Effects of COVID-19 on the supply chain

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Supply chain disruption is being felt across many industries domestically and around the world ([1]). Extreme weather events are impacting biodiversity, whilst events like Brexit, trade disputes and the COVID-19 pandemic have combined to partially cripple an increasingly complex global economic system. . Multiple domestic lockdowns slowed or sometimes even stopped the flow of raw materials into the country. This has caused immense challenges for manufacturers and the many small businesses that rely on products to serve their customers.

Consumers have been impacted with higher petrol prices, shortage of goods, scarcity of labour flowing from delays in raw materials and packaging.For example, 30% of Australian businesses experienced supply chain disruptions in April 2021 with container freight rates rising from $1.5k to $5k per container ([2]). Freight delays have caused lead times to increase from 16 to 52 weeks.

The most significant impact on the current state of supply chain disruptions comes from the logistics side – more specifically from shipping delays ([3]).Stress in the supply chain pre-dates the COVID-19 pandemic. However, such disruption due to COVID-19 has made things much worse.

Some of the challenges: Feedback from supplement manufacturers

- **Molybdenum** experienced a shortage literally overnight, affecting **multivitamin supplements** containing molybdenum. France and China are the two leading sources of molybdenum. Molybdenum is traditionally a mineral that is in low demand; however, after extensive testing 18 months ago Pfizer and J & J included molybdenum in their vaccines as a pH adjuster. This demand resulted in a shortage of molybdenum raw materials for the next two years with prices going up 600%. Fortunately, other local manufacturers with sufficient

supply were able to meet the molybdenum demand, with six manufacturers now supplying molybdenum.
- Alcohol intake increased during lockdowns which created a shortage of **saccharomyces cerevisiae** used for yeast in beer.
- **Evening primrose oil** may be out of stock not due to demand for this ingredient but space that is needed for herbs that are in demand for immune health.
- **Psyllium** sourced from India was in short supply when India when into lockdown for 4-5 months during the Delta strain outbreak, delaying the manufacture of some fibre products.
- Demand for **vitamin C** saw one company go through their annual supply in 3 months.
- **Raw herb supply** has had its challenges. Adulteration can be prevalent in the botanical supply chain. Furthermore, freight delays have increased the chances of some mould toxicity and cross contamination of raw herbal materials. Staff shortages have resulted in herbal crops not being harvested. Some herbs have matured but pickers have been lacking with crops going to waste.

How supplement manufacturers have responded

Supplement companies have embraced risk management planning through forecasting and balancing acute challenges as they arise.

Various strategies employed to keep up production of quality products during the pandemic include;

- increasing stockpile of raw materials
- producing more of their most popular products
- securing alternate local suppliers of materials and packaging where possible, and
- strengthening direct relationships with growers of herbal medicines

Some of the broader international and domestic challenges Australian companies have faced over the past 2 years include (Brand feedback):

- **Labour** challenges due to COVID-19 illness. The effects of this have been seen at ports, contract manufacturers, and herb farms. Labour shortages have resulted in lack or delays in training new recruits for shipping, picking and packing. For example, delays with co-packers for raw materials increased from 42 days to 65+ days, disrupting other components of the chain.

- **Shipping** delays due to numerous factors including a global shortage of shipping containers worldwide. The containers are harder than ever to find as surging demand to restock inventories and a series of shipping disruptions has left many thousands of containers stranded at sea on ships anchored near jammed-up ports.

This has resulted in altered shipping routes, larger ships being used and more stops added to the current delivery schedules to Australia.

Give our geographical location and the fact we only predominantly export iron ore, beef and some foods, Australia must wait to fill containers and then ship which can be an expensive waiting

game. Many carriers are willing to return to China with empty containers rather than wait within Australia for export product that is slow to make its way to the ports.

Delays in offloading, congestion at ports and trucking issues is further creating an imbalance in usual supply and demand.

Further strains came from the grounding of the *Ever Given* in the Suez Canal in March 2021 and the shutdown of a key port in southern China in May and June 2021 that left thousands of shipping containers idle.

- **Escalating shipping prices -** Shipping container prices have soared which are the backbone of global trade.
- **Strikes** in various countries such as North America and Mexico impacting the supply chain
- **Raw materials** shortages from import issues, as well as weather factors. If a crop is damaged, seasonality of herbs needs to be taken into account, as well as the fact that some herbs require a long crop cycle. Some examples are discussed below.

In Australia, this has resulted in:

- Significantly longer lead times
- Labour shortages due to COVID-19
- Raw material shortages and price increases (30%-80%)
- Shortages in packaging materials including glass and plastic bottles, spray pumps, cardboard, and glue for labelling
- Contract manufacturer delays
- Competing with other industries for food raw material
- Competing with baking and brewing industries for yeast products
- Rigorous checking for adulterated herbs
- Product delays or reformulation – delays in one ingredient can result in product delay or necessitate the reformulation of a product.

Risk management tools employed for managing the complexities of the supply-chain storm

- Stockpiling large quantities of raw materials
- Balancing forecasting with acute shifts in the supply chain as they arise
- Assessing cash flow and warehouse capacity
- Consistent and direct relationships with growers ensuring quality materials, limiting any surprises when receiving raw materials
- Continued screening of raw herbs to check for mould counterfeit or adulterated ingredients
- Absorbing costs where possible and sustainable for the business

Why don't we grow and source ingredients from Australia?

Supplement companies manufacture within Australia; however, raw materials are currently sourced mainly from Europe, China and the USA.

Trade liberalisation and improvements in technology have made it easier and cheaper to source goods and services internationally. Increases in global trade offers large benefits such as cheaper and greater choice of goods and services for consumers. Industries also gain from specialisation and economies of scale ([4]).

There is movement toward local growing and sourcing where viable and suitable to growing conditions. Traditionally, it has not been economically viable, due to lack of labour consistency, limited technologies, and a small Australian population operating in this space compared to other countries.

Bottles are made in Australia, however, there is uncertainty over whether the demand will last. Decisions need to be made over whether to invest in bottle making machinery in Australia or wait for demand to re-calibrate, while importing bottles which is not cost effective.

Minerals such as selenium are locally sourced in small quantities. Initiatives are underway for local sourcing of high demand minerals, such as magnesium. Some proteins such as whey protein isolate and whey protein concentrate are sourced in Australia. Fish oils have a long supply chain and premium sources are from Peru.

Dependent upon growing conditions some herbs are sourced from Australia, New Zealand, Tasmania and the rest internationally.

The Australian government publicly released on 13 August 2021 a final study report, where a framework has emerged to identify supply chains that are vulnerable to disruption, and applied it to Australian imports and exports. The Commission has also recognised strategies to manage supply chain risks and the circumstances under which government might intervene ([4]).

What's on the horizon.....? (Brand feedback)

The general consensus is that overcoming the current supply, demand and logistics challenges will start to ease toward the end of 2022 and into 2023.

'Precision scheduling' was implemented prior to COVID-19 (equivalent to just-in-time manufacturing). The shipping industry has taken some steps in terms of logistics to increase their capacity and address the issue of a lack of shipping containers.

Airfreight hasn't been an economically viable option as it's roughly eight times the cost of sea shipment. More ships are needed, but additional supply is a few years away. There are new orders for shipping vessels, equal to almost 20% of the existing capacity, but these will not be available until 2023.

Supplement companies are looking into some of the following....

- Bioactivated nutrients, less ingredients, more absorbable forms (many offer this already)

- Offering indigenous herbs and working with indigenous community
- Locally sourced minerals
- Investing in locally grown ancient grains which are more hardy and can be grown to scale

Conclusion

The strains on supply chains have been immense. The outbreak of COVID-19 has highlighted how interconnected the global supply chain is.

Demand in the health and wellness industry is a challenge at the best of times. As one industry expert has commented “Just one endorsement from an influencer on TikTok can shift demand for an entire crop” ([5]). Supplement companies have been skilfully navigating this environment for the past 48 months. Working closely with trusted suppliers and manufacturers has been integral in minimising disruptions and ensuring continuity of supply.

Managing the risks of supply chain disruptions, whatever their origin, inescapably entails costs on businesses, consumers and governments. These costs vary substantially and depend on the choice of risk reduction strategy taken ([4]).

There has been an obvious increased role for practitioners to support the health of many people as we navigate the pandemic. They are clearly doing an amazing service to our community as are supplement companies. Thank you.

Addendum: What are supply chains and their components?

A supply chain is the process of transforming raw materials into goods that are delivered to final users, either industries or consumers ([4]).

Many elements make up the supply chain, from manufacturing sites and warehouses to transportation, inventory management and order fulfillments.

Components of supply chains include labour, accounting, data processing, storage services, domestic and imported goods such as raw materials, capital such as machinery, logistic and infrastructure, including buildings, road and rail.

Every link in the chain needs to operate effectively to maintain order in the system, yet each component has its own unique challenges to overcome.

Any shortage of these components makes most businesses in the industry vulnerable to disruption.

What are the main external risk factors to supply chain? ([4])

- Geopolitical trade wars such as Brexit which affect regional or global trade
- Environmental factors such as bush fires affecting communication and transport

- Economic factors such as inflation
- Societal factors such as labour disputes, pandemics
- Infrastructure-related factors such as cyber security, transport systems, port disruptions

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