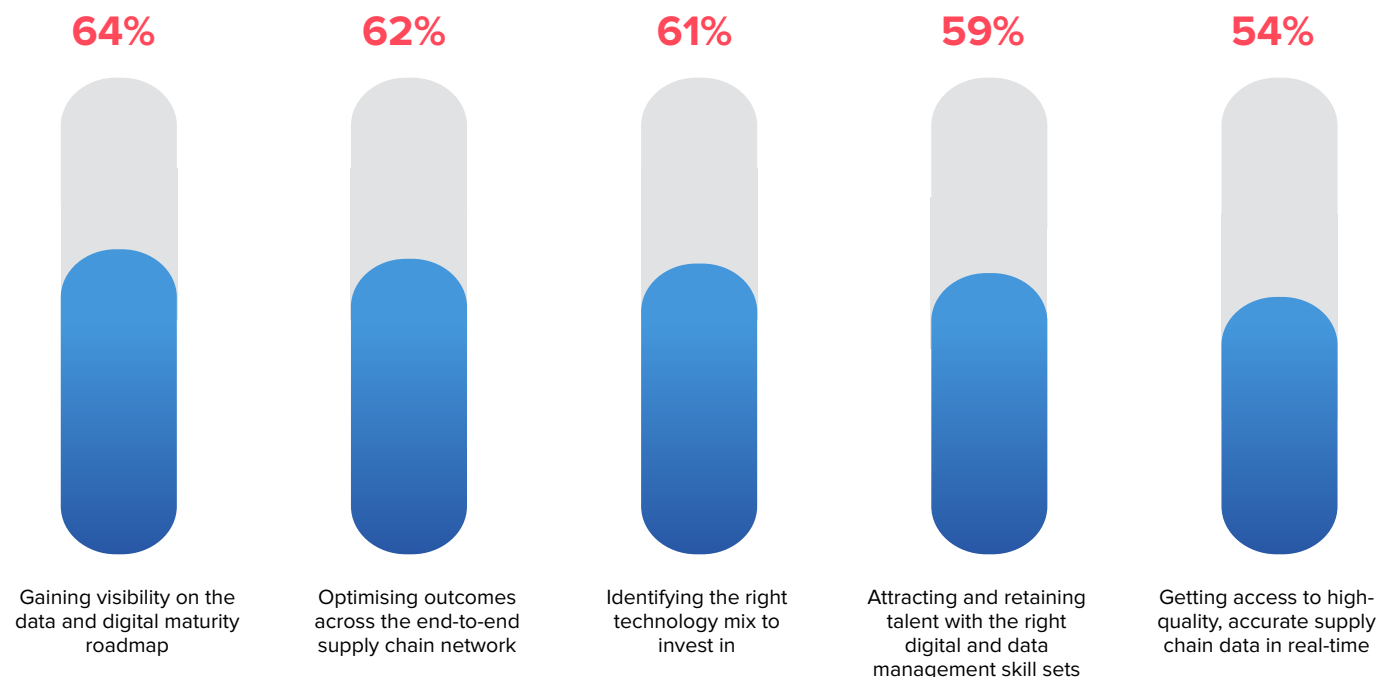
This in turn is ensuring a greater level of resilience, along with delivering quality and efficiency improvements. Often the timelines associated with this are much longer than 12 months (particularly when looking at things enterprise-wide) and so producers are looking at the year ahead as part of far further reaching technology roadmaps."



Will Robinson
Conference Director
LogiPharma 2023



What are your top three challenges in building a digital supply chain for the future?



"Interestingly, none of the challenges presented come across as a universal priority. What we have in place of a single outstanding 'winner' is a clear theme across each of the main possibilities. Where we might once have had specific needs crop up, we now see that the industry is asking: how can we make data useful and useable? Not just present. The answer to this is pairing AI with a new way of thinking about your supply chain to start making data-powered decisions that drive strategic business outcomes."



Dora Birna
Chief Marketing Officer
7bridges

"The top two challenges in building a digital supply chain for the future are, in some ways, connected. Without getting to the data, optimising outcomes across the end-to-end supply chain is hard, if not impossible. If you think about today's supply chains, they are long and they are heavily outsourced with many brand owners being just that – brand owners. So, getting visibility to that data requires getting data across the eco-system which requires connecting to external systems and collaborating with not just the next tier of supply, but the next, and the next, and so on.

Then even if you get the data, for example, into your data lake, how do you then use that to optimise outcomes, when each tier of the supply chain has its own batch, siloed, disparate planning and execution systems? A digital supply chain network solves this by connecting the entire ecosystem into a multi-party network, allowing each tier to share data controlled by permissions, along with the AI, to then detect and resolve issues in real-time, at the right point in the network, which ensures the best outcome."



Shirell James
EVP, EMEA
One Network Enterprises

"I think the pandemic has fueled the need for data visibility and the justification for investment into building a more robust digital supply chain. It is important that we leverage the information we have, and make key decisions based on our data points."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"To overcome these challenges, I think that setting an achievable target and outlining your end goal can help greatly. It is important to note these goals should be revisited as new technologies become available and the market changes.

To ensure success, it is also important to have a common data language. Ensuring that your systems can work together seamlessly before new technologies and further supply chain digitisation is implemented will be essential."



Mo Hussain
Head of Demand and Sales & Operations Planning (EMEA)
Kyowa Kirin International plc

"Seeing 'gaining visibility on data' as the top priority and challenge in this space is unsurprising, as it is the first and most important step in enabling the fully digitalised supply chain. Where the greatest challenge often comes from is when attempting to gain visibility on the supply chains of partners across the E2E supply chain. This integration requires a significant level of cooperation and transparency across separate enterprises."



Will Robinson
Conference Director
LogiPharma 2023

Quality Assurance and Operational Resilience in Logistics



Heads of supply chain are focussing on quality assurance and improving operational resilience in logistics, as continued threats from geo-political tensions and a global energy crisis persist. Enhancing tracking capabilities as goods and products are transported is one area that our respondents are prioritising as they assure quality.

Optimising tracking and increasing the visibility of goods across the supply chain is essential in maintaining operational resilience in logistics. Assessing quality throughout every stage of the supply chain is allowing heads to take full control of quality management, and act faster, should challenges arise.

Further digitisation of the supply chain for this purpose is inevitable, as AI and ML, for example, can provide data-led, automated insights across logistics operations when quality issues arise.

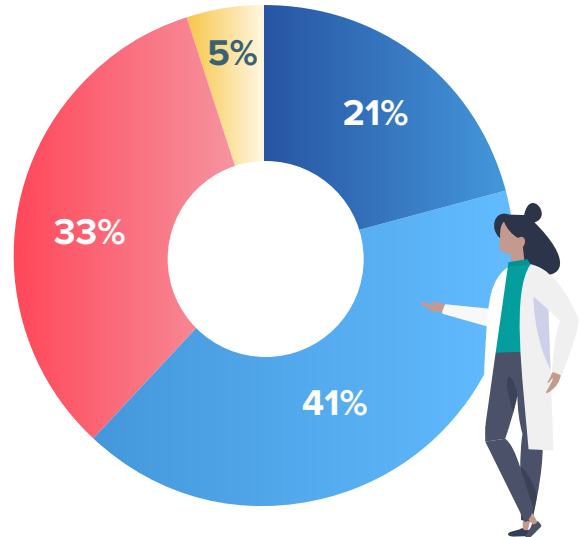
Additionally, 22% of respondents viewed data management in particular as an area in logistics that needs the most improvement. The support that data management can provide in fuelling operational resilience in logistics, in areas such as predictive simulation and risk analysis cannot be understated. However, fully harnessing the data at our disposal and having the data management tools in place to handle that data can prove difficult.

Our respondents also highlighted temperature control (21%) as a key area of the supply chain that needs improvement for operational resilience. As unexpected changes in the market may result in fluctuations in transport distances, storage locations and even demand, the safe transport, storage, and delivery of key drugs can become challenging.

To combat this, advancing the tracking and tracing of goods, alongside further digitisation can position your logistic processes to better respond when unexpected changes arise.

More than 60% of our respondents are either confident or very confident in their supply chain resilience and quality assurance. For those who perhaps are not so confident, advancing data management capabilities in logistics can be a great way to improve operational resilience and quality assurance.

Implementing new technologies cannot be done correctly without sound data management capabilities underpinning them. Fully optimising your data management in logistics can provide insight into where complications are arising in the transport and storage stages, and be a great shield against future threats.



How confident are you that your organisation is performing well in quality assurance and operational resilience?



"Many organisations are still using their own spreadsheets and older systems which are often isolated and siloed. This results in different teams having access to different data that is not stored in a centralised location. Data centralisation creates one source of truth and is something that I think many organisations in the industry are prioritising over the next few years."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"For those who are perhaps not too confident in these areas, I would recommend that you talk to your colleagues who work directly in quality performance, and address specific areas of concern. It is great to see so many are confident overall, however. With so many respondents working in the supply chain and logistics, the close relationship that their roles will have with delivering quality for their organisations is perhaps boosting their confidence in these areas."



Claudia Bertrams
Executive Director Supply Chain EMEA & APAC
Ultragenyx

We asked our respondents what their organisation will prioritise to improve quality assurance across the supply chain in 2023. Here is what they told us:

“Sustainable packaging is a priority as quality assurance has already been taken care of.”

“The notion is to guide the development of our logistics partners to support quality once our products leave our premises.”

“We have prioritised technology that supports the flow of data from the source to make quick and accurate decisions when needed.”

“We will collaborate the multiple dimensions of quality through a single digitised quality measurement channel.”

“We are targeting extended visibility in 2023 for quality management of the supply chain.”

“We have prioritised live tracking solutions for 2023 for better vigilance and control of the supply chain.”

“At Advanced Bionics, we are working on improving our supplier collaboration to drive quality assurance across our supply chain. Over the past few years, many organisations have struggled to maintain stability with their suppliers, and the quality that is provided.

So, this is an area we are working on, particularly as inflation rises, and the energy crisis and geo-political tensions we saw last year persist.”



Stefano Chiei
Director Operations EMEA/EE
Advanced Bionics

“Certainly, in cell therapy, I think we still have room to improve our automation capabilities and it should help us to deliver speed and quality. Part of this is also increasing visibility for all of our stakeholders to reduce churn. Automation could, for example, help products move faster through quality assurance by alleviating bottlenecks.”



Ingrid Marchal-Gérez
EMEA Cell Therapy Commercial Operations Lead
The Janssen Pharmaceutical Companies of
Johnson & Johnson

“You really have to invest in solutions and processes both up and down stream. The ROI on investing in solutions that provide a better-quality product or service to the customer will far outweigh ignoring it or cutting corners.”

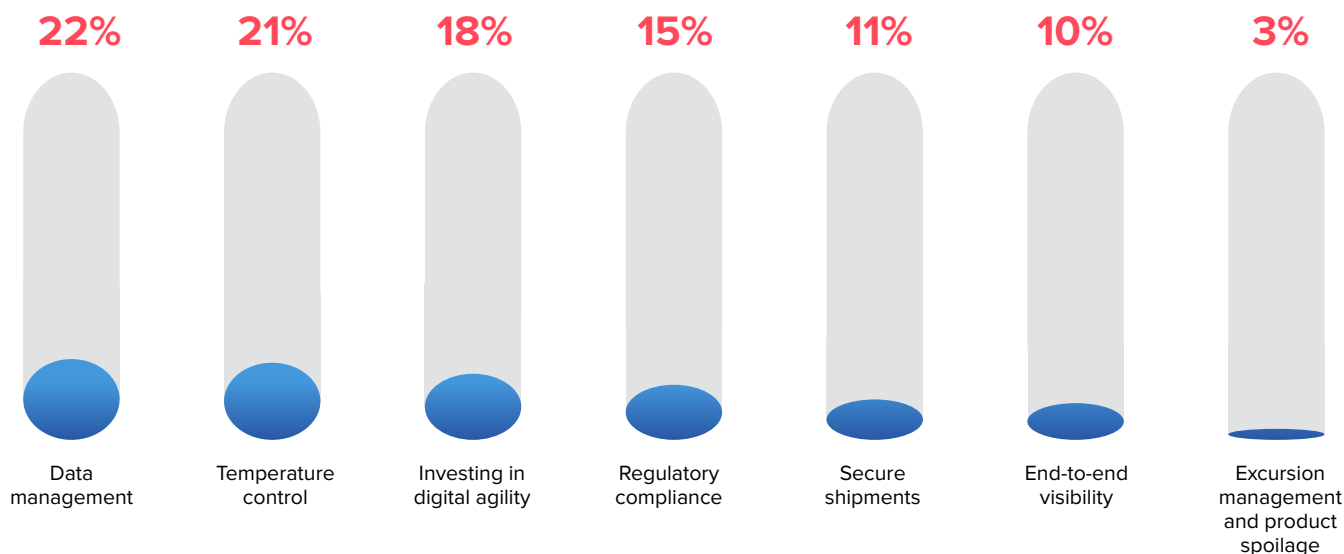
Anything from digital track and trace to cold chain solutions, and even improving processes for onboarding a supplier, will provide improvements throughout the whole network and supply chain. Ultimately, this provides better customer experience and product, which is important to improve quality.”



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies



Which area of the supply chain needs the most work to improve operational resilience?



"We see now that the vague cry for ill-defined visibility is no longer front and centre. There is a sense that the term is not very helpful or meaningful anymore. Instead, it is about understanding data and making the most of it."

The industry is looking less at individual supply chain challenges and more at the overall data problem that it needs to overcome. There is movement away from activity-based supply chains toward outcome-driven ones. We need smarter supply chains that are data-led to navigate today's uncertainty so leaders can make better decisions."



Dora Birna
Chief Marketing Officer
7bridges

"Once again, we see the themes of data management, visibility, and data agility. Imagine a world where each party on the network manages the data for their part of the supply chain and then shares it with the network, to create the ultimate, connected eco-system."

This provides real-time visibility to everyone – not just of transactional data such as orders and forecasts, but of master data such as the BOM, and uses AI to identify issues in real-time and enable planners to make better and faster decisions. This is what a digital supply chain network can do."



Shirell James
EVP, EMEA
One Network Enterprises

"I am a little surprised to see that temperature control is still an area of the supply chain that needs improvement for most. At Merck & Co, we have put great work in over the past few years to ensure we have sufficient temperature control operations in place."

It is positive to see however, that organisations are aware of the areas in their supply chain that needs improving, and hopefully, this is allowing heads of supply chain to target their key areas."



David Ruiz
Global Head of Customer Integration
Merck & Co

"Seeing the management of data as the top development in this area shows the intrinsic link between the digitally enabled and data-driven supply chain, and agility, which leads to improved resilience."

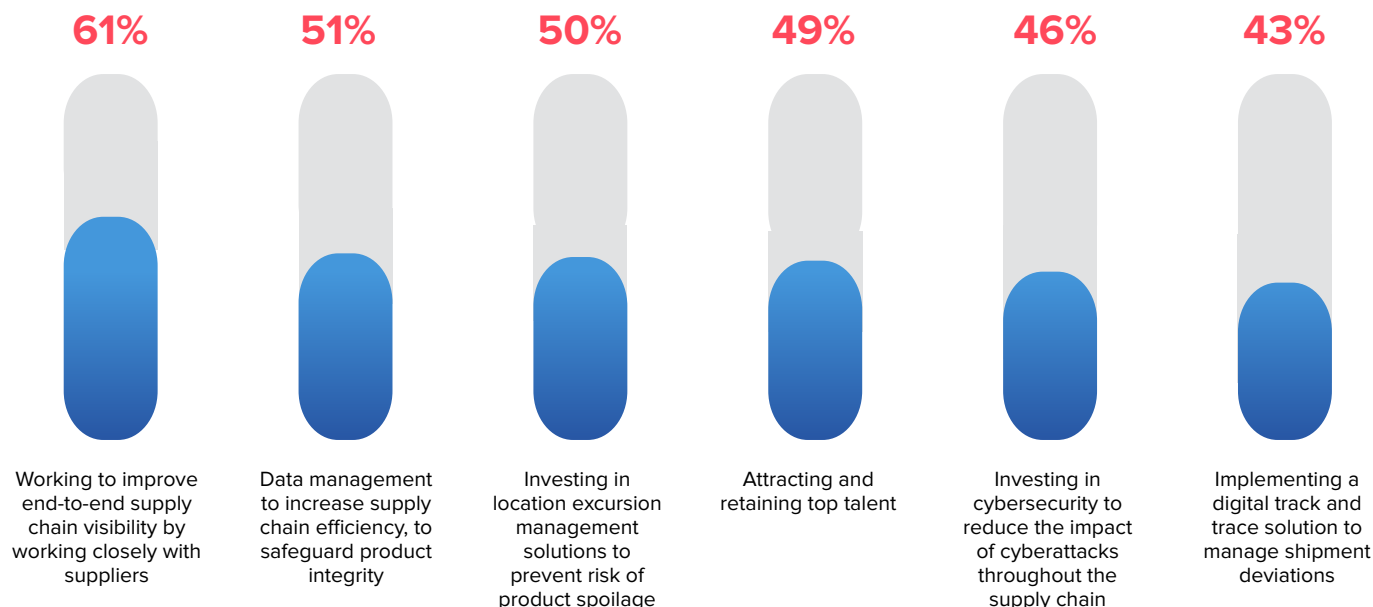
In general, the producers who were the most data-enabled fared the best when faced with a range of 'black swan' events in recent years, and are best positioned to do so again in the future."



Will Robinson
Conference Director
LogiPharma 2023



How is your organisation building and strengthening the supply chain of the future?



"Improving end-to-end supply chain visibility with suppliers and enhancing data management to improve efficiency, are what the industry is looking to achieve. Let me give you an example of how a digital supply chain network can drive value for the pharma industry in these areas.

By giving contract manufacturers one place to collaborate with all of their pharma companies, and one place to do their material and capacity-constrained planning, looking at future demand and future supply, as well as internal constraints, makes them happier to collaborate with pharma companies. This is because it is not only easier for them, but it is driving value in terms of their own operations with less manual overhead to manage changes, less RM so lower COGS etc.

Pharma companies can benefit if they get all their CMs on the network as this means they see, in real-time, the supply they are getting and the impact on their own customer demand. They can then make quicker and better decisions on how to meet demand, how to increase revenue, and, at the same time, reduce inventory. In cases where they have internal manufacturing, they can also collaborate with their own material suppliers and bring down RM inventory which reduced COGS."



Shirell James
EVP, EMEA
One Network Enterprises

"As drug manufacturing becomes increasingly specialised, it is impossible for one manufacturer, or organisation to have all the capabilities to make a certain medicine. As we move towards more specific drug therapies, collaborating with the best-in-class suppliers will be necessary to leverage different technologies.

In this process, it is essential that you have sufficient visibility, and can understand what your suppliers are doing every step of the way. The ability to make adjustments early in production cycles will only be possible through improved end-to-end visibility. So, it is not a surprise to see respondents focussing on this, as they strengthen their supply chains."



Mo Hussain
Head of Demand and Sales & Operations
Planning (EMEA)
Kyowa Kirin International plc

"To improve visibility, working with external partners is a great resource. They are a crucial part of the end-to-end supply chain with a broad understanding and view of critical processes. It is great to see that so many appreciate the importance of collaborating with partners, and I think attracting top talent is an equally important factor that will deliver success."



Claudia Bertrams
Executive Director Supply Chain EMEA & APAC
Ultragenyx



Simulation-Based Risk Management of Supply Chains



It may be increasingly difficult to foresee and predict where risks to the supply chain can come from. However, heads of supply chain are tasked with preparing the supply chain to deal with these threats, perhaps even before they occur.

To create the resilient and agile supply chain that is needed, understanding where the biggest risks may come from is critical. Our survey has revealed that environmental impact (57%) and legal and compliance are the biggest risks to the supply chain over the next 12 months.

Knowing where risks are likely to come from is helping heads of supply chain to implement simulation-based risk management practices, which 83% of our respondents are adopting. Using simulation-based risk management is allowing heads of supply chain to experiment with various scenarios, and assess how well certain changes in supply chain

operations navigate different threats. Our results suggest that simulation-based risk management is a great tool for heads of supply chain, as it is allowing them to understand the best ways to respond to threats that may occur.

Despite the high adoption rate, some are struggling with implementing the technology. According to our respondents, they are lacking sufficient data analytics capabilities to perform simulations that provide meaningful, actionable insights. To properly support supply chain resilience, the technology requires comprehensive data analytics to assess how certain responses will perform.

Without this, the insights that are given - while helpful - cannot fully drive decision-making. Successful simulations will ultimately hinge on having access to accurate, accessible and timely data, so it comes as no surprise that some are facing challenges in this area.

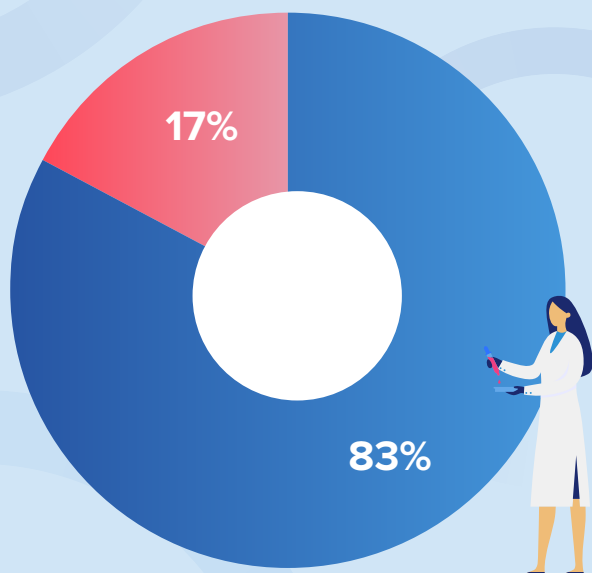
What are the biggest risks to your supply chain in the next 12 months?



"The reality of the current climate crisis is that we all will experience environmental risks to our supply chain, even within the next 12 months. The biggest threat for any organisation regarding climate change is unpredictability. Not knowing where the next potential environmental risk is coming from, and how it will impact the supply chain across the globe, makes it incredibly difficult to secure and plan for the future."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies



Is your organisation currently using simulation-based risk management practices?

● Yes

● No

"From mapping solutions to demand forecasting, using simulation-based risk management practices have been pivotal for us. We support a wide array of demand visibility in our supply chain, so, for us, the success of our simulation-based risk management practices play a large part in our success to meet the market needs."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"We are implementing simulation-based risk management practices. This is difficult to implement at an advanced level with the current technologies that we have. From my experience, most organisations are still using manual modelling, such as excel based modelling."

For us, the market tools are still not mature enough. In addition, we are dependent on the availability of spotless master data, a perfect setup of systems, and systems that can handle multiple scenario simulations. Without this, the simulation outcomes will not be credible. Hopefully, the future sees the technology mature, and we can begin to gain valuable insights and automate routine decisions."



David Ruiz
Global Head of Customer Integration
Merck & Co

"More than ever, it is critical that we are prepared as much as we can be for potential risks to our supply chains. We need to be ready for different outcomes, and have a best practice in place to respond, should certain threats occur. With the huge number of simulations that can be ran, it is important to view this as a work in progress. However, any work that can be done, will be vital in supporting the supply chain of the future."



Mo Hussain
Head of Demand and Sales & Operations
Planning (EMEA)
Kyowa Kirin International plc

We asked our respondents that answered 'no' to the previous question, what their reasons for not using simulation-based risk management at their organisation were. Here is what they told us:

"Compromised sets of data and data silos are the challenging factors."

"We do not have the digital-twin technology in place for this."

"Higher unpredictability in the market has put our developments on the back-burner."

"Data fragmentation is a major challenge that disrupts our usability of simulation-based risk management."

"A couple more niche technological integrations will support us with simulation-based risk management."

"We are in the process of accumulating more risk associated data for this purpose."

"Investing in simulation-based risk management is an ROI that is going to take years to achieve. Building a data management team and seeing a return will also take time. For us, we have a data governance team that has oversight over the infrastructure, as the data is consolidated."

This is allowing us to see the symmetry between the data, and different systems. It is a long process, but it is about trusting that the data provides key insights to make critical decisions for the business."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"I think that for many, they may be struggling to fully implement simulation-based risk management practices due to the fact that the tools on the market need to be validated first. Equally, the data that is used must be consolidated before it can be used in a manner that makes using the resulting insights a reliable approach."



Claudia Bertrams
Executive Director Supply Chain
EMEA & APAC
Ultragenyx

Conclusion

Our survey has revealed that heads of supply chain recognise the importance of having advanced data management capabilities. With macro-economic events causing supply chain disruption, investing in advanced data analytics will be key to driving supply chain resilience.

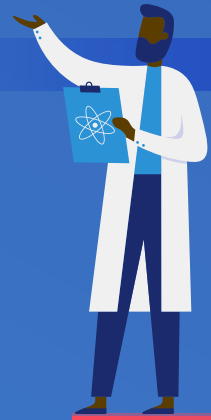
One of the critical steps to creating a resilient supply chain is being aware of the key areas to prioritise, with our survey highlighting that data management and temperature control are the top two areas needing the most work. However, more than 60% of our respondents now have confidence that their supply chains are resilient. This suggests the great efforts that have been put in place to evolve the supply chain is working, and the pharmaceutical supply chain is moving in a positive direction.

Our respondents have highlighted environmental, legal, and compliance risks as the biggest threats to the supply chain over the next 12 months. To combat this, many are turning to simulation-based risk management. For this to be a success, however, our results again suggest that, enhanced data management and digital maturity are essential.





Part Two



Utilising Digital Innovation to Continue Supply Chain Management Improvements

Heads of supply chain are continuing improvements by ramping up the focus on digital innovation. Our survey has uncovered that an inability to collaborate with suppliers (50%) and decision execution (50%) remain their biggest supply chain challenges and are the key areas to prioritise.

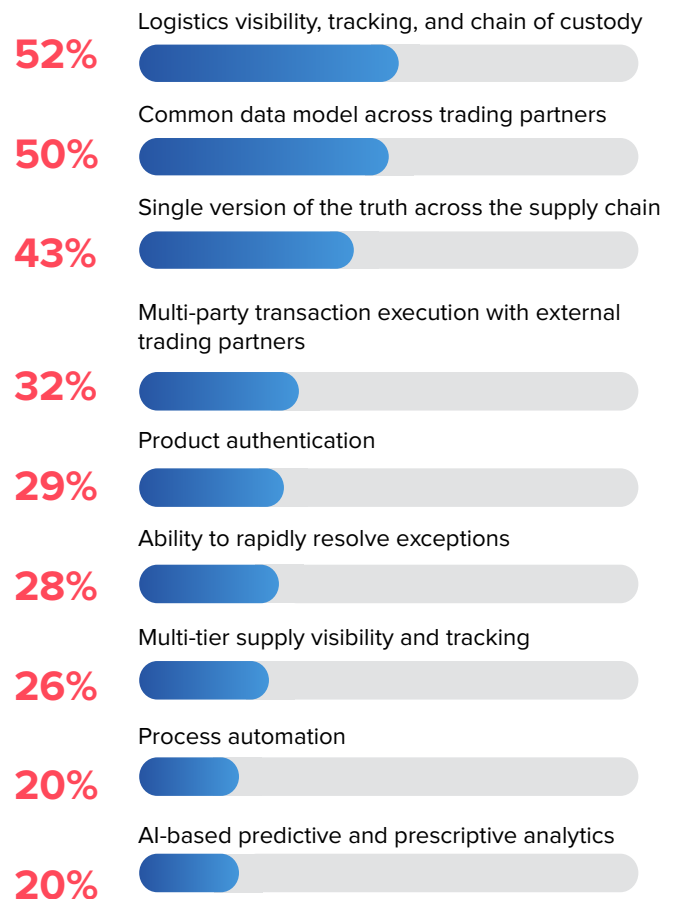
To combat these challenges, and maintain a resilient and agile supply chain, the survey results have highlighted that strong visibility (52%) and a unified data model (50%) will be critical to supporting the digital supply chain journey. With threats coming from different and unforeseen sources, increasing visibility across the end-to-end supply chain is helping to identify risks and highlight solutions sooner.

Data is king, and implementing advanced technologies, such as automation, AI and ML requires fuel in the form of advanced data analytics. Success will hinge on ensuring systems can transfer data seamlessly internally, and externally. So, it is not a surprise to see that implementing a unified data model is a priority for heads of supply chain.

To ensure the right digital solutions are being employed, gaining insight into the capabilities that solutions must provide is allowing heads of supply chain to identify the attributes they require. According to our survey, capacity management (47%), third-party collaboration (44%), and regulatory compliance (43%) are the top three capabilities that a supply chain solution should possess.

Demand surges, strains on supplier relationships and increased regulation have all been pandemic-induced threats to the pharmaceutical supply chain. With these threats persisting, it is no surprise to see that heads of supply chain are focussing on tailored digital solutions to continue supply chain management improvements.

What are the top three attributes supporting your digital supply chain journey?



"The answer option that stood out to me was the single version of the truth. Kyowa Kirin International is a Japanese based multinational organisation. Within this context, it is important to find common ground on ways of working, system integration and data structure.

Many companies experience this type of challenge, so improving end-to-end supply chain visibility can be a great way of overcoming this gap."



Mo Hussain
Head of Demand and Sales & Operations Planning (EMEA)
Kyowa Kirin International plc

"While seeing process automation low down on the results here may be slightly surprising, it is important to note, in my opinion, that automation in the supply chain is not something new. We have a lot of our processes and functions automated already, and whilst there will be more in the future, this is not something new to supply chains.

You can always improve, and as the market continues to be volatile, having a digital supply chain that excels in visibility, data analytics, tracking, and automation is our best shield against external threats."



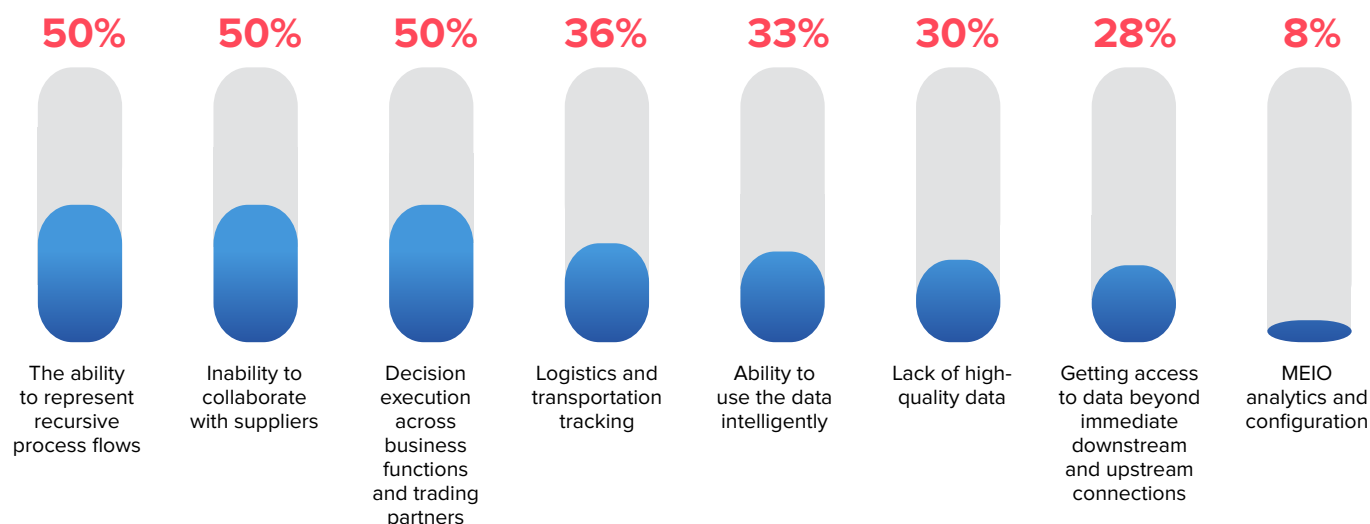
Stefano Chie
Director Operations EMEA/EE
Advanced Bionics

"As we look to support our digital supply chain journey in high value therapies, it is really important that we are able to resolve exceptions. Particularly for personalised therapy, it would be top of the list for me. Over the coming years, I think that automation for quality assurance processes may become a more important attribute."



Ingrid Marchal-Gérez
EMEA Cell Therapy Commercial Operations Lead
The Janssen Pharmaceutical Companies of Johnson & Johnson

What is the biggest supply chain challenge for your organisation?



"Each partner can concentrate on the top internal value drivers within their organisation and provide networked data and services, which would allow each partner to be excellent at what they do. This must be smarter than trying to worry about every siloed issue in the network where you have no control. This is a partnership; this is a network."



Diane Reynolds
Program Director, Pharma
One Network Enterprises

"The biggest challenge for collaborating with suppliers, in my opinion, is interoperability. This is, unfortunately, the same problem we have been experiencing in supply chains in the last 15 years. The root cause of this absence of interoperability is a lack of data-exchange standards, and above-market regulations that enforce those standards."



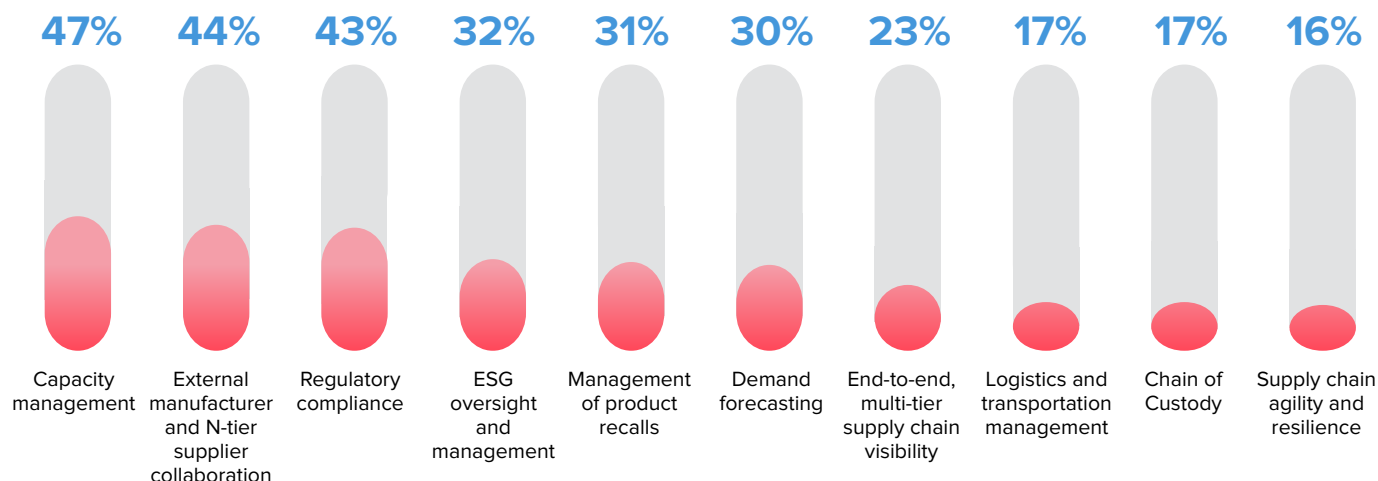
David Ruiz
Global Head of Customer
Integration
Merck & Co

"It is perhaps unsurprising to see that many respondents are finding it challenging to collaborate with suppliers. In my opinion, this is still happening as a result of the changing environment that the pandemic caused. The workforce situation across suppliers has been challenging, and the unpredictability and complexity we have experienced over the past two years are still here."



Claudia Bertrams
Executive Director Supply Chain
EMEA & APAC
Ultragenyx

What are the top three capabilities that a supply chain solution should provide?



"I am unsurprised by these results. From my experience, capacity management, supplier collaboration and regulatory compliance are highly sought-after attributes. Over the coming years, I believe that ESG oversight and end-to-end visibility will become increasingly popular. These are solutions that most organisations will require, but few have sufficient expertise internally in these areas."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"I am unsurprised by these results, as capacity management, and collaboration with external providers are even more essential in the post-Covid world in overcoming the key challenges that have been identified in this playbook."



Claudia Bertrams
Executive Director Supply Chain EMEA & APAC
Ultragenyx

Pharmaceutical Supply Chain Resilience in the Age of Geopolitical Instability

Geopolitical instability is causing congestion, delays, price hikes and material shortages for the pharma supply chain. However, the impacts of the COVID-19 pandemic still linger. As a result, heads of supply chain are continuing their efforts in evolving and building a resilient pharmaceutical supply chain of the future.

While global relations may be causing threats to the supply chain, relocating manufacturing (77%) and sourcing (61%) locations away from dangerous regions is not yet a reality for our respondents. It is simply too early for some organisations to decide if relocating is the best option. Heads of supply chain are instead prioritising improving partnerships and will rely more on technology as an alternative to relocating their operations.

The pandemic's indirect impacts also present challenges for the pharmaceutical supply chain. Eighty per cent of respondents highlighted that investments in developing COVID tests and vaccines have had an impact on the development of non-Covid products.

As geopolitical instability supersedes COVID-19 as the leading threat, this suggests that heads of supply chain are being tasked with combatting the additional, indirect impacts of the pandemic.

The lasting impacts of the pandemic can also be seen in the change in consumer behaviour. Seventy per cent of respondents are seeing a trend towards a demand for patient centricity. Patients are requiring at-home deliveries in higher quantities. As a result, pharmaceutical organisations are responding by adapting how they measure demand.

Additionally, transport and storage capabilities are facing new constraints. Drug therapies are becoming increasingly specialised, and require a range of storage requirements. Therefore, storage and distribution networks must be able to maintain product safety, whilst ensuring they are meeting the demand for increased patient centricity.

To be resilient, the pharmaceutical supply chain must be able to combat the new threats that are posed by geopolitical instability, while remaining flexible as the indirect impacts of the pandemic become apparent.

How has investment in developing Covid tests and vaccines affected your non-Covid development pipeline?



"Although I expected that there would have been some impact, I am surprised that it is so high with only 20% of respondents saying it had no impact at all. I do however suspect that the impact will be temporary, with focus and funding shifting back to the pre-Covid drug candidates."



Gary Connors
Partner
Oliver Wight EAME

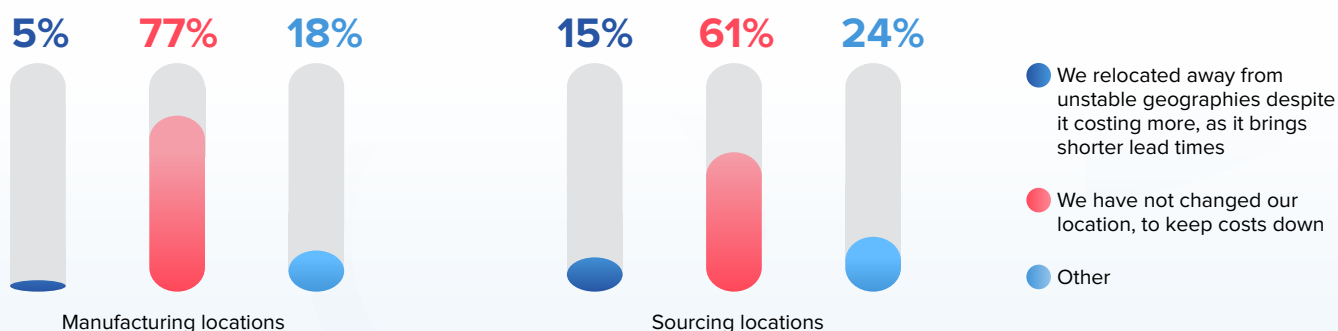
"The Covid crisis was a resilience test for the continuity of clinical trials for our entire portfolio; interrupting those studies would have meant significant delays in launching life-saving products for our patients."

In parallel, we had to ensure all critical non-covid treatments (oncology, diabetes, and many others) were uninterrupted, which was a logistical challenge due to the situation at hospitals. Looking back, we did a great job in protecting those key supply chains, thanks to a resilient network, and a fantastic team behind us."



David Ruiz
Global Head of Customer Integration
Merck & Co

How has geopolitical instability influenced your manufacturing and sourcing locations?



"While geopolitical instability has put added pressure on supply chains to deliver on-time and at the right costs, this impact has not proven significant enough to warrant the cost of changing the manufacturing footprint of many organisations.

Changing sourcing strategies for raw materials is much less costly, so it is no surprise to see that there is more change here. While we might have expected the level of change in sourcing to have been higher, most organisations are keeping an eye on the situation and will be developing contingency plans."



Gary Connors
Partner
Oliver Wight EAME

"I believe that the geo-political instability we are unfortunately seeing, particularly in Russia, is geographically contained, and the effect it is having on global supply chains is limited. This is not to say that I do not think certain organisations will relocate.

For many, globalisation is taking a step backwards, and there is a trend towards regionalisation and localisation. This will help organisations, in my opinion, to regain control and security of their supply chains, and ensure they are less dependent on external factors."



David Ruiz
Global Head of Customer Integration
Merck & Co

"As the pharmaceutical supply chain has become increasingly globalised over the past 20 years, organisations have been focussing on having secondary source locations, to reduce the risks posed in high-instability regions. It is great to see that the work that has been put in means that few organisations are relocating."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

We asked our respondents who answered 'other' for manufacturing locations to provide some more detail. Here is what they told us:

"Relocation from unstable geographies is not a positive way to deal with the issue. We are working out good partnerships that would help sustain the organisation in the mid-term."

"We think that it is somewhat too early to respond if we change manufacturing locations. We are analysing the risks and possibilities of disruption constantly."

"Market fluctuations and political decisions are being watched closely to see if they will impact our manufacturing plants."

"We are still considering if the geopolitical threats would affect our business. Decisions about a change of locations have been put on hold until we analyse the situation completely."

"Risk analysis is conducted to gauge the need for operational or procurement strategy changes."

"We will be adding new manufacturing locations. At present, we are evaluating the potential opportunities in new regions."

"It is pleasing to see that organisations are taking a measured approach to change and not overreacting."



Gary Connors
Partner
Oliver Wight EAME

"I can see that for some, they believe it is too early to decide whether changing manufacturing locations is the right choice for their organisation. Unfortunately, I think there is the possibility that organisations will decide to change locations too late. There is definitely an optimal time, and it is important to be proactive, rather than reactive."



David Ruiz
Global Head of Customer Integration
Merck & Co

We asked our respondents who answered 'other' for **sourcing locations** to provide some more detail. Here is what they told us:

"Our sourcing patterns have undergone changes due to these risks. We are using technology to determine requirements based on key trends."

"There are new technologies used to optimise sourcing. Since the geopolitical conditions are unstable, we have to research new sources on a regular basis."

"In case there is a need, our crisis management solutions will be employed. We are adequately prepared for any disruptions."

"There is more emphasis on technology to track and maintain inventory."

"Advancing the technological capabilities of our supply chains can be a great alternative to changing sourcing locations. Done correctly, technology can help us have a much more responsive supply chain, that provides us with decision-making insights in real-time."

Additionally, optimising the supply chain from a data management perspective can support the technology to ensure we are getting optimal outputs."

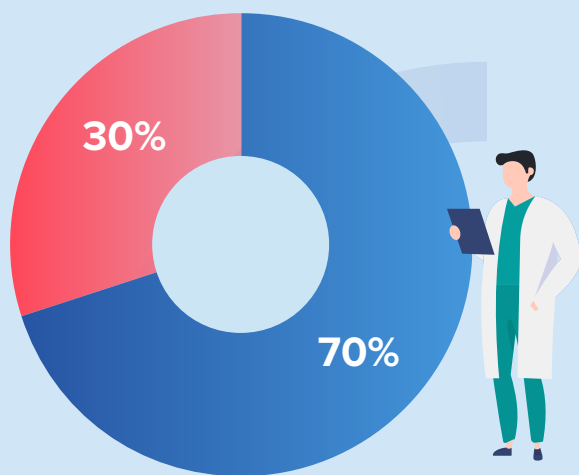
"We are trying to increase the cost-effectiveness in our sourcing process to deal with the challenges."

"Our teams are constantly communicating with partners in the supply chain to check for potential threats."



David Ruiz
Global Head of Customer
Integration
Merck & Co

How have consumer behaviours and preferences for getting their medications been influenced by the pandemic?



- We are seeing a trend towards more online healthcare consulting, prescribing and delivery of drugs to consumers
- We are not impacted by the pandemic in terms of how we market and distribute our products

"This is huge and is altering the face of the industry in a permanent way. While the technology to provide online healthcare all the way through to the prescribing and delivery of drugs has existed for a while now, the barrier was consumer trust. This barrier has now been overcome or at least significantly lowered so we should expect to see further acceleration of this trend."



Gary Connors
Partner
Oliver Wight EAME

"Many see clear preferences toward online consultation and consumption. For those supply chains, this presents strategic challenges in terms of time, cost and temperature controls. As we get further from the height of the pandemic, will this trend falter as it has in retail?"

Considering the unique needs of this industry, we are likely to need a way of catering to both online and in-person. Supply chain strategies which keep both segments fulfilled easily, on time and at the right temperature will be the winners here."



Dora Birna
Chief Marketing Officer
7bridges

"Direct-to-patient supply chain development saw a significant leap during Covid and set a precedent for patients' expectations around service levels. Though the legislative landscape is still a highly complex one in the European space, there are significant advancements being seen across the industry in the role of eCommerce and its impact on supply chains."

The producers (particularly those with large OTC portfolios) who are preparing their supply chains to adopt to online fulfilment, will be well placed for success in the future."



Will Robinson
Conference Director
LogiPharma 2023

Evaluating and Optimising Carrier Networks



The importance of an optimised carrier network in a modern, global pharmaceutical supply chain cannot be understated. From a lack of visibility and transparency, to influence and education, reducing scope 3 emissions has been a challenge for heads of supply chain.

Our survey has uncovered a promising path to reduce scope 3 emissions. By leveraging data-led insights, carbon hotspots can be identified quickly so team members and third parties alike are aware of where improvements can be made. Additionally, sharing data and educating suppliers is helping to foster a culture of collaboration, which is allowing progress to be made sooner.

With carriers playing such an important role in the success of the pharmaceutical supply chain, regular supplier network evaluations are imperative. Service level is highlighted as a primary factor influencing carrier selection in optimising networks, with 88% of respondents considering it either influential or very influential.

As the pandemic highlighted, the supply chain cannot perform with stability and resilience without carriers providing a consistent service in the face of threats caused by external influences. The carrier network must be able to perform seamlessly, and it is unsurprising to see that carrier decisions are being influenced heavily by the service level that they can provide.

Data is playing an increasingly influential role in carrier decisions enabling heads of supply chain to compare carrier services, and identify where and why carriers have impacted distribution. Having sufficient technologies and processes in place to turn data into actionable information and insights is essential, however, as carrier networks are evaluated and optimised.

We asked our respondents how their organisation will focus on Scope 3 emissions over the next 12 months. Here is what they told us:

"We will rely more on data and analytics to manage scope 3 emissions better."

"Focus on adequate data would be important here. Carbon emission hotspots can be recognised sooner."

"The carbon emission levels of our supply chain will be evaluated more often. Reducing scope 3 emissions will take time due to the lack of transparency of sustainability reports."

"We will focus on recognising the cost-effective ways to reduce emissions overall. Also, working closely with supply chain partners to reduce scope 3 emissions will be emphasised."

"It is vital that we share knowledge with other teams so that they know where there is room for improvement."

"We are mobilising suppliers to implement emission reduction targets systematically."

"From the responses, most businesses see Scope 3 as something that requires them to manage their suppliers differently, using phrases like "hold them accountable" and "educate them about emissions." While supplier relationships do need to play a part, organisations can take a more active role by focusing on outcome-driven activities.

That means having usable data that gives you the power to make immediate changes within your supply chain. Ones you can continually iterate, working toward a more sustainable supply chain step by data-driven step."



Dora Birna
Chief Marketing Officer
7bridges

"I think that increased regionalisation can play a big role in reducing scope 3 emissions. For us, this is not only about reducing the total transport miles that our suppliers are responsible for, but also the number of flights that are taking place. The data shows that just reducing the number of shipments is not the full story, there needs to be a focus on reducing the right types of shipments."



Stefano Chiei
Director Operations EMEA/EE
Advanced Bionics

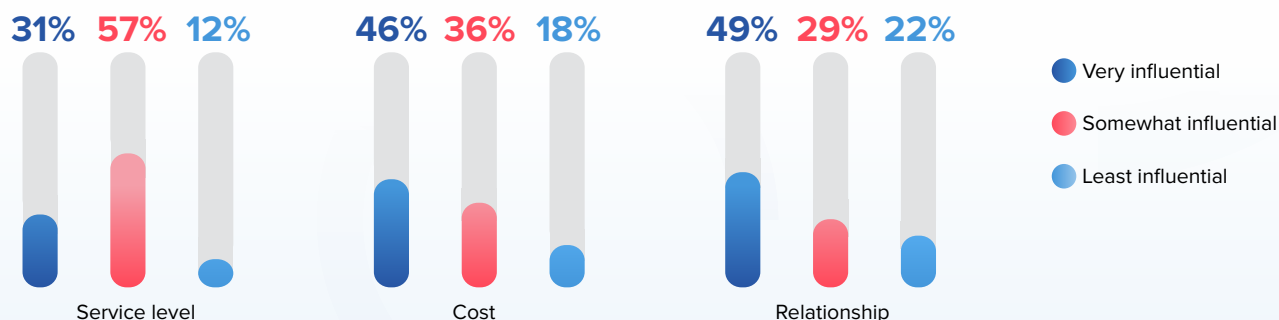
"The first step that many producers are battling with at this stage is getting a true handle on the scale of carbon emissions across the E2E supply chain. When dealing with Tier Two, Three, or even Four logistics and distribution partners, getting this clarity on their carbon footprint can prove to be particularly difficult.

Getting this full visibility will be crucial to developing solid strategies around emissions reduction in the months and years ahead. The level of mobilisation in this space does, however, show that sustainability is a high priority for the industry as a whole."



Will Robinson
Conference Director
LogiPharma 2023

How do the following factors influence carrier decisions in your organisation?



"It is encouraging to see, in my opinion, that the industry, for the most part, is not putting cost as the primary influence. Particularly in pharmaceuticals, service level and quality is much more critical than any other metric."

I do think that we can underestimate the importance of relationship. It is critical that we have trust and an established relationship with our suppliers and customer, as it can make a big difference in our success."



David Ruiz
Global Head of Customer Integration
Merck & Co

"Relationship is critical in having a customer experience which meets the needs of the organisation. As logistical challenges and emergencies occur, knowing that you can rely on a strong relationship with your carrier to help meet customer needs is vital."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

We asked our respondents how their organisation uses data to make decisions involving speciality carrier usage. Here is what they told us:

"Data is used to avoid delays of shipments. We have to plan our distribution activities more systematically."

"Data sheds more light on the compliance challenges that could emerge during transit to certain regions."

"Data is needed when extending services to new regions. We can analyse the potential costs better."

"If there has been any negative impact on our distribution due to the carrier, data is used to identify reasons for these disturbances."



"Selection of speciality carriers for different regions depends on the data. We evaluate historic reports to make informed decisions."

"At Trilink Biotechnologies, we use data to verify several aspects of carrier selection. Our data analytics allow us to assess global performance, costing models, and real-time visibility capabilities to manage the global network. As we look to optimise our carrier network, the role that data plays cannot be understated."



Peter Stolba
Vice President, Business Operations and Supply Chain
Trilink Biotechnologies

"Data enables comparison of carrier services and also predicts future needs."

"To effectively use data to make decisions involving speciality carrier usage, I think that continuous monitoring of shipping lanes regarding transit and compliance is essential. Additionally, costing data may be able to drive informed decisions, and focus transport with specialty carriers where it is most needed."



Claudia Bertrams
Executive Director Supply Chain EMEA & APAC
Ultragenyx

Conclusion

With the digitisation of the pharmaceutical supply chain in full swing, understanding the areas of the supply chain that must take priority, as well as what an optimal supply chain solution looks like, is essential.

With capacity management and N-tier supplier collaboration being key attributes respondents are looking for in a supply chain solution, we have an insight into the challenges that must be tackled. To combat this, heads of supply chain are looking to increase visibility and establish a common data model across trading partners.

While the primary impacts that COVID-19 caused on the pharmaceutical supply chain have passed, the indirect impacts are still being felt through the change in consumer behaviour it has left behind. Seventy per cent of respondents have seen a shift in demand towards patient-centricity.

Transport and storage capabilities must be optimised to ensure that, as drug therapies become increasingly specialised and demand is measured differently, product quality and safety standards are upheld.

The geopolitical instability that has rocked certain regions has led to supply chain congestion, delays, and raw material shortages. Interestingly, most of our respondents said their organisations are not looking to relocate their manufacturing and sourcing operations. Instead, data, technology and strengthening partnerships are helping heads of supply chain to maintain a resilient supply chain amid geopolitical uncertainty.

Over the next year, carrier networks are being optimised and evaluated as work continues on building sustainable and resilient supply chains. A priority for many is reducing Scope 3 emissions, particularly with sustainability deadlines looming.

Data analytics is essential in this process as it highlights key hotspots for third-party attention. Furthermore, supply chain leaders can compare carriers to ensure that - if distribution is impacted by third parties - they can identify where and why sooner.



Key Suggestions

1

Data management is king

Advanced data analytics is at the epicentre of a resilient supply chain. Evolve your supply chain into one to provide actionable, real-time insights that are at the heart of decision-making. Achieving this can provide a strong base from which to successfully implement greater advancements.

2

Focus on strengthening supplier collaboration

Strengthen relationships with suppliers to promote innovation and productivity. By doing so, it will also provide greater visibility across the supply chain, with enhanced connectivity between internal and external systems highlighting where inefficiencies lie, and exactly where faults are taking place.



3

Simulation-based risk management: know your enemy

Risks to the supply chain show no signs of slowing down. Investing in simulation-based risk management practices can help identify threats and where they are coming from. However, your data management needs to keep pace with this to prove fruitful.



4

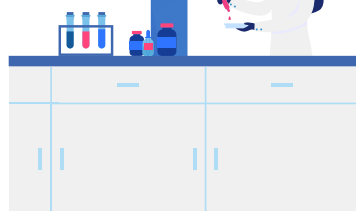
Keep up the good work

Since the pandemic, heads of supply chain have been working to transform strength, agility, and resilience. With so many respondents having confidence that their supply chain is resilient, the innovative solutions being employed are moving the pharmaceutical supply chain toward a brighter future.

5

Identify, plan, and enact

Identifying and overcoming risks is key in building a resilient supply chain. Mapping out where the biggest risks are coming from provides invaluable clarity on where to focus efforts. Creating an achievable roadmap helps reveal the steps that will lead to success. Knowing where to start can be tough, but making a start is essential.



6

Remain competitive by staying ahead of the curve as consumer demands change

By now, the lasting impacts of the pandemic have been realised. Patient centricity is here to stay, and heads of supply change must respond by matching this shift. As consumers require more at-home deliveries, and demand to have surplus medicine available at home, the pharmaceutical supply chain must evolve, or be left behind.



7

Data is the fuel for the digital supply chain of the future

More so than ever, data is your ally. The pharmaceutical supply chain is expected to continue evolving quickly over the coming years. From AI and ML to automation and simulation-based risk-management, data will be the source of fuel for a digitally-advanced supply chain. Advanced data analytics will be essential in providing insights in real-time and will drive decision-making at a strategic level.

About One Network Enterprises



One Network
Enterprises™

One Network Enterprises is the leader in supply chain control towers and provider of the Digital Supply Chain Network™. It is the only solution that gives supply chain managers and executives end-to-end visibility and control with one data model and one truth, from ingredients and raw material to last mile delivery.

Powered by NEO, One Network's machine learning and intelligent agent technology, it enables seamless planning and execution, across inbound supply, outbound order fulfilment, and logistics, matching demand with available supply in real-time. Lead your industry by providing the highest service levels and product quality at the lowest possible cost.

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