"Supply Chain Problems" – What? How? Why?

As the world emerges from the COVID effects in 2022-23, businesses involved in physical product supply chains – manufacturers, wholesalers, retailers, logistics companies – face major challenges that will require creative solutions to reach new business process equilibrium. The largely ignored causes of broad-based global supply chain disruptions mean that traditional forecasting, purchase planning tools, and new capacity investment triggers will not work in the near term without significant adjustments.

It seems like every consumer challenge confronted in 2022 is blamed on *"supply chain problems."* Try to order a new piece of furniture and you're likely to be told 8+ months delivery. Try to buy building materials and learn a 2X4 at Home Depot or Lowes is more than $8 … 4X what it cost two years ago. Common staples at the grocery store are frequently stock-out. Ask why and the answer is almost always *"supply chain problems."*

What does *"supply chain problems"* really mean … how did they happen … how can companies manage through them? A common but mistaken belief is that problems in manufacturing or logistics systems are the root causes. News reports of clogged ports – blamed on COVID factors – are burned into our thinking. Chip shortages disrupting automotive production have been reported flash points. The list goes on, but the real cause – and its implications over the next two years – gets almost no discussion. That issue is radically altered consumer demand patterns that have overwhelmed various aspects of manufacturing and logistics chains.

Businesses plan and commit in advance to material purchases based on forecasted demand. They also make long term capacity investments based on multi-year forecasts built on the same past demand data, adjusting for predicted future factors. Advanced data analysis systems are used to crunch historical data – MRP is one widely used method. The process works well if historical demand is reasonably predictive of the future demand profile.

The COVID pandemic obviously had many serious effects, but generally overlooked is that demand patterns changed overnight. The hospitality industry ground to an almost immediate halt in Spring 2020. People stayed home, changing their demand habits of purchasing and consuming food. Demand at grocery stores surged while restaurant demand collapsed. Food producers experienced shortages of retail packaging and a simultaneous glut of institutional packaging. Dairy farmers in Wisconsin reportedly dumped milk, not because there was low demand for their perishable product, but because they couldn't get enough retail packaging to meet the new demand profile.

Some more examples – as we nested at home, we noticed things previously overlooked, like furniture that needed to be replaced or electronics improved. Many were forced to work from home, overlaying an entirely new set of demand factors. In the international logistics system, the geographic distribution of shipping containers and ships was out of balance almost immediately, primarily because of the radically changed demand profile in 2020-22.

Manufacturing and logistics capacities are adjustable over time, but not immediately. Manufacturers maintain surge capabilities for some level of unexpected demand, but that production surge ability is limited in the short term. As a further complication, the ability of a manufacturer's key suppliers to support unexpected demand is an unknown constraint.

"Perceived" shortages also have the effect of creating *"reactive demand."* Within a couple of weeks of the WHO announcement of a global pandemic on March 11, 2020, many staples including paper towels, toilet paper and hand sanitizer became scarce on retail shelves. That *"reactive demand"* – now burned into the

statistical planning bases of all businesses – is false demand. While added usage of some products like hand sanitizer did occur, panic buying, and consumer hoarding was a reality. Inventory simply moved from the retailer shelves to home storage. Actual demand at the point of use did not change proportionately.

"Reactive demand" is not limited to consumer behavior. Retailers, distributors, and manufacturers concerned about availability undoubtedly supplemented order quantities from their suppliers as *"insurance stock."* *"Reactive demand"* throughout the system has overlayed a fog that is distorting factual perspective about true demand dynamics.

What does all this mean? First, companies must decide which demand patterns have changed permanently, versus those that will revert to pre-COVID norms. Permanent changes must drive purchases and new capacity investment. Reacting to temporary *"reactive demand"* factors can be life threatening for a business. The challenge will be figuring out the difference. The longer changes persist – the more likely they become permanent demand habits.

As the world emerges from the COVID effects in 2022-23, businesses need to re-invent their forecasting perspectives. Discard blind allegiance to MRP statistical models. These models still retain value, but the historical statistics that drive them will be flawed in most companies' business realities. Forecasting demand for the next few years will be an *"art",* requiring more creative judgment than ever before to learn the new future and sustained realities.

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