

## Can supply chains turn pandemic-proof?

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**The sudden and extreme impact on supplier/distributor network in light of the pandemic, forced policymakers and pharma companies to rethink about supply chains. Has the industry rose to the challenge and mitigated those issues while also ensuring the supply chain remains resilient to future disruptions? Let's find out.**

COVID-19 has upended the world and caused enormous challenges to economies and has brought terrible human suffering. Almost all industries have to rethink nearly every aspect of their operations and pharma is no different. In fact, this outbreak has brought more attention to the healthcare and pharma industry. Perhaps the biggest impact has been on the supply chain operations. The cracks in the supply chain are forcing policymakers and firms to reassess its management.

According to PricewaterhouseCoopers' (PwC) Health Research Institute (HRI) report, 94 per cent of life sciences executives and 86 per cent of provider executives said that improving their supply chain overall was a priority in 2021. Specifically, improving supply chain transparency was their top priority.

Over-reliance on one supply source belonging to a specific geography (India and China mainly) created significant disruption in the manufacturing especially for key starting material (KSM) in vaccines and biopharma formulations.

"Single source dependency, especially in categories like anti-infective, ARV (antiretroviral) and antimicrobials, and lack of large-scale fermentation capability created disruptions in the supply chain," said Matruprasad Priyadarshi, Senior Director-Regional Programme Operations & General Manager – South Asia, United States Pharmacopeia (USP), an independent, scientific non profit organisation focused on building trust in the supply of safe, quality medicines, based in India.

### Addressing supply chain vulnerabilities

With COVID-19 impacting lives around the world, the pharma supply chain had to be one of the most active sectors to avail all the essential goods to industries and individuals. The players in the sector had to create faster, more flexible operations that can cater to the on-demand economy. Both pharma and supplier companies were quick to take action and had adopted various strategies to bolster their supply chains.

"We leveraged traditional supply chain strategies like dual vendor qualification, distribution resources planning (DRP) and multiple shipping options with a balance of in-house production methods," said Gabe Longoria, CCO at Astrea Bioseparations, UK, a leading provider of bioseparations products and services. To enhance its supply chain security, the

firm has made significant investment in Cambridge, UK and Singapore.

Others like Belgium-based biosupplier Univercells Technologies had adopted an active supplier management approach.

“On a regular basis, we are reassessing the selection of potential suppliers for our key components to keep both cost and lead-time under control. In some cases where the lead-time remains long (mainly for single-use items) we made the choice to increase our inventory to ensure business continuity. For highly critical items relying on more than one supply source enables as well to de-risk procurement,” said Gareth Crothers, Head of Manufacturing & Supply Chain at Univercells Technologies, Belgium.

Many companies brought more manufacturing in-house, whether that be late stage intermediates or specific chemicals. Companies are also qualifying numerous raw material suppliers in a variety of different countries in order to minimise the risk of disruption.

“A lot of work goes into identifying, evaluating, making contact and monitoring alternative suppliers – and with industry events impacted by COVID -19, online solutions such as Cortellis Supply Chain Network are becoming more important for such efforts,” said Gareth Moore, Product Manager, Clarivate, UK.

Clarivate Plc has launched Cortellis Supply Chain Network, a digital solution that supports generics companies, Active Pharmaceutical Ingredients (API) manufacturers, fine chemical manufacturers, excipient manufacturers, raw materials suppliers, and biopharma in their pursuit to maintain a steady supply chain.

Another strategy for bolstering supply chains relates to inventory management. “When the pandemic began, one of the early impacts to supply chains was caused by plant and port closures. Delays undermined the ‘just in time’ delivery model relied upon by most manufacturers, pharmacies and hospital systems and led to shortages. To compensate and provide more of a buffer in the event of future supply delays, most companies have expanded their inventories beyond the traditional two months,” said Matruprasad Priyadarshi.

The supply situation was aggravated with the reduction in flights and tightening of local transportation around the world. “During COVID-19 there were challenges with respect to continuous supply of high volume API, formulations and packaging materials, thereby causing disruptions. The last mile connectivity was an issue in specific places, so multiple modes of transport were deployed to help in the availability of key materials. During the early days of lockdown, industry had concerns about the short supply of manpower, but with local government support these challenges were mitigated,” added Matruprasad Priyadarshi.

In the future, efforts such as digitisation/automation of plant operations, virtual audit and testing will help in enabling the regular supply of drug substances and products.

“Assurance of supply is a key requirement in many industries, especially in biopharma. While no one could have anticipated what we all have experienced in the last 20 months in this industry, companies should strive to provide better information, improve lead times and continue to ensure availability of the high quality products through better communication, additional cleanroom capacity and redundant manufacturing measures,” said John Boehm, Vice President of Biopharma, Colder Products Company (CPC), USA.

CPC has taken various steps such as opening a new facility in the US, increasing manufacturing capacity etc. to ensure an efficient supply chain during the pandemic.

While approximately half of pharmaceutical organisations have already deployed visibility technology to track raw materials and to better plan their manufacturing, many are dissatisfied with the capabilities of their current solutions. As a result, more than nine in 10 executives plan to implement a more robust digital supply chain visibility (SCV) solution over the next 12 months. That’s according to ‘The Pharmaceutical Supply Chain: Closing the Visibility Gap’, a new report released in December 2021 by FourKites, provider of the world’s leading real-time supply chain visibility platform, and Accenture.

## **Pandemic-proof supply chain**

The traditional life cycle of a supply chain has proved to be fragile and unpredictable with the gradual increase in customer expectations and sudden lockdowns. Experts suggest investing in technologies, near-shoring or on-shoring of the supplies, having two trusted suppliers from different parts of the world etc. to ensure the supply chain remains resilient to future disruptions.

Industry players need to invest in the right technologies to better manage the supply chain lifecycle. There is an increased need for traceability in the supply chain and organisations need to look at solutions that can deliver more detailed information. Organisations are continuously looking for solutions to help increase inventory visibility, lower costs, and reduce waste.

“Technologies such as prescriptive analytics, real-time inventory visibility, and digitised workforce management etc. are meant to bring more agility and help eliminate the adverse effects of uncontrollable industry disruptions in the supply chain sector,” opined Rajnish Gupta, VP and Head - India & Subcontinent Business, Zebra Technologies, India.

Some companies are working to bolster relationships with existing suppliers. “As much as possible, we want to develop reliable long-term partnerships with our suppliers, regardless of their geographical location, and form strategies for longer term manufacturing supply in other regions to provide contingency and cost efficiency as our business grows. We also aim, where appropriate, to reduce shipping risk on the sourcing side by selecting raw material suppliers who are geographically close to our production facility,” added Crothers.

Supply chains with a single point of failure or limited suppliers are particularly vulnerable to disruption. Some industry experts advise having at least two trusted suppliers from different parts of the world and ensuring that they retain sufficient raw materials in-house.

“Having multiple and backup supply sources across geographies can diversify supply chains and help minimise interruptions during an emergency. A robust contingency plan includes early identification and negotiations with alternative suppliers, avoiding the need to reactively locate supply,” said Moore.

Therefore, it is important to diversify supply chains, ensuring there are alternative suppliers in the event of an emergency situation in a specific geographic region.

The recent supply chain shortages highlighted dependencies on the sourcing of raw materials and APIs from only a few countries (e.g., India, Mainland China). As a result, many countries are encouraging and incentivising onshore manufacturing. In a survey conducted by Global Pharma Insights, 67 per cent of respondents stated that their governments were attempting to bring manufacturing home, and 84 per cent responded that their companies were actively seeking new supply chain partners.

“We have made significant investments to insource wherever possible activities that had been external but fit well in our manufacturing competencies, especially when it comes to manufacturing our custom consumables,” said Gareth.

Industry and governments are also evaluating what local investment would be needed to increase or build production within their own country for raw materials or active ingredients.

“For greater oversight, governments are continuing to enforce reporting systems of potential impacts on drug supply. However, it is not possible to produce 100 per cent of the supply domestically, and drug shortages are not solely due to dependence on supply from other countries,” said Moore.

This re-shoring of the supply chain is a much more difficult and time-consuming proposition – especially for traditional batch manufacturing facilities which can take years to re-tool, much less build from scratch.

“One way to diversify supply chains is by creating geographic diversity by helping more manufacturers, especially manufacturers in underserved areas, produce ingredients and medicines to international quality standards,” said Matruprasad Priyadarshi.

Another way to build resilience is to diversify production methods through the adoption of advanced manufacturing technologies like pharmaceutical continuous manufacturing.

“Pharmaceutical continuous manufacturing (PCM) is one of the most promising advanced manufacturing technology (AMT) advancements because it enables continuous use of a production line that can yield significantly more product output. This type of AMT has the potential to improve manufacturing efficiency, reduce production costs, and significantly reduce environmental footprints,” said Matruprasad Priyadarshi.

The pandemic has been a wake-up call for the pharma industry on the importance of building resilient supply chains. Firms should use this opportunity to assess supply networks, understand its vulnerabilities, and then take actions to improve robustness. Going forward this risk is going to continue and having agile, resilient supply chains is the need of the hour.

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