POINT OF VIEW

Ukraine-Russia Conflict

How Global Businesses Can Combat the Effects Leveraging Supply Chain Analytics

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Advancements in supply chain management have made it possible to predict and gauge the scale of known disruptions. However, unpredictable events such as natural disasters or wars can still cause significant supply chain disruption without warning. One prominent recent example is the Russia-Ukraine war, which has already had a massive impact on global networks in terms of trade goods distribution.

How the Ukraine-Russia war is disrupting the global supply chain

The war has created transportation bottlenecks, leading to a shortage of agricultural products like wheat and metals such as car parts for vehicles manufactured by firms around Europe. The resulting impact is also seen across other industries, from energy production/distribution sources to consumer goods like cooking oil.

Here's a quick glimpse into the various industries disrupted by the war.

1. Agriculture sector

According to the United Nations' Food and Agricultural Organization, the following agricultural goods are most affected:
Sunflower oil - Ukraine is the leading producer of sunflower oil with 13,626,890 tons produced per year, followed by Russia. Together, these two countries account for 50% of all sunflower oil production worldwide.
Wheat - Russia and Ukraine contribute approximately 30% of the global wheat supply.
Barley - Russia and Ukraine are first and fourth, respectively, in terms of barley production.

2. Semiconductor industry

Ukraine provides half of the world's neon gas supply, which is vital to the semiconductor industry. However, the lack of this key manufacturing element has considerably impacted the production capacity of companies such as ASML, Samsung, Intel, and TSMC.

3. Energy sector

The global oil and gas industries are experiencing a shortage of supplies because major companies like British Petroleum have a large stake in Russian firms like Rosneft. This has negative consequences for our world's energy needs, which are likely to persist.

4. Transportation sector

Transportation bottlenecks have led to a surge in oil and gas prices, making the alternate logistics routes more expensive. Road carriers like UPS, FedEx, and DHL have pulled out of the two countries. Furthermore, Russian airspace is blocked, and the waterways face port congestion, with container shortages and surcharges.

These major industries are facing major challenges, leading to higher prices, reduced supply, and notable global impact. What are the viable alternatives?

1. Agricultural imports

Agricultural requirements can be met by growing crops locally or importing them from other nations: Wheat from China, India, and the United States; barley from Australia and Canada; and sunflowers from Argentina and China

2. Semiconductor substitites

Many large comapanies are planning to become self reliant by having a near-shore manufacturing units to fulfill their needs for semi conductors. For example, Intel plans to build two factories in Ohio, and ASML intends to set up additional manufacturing units in the United States. In addition, China can be a substitute supplier of neon gas for the semiconductor industry.

3. Energy alternatives

Due to the global energy crisis, many countries are exploring alternatives. In countries like France, for example, nuclear power provides a safe and secure energy supply. Further, oil and natural gas can be obtained from the United States and Saudi Arabia, and coal can be imported from the United States, Indonesia, India, Australia, and China.

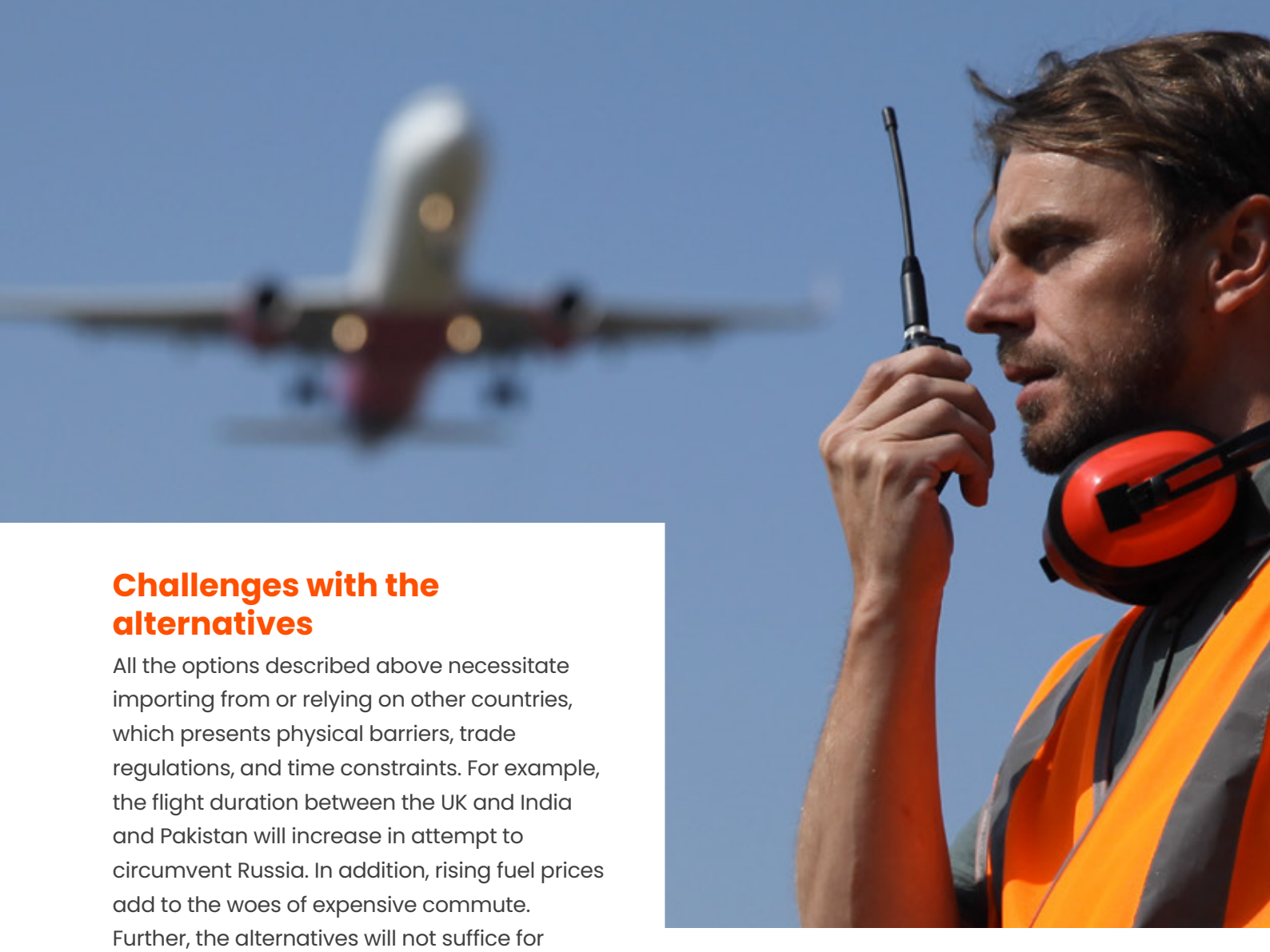
4. Transportation alternatives

Alternate air routes

Under normal circumstances, the most optimal air route connecting Asia, Europe, and North America is through Russia. However, different routes can be used to ensure a relatively smooth supply of products and services during challenging times.

They are:

- Air travel over the North Pole or the South Pole through the Middle East
- Kazakhstan as a stopover on the southern route
- Airports in Abu Dhabi and Dubai can accommodate additional air traffic in the Middle East
- China-Europe rail freight - Cargo can be diverted on the China-Europe rail route through southern Russia and Siberia.



Challenges with the alternatives

All the options described above necessitate importing from or relying on other countries, which presents physical barriers, trade regulations, and time constraints. For example, the flight duration between the UK and India and Pakistan will increase in attempt to circumvent Russia. In addition, rising fuel prices add to the woes of expensive commute. Further, the alternatives will not suffice for transporting perishable goods.

The global economy is experiencing a shift as Ukraine and Russia engage in this conflict. Many businesses with supply chains spanning multiple regions are disrupted or at the risk of disruption - but it doesn't have to stop them from continuing operations altogether.

To prevent major business interruptions following war-related impacts on trading routes or other key aspects of their international trade flows, enterprises should develop strategies backed by analytics to navigate this shifting landscape with confidence.

How can analytics help mitigate the impact of war on global supply chain disruptions?

Plan

- Production and Inventory Planning

Source

- Supply Risk Assessment

Deliver

- Transportation Optimization
- Delivery Promise Optimiztion

Though the current scenario does not necessitate permanent supply chain changes, a few tactical and time-sensitive updates to existing systems can ensure that the global supply chain runs smoothly and effectively.

1. Delivery Promise Optimization

Since air travel is getting increasingly expensive because of Russia's airspace prohibition, faster deliveries to keep customers happy are costing significantly more than in the past. As a result, it's more crucial than ever to set the right expectations with customers or charge appropriately to maximize earnings while maintaining customer satisfaction.
The first step is to assess the impact of these new constraints on overall delivery time. The next step is to update the delivery promises with high accuracy instead of apologizing for the delayed delivery and expecting the customer to understand. Finally, leveraging an AI algorithm to analyze a range of factors causing the delays in real-time and forecasting for the coming days and weeks is essential. For example, when a customer places an order, such algorithms can provide updated and precise delivery times.

What do you need to execute this?

The following data should be available to the organization:

- Historical lead times
- Vendor lead time SLAs
- Origin location (self or vendor)
- Customer locations

Data that can be generated or extracted includes:

- Natural or man-made disruptions
- Port congestion and air-route traffic
- Geopolitical tensions
- Real transit time with traffic and other blockages

2. Transportation Optimization

Though the existing transportation management system handles the distribution of the right mix of road, rail, ocean, and air transport, it is constrained by years-old contracts and agreements.

An AI-driven transportation optimization algorithm can quickly make recommendations to fix the gaps. It can also suggest consolidation opportunities to move finished and unfinished goods in the most cost-effective and time-effective manner.

What do you need to put this together?

The following data should be available to the organization:

- Current load profile across different modes of transport
- Current rate card
- Origin and destination pairs
- Carrier capacities

Data that can be generated or extracted:

- Demand forecast
- Consolidation scenarios

3. Inventory Planning

Stockpiling inventory can help resolve short-term supply chain disruptions. With a smart inventory management tool, you can look into current inventory levels, model its freshness index, and forecast delays in the lead time for the merchandise coming from the global suppliers. Further, you can re-calibrate the safety stock and cycle stock levels to balance the cost of holding more inventory and stock out losses.

Finally, a quick patch of AI-driven optimization engine over the existing planning tool can help you make these decisions based on inputs such as the current global scenario, port congestion, airway restrictions, global supplies shortage, and so on.

What do you need to put this together?

The following data should be available to the organization:

- Existing inventory levels
- Inventory norms
- Sales velocity
- Product hierarchy

Data that can be generated or extracted:

- Demand forecast
- Lead time variability considering any natural or man-made disruptions
- Port congestion and air-route traffic
- Geopolitical tensions

4. Production Planning

You can plan your production to maximize the output of finished goods based on the availability and expected delay in some raw materials.

Various manufacturing and consumer goods companies that have managed to stockpile raw materials and components may need to adjust their production output in anticipation of raw material shortages. Further, organizations still waiting for raw materials should accommodate their production schedule to make the most of available time and resources.

How to do this?

The following data should be available to the organization:

- Production plan and detailed schedule
- Raw material inventory
- Production plant's capacity and constraints
- Current resource utilization

Data that can be generated or extracted:

- Demand forecast
- Supply risk index based on natural or man-made disruptions

5. Control tower for end-to-end supply chain visibility

Since supplies are at higher risk of arriving late or not arriving at all, having good visibility into the entire supply chain beyond tier 1 suppliers is now crucial.

- More than 50K US and Europe-based firms have direct or tier 2 suppliers in Ukraine or Russia.
- More than 300K US and Europe-based firms have tier-3 suppliers in Ukraine and Russia.

With this level of dependency on tier 2 and other suppliers, it is important to have a control tower set up to provide end-to-end visibility, right from the status of sourcing of raw material to the last-mile delivery of the finished product to the customers. The control tower will not only help with the descriptive views on how the supply chain KPIs are performing but also provide predictive and prescriptive insights to tackle the situation and optimize the current scenarios.

Conclusion: The power of analytics and AI is the new way to stay ahead, not just in business but also during global supply chain disruptions.

Though the current conflict is primarily between two nations, it has impacted businesses across the globe, particularly supply chain organizations. And, because such conflicts occur without warning, there is often little time to respond and adjust business accordingly to minimize impact. As a result, businesses must turn to tools that can detect and respond to disruptive trends early. Such smart recommendation engines can provide executives with peace of mind and keep business moving forward when a disruption occurs.

About Tredence

Tredence is a data science and AI engineering company focused on solving the last mile problem in analytics. The 'last mile' is defined as the gap between insight creation and value realization. Tredence is more than 1,600 employees strong, with offices in Palo Alto, Chicago, Toronto and Bangalore, with the largest companies in CPG, retail, hi-tech, telecom, travel and industrials as clients.

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