Challenges faced:

Pharmaceutical supply chain issues have been a major source of concern for the industry since 2020. Even as the world moves forward into the era of the new normal, the challenges still remain.

While modern manufacturing companies overcome the challenges and used solutions such as cloud applications, automation, Artificial Intelligence (AI), Machine Learning, and Big Data to their advantage, many risk-averse pharmaceutical companies are still vulnerable to supply chain challenges due to a lack of appropriate tools.

1. Temperature excursions

According to the IQVIA Institute for Human Data Science, temperature-control failures in supply chains cost the biopharma industry $35 billion annually. These adversely affect drug quality, stability, and compliance for globally shipped products. The COVID-19 vaccine Pfizer must be stored between -70°C and -60°C.

#### Digitization

#### The digitization of documentation and standardization across industry platforms, digital signatures for regulatory documents, smart contracts, blockchain, and automation. The main challenge for pharmaceutical industries is the way to deliver changes securely and enhance data security

1. Lack of integration across processes

When your inventory, manufacturing, and distribution operations do not communicate with one another and are managed manually, the error rate rises and business productivity falls.

1. Shortage of raw material

The inability to plan effectively during the pandemic can create numerous challenges when obtaining raw materials. Without a planning tool, knowing lead times and accurate inventory quantities can significantly slow you down as you try to extrapolate data and understand your supply schedule.

#### Pharmaceutical fraud

It is one of the domains that hinders the supply chain drastically. It majorly happens due to parties involved in the supply chain committing some unwanted practices for their individual profit which makes the supply chain error-prone.

1. Accurately forecasting demand

One of the most difficult challenges for pharmaceutical supply chain professionals is accurately forecasting demand so that all pharma products are manufactured on time and delivered successfully. End-to-end visibility is critical for having the right inventory in the right place at the right time, avoiding obsolete inventory, maintaining safety stock, fulfilling orders, and performing demand forecasting.

1. Maintaining pharmaceutical compliance

The number and complexity of regulatory business requirements have grown significantly in recent years. Non - compliance can have a severe impact on costs, reputation, and the lives of patients.

1. Optimizing inventory levels, just in time

As we know Pharma is one of the most sensitive sectors in terms of timed delivery. If the demand is not fulfilled within the time limit it might cause a very severe effect. Also on the other side storing medicines and drugs in quantity doesn’t work always as they have their own limitations. So a Just-in-time based inventory policy will be a challenging task for an industry like this.

1. Overstocking (Bullwhip effect)

This is one of the most common challenges faced in the supply chain system of major industries. It basically happens due to inaccurate passage of information from the customer all the way to the manufacturer which leads to problems of overproduction of items. Major industries don't get affected due to the product they produce. But industry like pharma has a very major effect due to the medical environment limitation.