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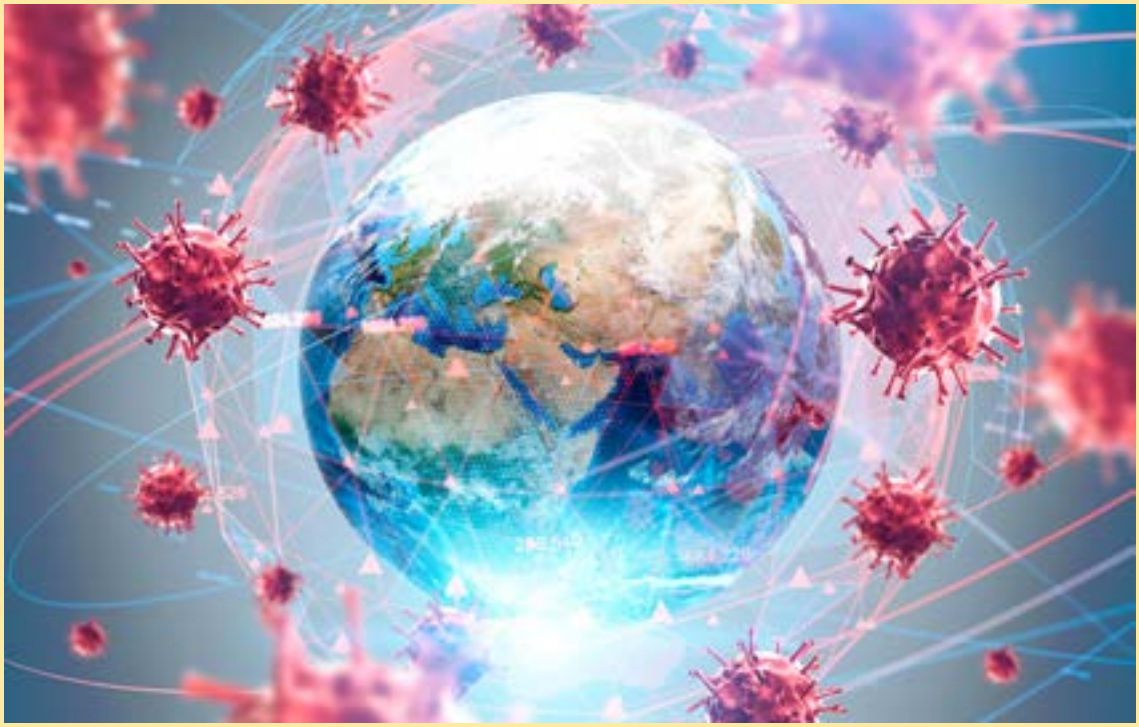
COVID-19 Global Impacts



A SiliconExpert White Paper

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COVID-19 has gone from being a fresh emergency to a fact of life. After more than two years of reporting on a disruptive pandemic, we look forward to sharing our thoughts and insights on how the global supply chain has been impacted, also how people and organizations overcome the pandemic crisis.

From the Beginning...

In December 2019, The Chinese government notified the World Health Organization of an unusual illness in the city of Wuhan. This virus was later identified as a novel coronavirus, and the illness it caused was named COVID-19. Weeks later, as it spread and the death toll climbed, the Chinese government placed Wuhan under quarantine.

Factories producing goods for thousands of global companies remained shut down past the Lunar New Year holidays as employees couldn't return to work. Rail, air, and ocean shipments stopped moving through the affected region. Soon, firms in other countries began announcing plans to temporarily suspend production because they couldn't procure parts from suppliers in China.

COVID-19 Impacts on Global Supply Chain

Lockdowns and Factory Closures

Shutting down a factory is never an easy action. Still, in the face of growing concerns about the coronavirus, more manufacturers opted to go idle rather than risk spreading infection among employees and their families. During the pandemic, some countries put their citizens on lockdown. China, Hong Kong, Denmark, El Salvador, France, Ireland, Italy, New Zealand, Poland, Spain, United States, Malaysia, and the Philippines have implemented the world's largest and most restrictive mass quarantines which resulted in canceling orders, factory closures, and declines in demand have caused a spur of layoffs and lost incomes for workers. As well as production capacity shortage.

Products Lead Time Extension

Manufacturing lead times remain extended higher than pre-pandemic levels across all products. Continued drivers of extended lead times are:

Shortages of skilled and unskilled labor in manufacturing and distribution impacted output and capacity.

Raw material shortages like copper, aluminum, steel, and many rare earth metals were heavily impacted by the Russia-Ukraine conflict and China's economy.

Lead times for container shipments remained extended.

Consumer demand remains strong in all segments. Hoarding and panic buying have driven many suppliers to implement and retain inventory allocation methods.

Material Prices Fluctuations

Commodities remain highly volatile due to supply/demand imbalance, the Russia-Ukraine conflict, and the recent COVID-19 lockdowns in China. For Examples:

Copper prices declined at the height of the China lockdowns with the country accounting for more than 50% of global demand for the red metal. Then pricing has gone back up as lockdowns ease and China reopens. The long-range outlook for copper remains concerning with little ongoing capital expenditure to increase production and demand growth projected in electrical grid infrastructure and electrification of the automotive industry.

Aluminum prices have fallen since March but remain higher than last year. Prices rose this past year based on strong demand, rising energy and production costs, and the impact of the Russia-Ukraine conflict with Russia being the second-largest aluminum-producing country. The COVID-19 lockdowns in China have softened prices over the past couple of months, but we expect pricing may rise as the lockdowns ease. We continue to hear from suppliers that the availability of raw aluminum is a concern in several product categories, which is contributing to extended lead times.

Steel price increases seen in March/April driven by the Russia-Ukraine conflict have essentially eroded as most steel lead times are inching closer to pre-pandemic levels. Electric grade steel used in transformers and EV products continues to be an area of concern with limited domestic supply and increased demand for utility and EV infrastructure.

Crude Oil prices remain elevated with continued sanctions and restrictions on Russia — the third-largest oil-producing and second-largest natural gas-producing country — and a continued imbalance between supply and demand as U.S. production has not fully returned to pre-pandemic levels.

Shipment Costs Increase

As demand increases and supply decreases, we are experiencing skyrocketing freight costs. Shipping costs have been doubled, tripled, quadrupled, and even multiplied by ten, in large part due to ocean carriers accused of price gouging. Businesses are then billed for the storage of goods while their shipments are delayed. Ports are also facing a shortage of chassis due to empty containers piling up, while there are so many full containers needing to reach their destination.

COVID-19 Impacts on the Electronics Industry

The electronic industry has been affected in several ways from increasing counterfeit tricking to shipping delays, consumer behavior, and factory closures. The electronic industry includes smartphones and tablets, desktops/laptops/notebooks, televisions, cameras and camcorders, audio/video devices, gaming consoles and accessories, home appliances, and wearable electronics such as smart watches, virtual reality, and augmented reality gears.

The major market share in the global consumer electronics market is upheld by Asia (especially China). The companies such as Samsung, Panasonic, Sony, Huawei, Hitachi, and several others are the electronic industry-based companies that shape the market growth.

The impact COVID-19 virus spreading was positive for some companies over 12 months and negative for several other companies. Some surveys have reported that consumer electronics are likely to be the most affected industry by the COVID-19 outbreak just like industrial and automotive. These areas are likely to be influenced more than other commerce owing to their resilient engineering capability in China and supply chains that depend mostly on China, Europe, and the USA. However, the medical, defense and aerospace-based electronic manufacturing units are thought to be the least impacted sectors

Latest Industry News

Recent China Lockdowns

China's Zero-COVID policy has forced thousands of workers home and suspended operations at major manufacturing hubs across the country, putting even greater woes onto a global supply chain struggling to keep up with an already precarious situation. With factories shutdown and production halted, most manufacturing operations in China are at a standstill. Some of the major manufacturers that have been impacted by the shutdowns were Toyota Motor Corp., Tesla Inc., Volkswagen AG, and Ford Motor Co. Honda Motor Co., etc.

Shanghai Business Returns after Two Months of COVID Lockdown

On June 1st, 2022, Shanghai ended two months of total COVID-19 lockdown. Shops have reopened and people are allowed back into offices, parks, and public areas. Over 25 million residents are now free to resume life and work operations as before. Most foreign companies, including businesses from Hong Kong, Macao, and Taiwan, have been hit hard during the two-month lockdown, with total output value down by 70% from the previous year. Major Companies in Shanghai announce production returns, Tesla, Laster Tech Corporation, Quanta Computer, CHEMI-CON (WUXI) Co., Ltd. Pegatron, Quanta, and Compal Electronics.

Automakers Cut Production due to Chip Shortage

Toyota Motor Corp. cut its July global production plan by 50,000 vehicles as semiconductor shortages and COVID-19 parts supply disruptions continued to curb output. Toyota and other car makers continue to struggle with supply-chain disruptions and component shortages caused by the COVID-19 pandemic including those resulting from recent lockdowns in China.

ELM Electronics, OBD-II Chip Maker, Shuts Doors

After more than 24 years of business, ELM Electronics is set to close its doors on June 30, 2022. ELM Electronics has been a part of the electronics and integrated circuits industry since its founding in 1998. They manufacture a wide variety of circuits and devices, with their most popular product being their ELM327 microcontroller for use in onboard diagnostics.

Chip Shortage Forces Automakers to Remove Features

Revenue reports have shown that automakers have lost up to 21% in sales in Q3-2021 when compared to 2020. In an attempt to combat falling revenue numbers due to the global semiconductor chip shortage, automakers are removing popular electronic features from their current lineup of vehicles. Like BMW, General Motors, Mercedes, Tesla, … etc.

Solutions to Overcome the Pandemic

Suppliers Developed Chips to Fight COVID-19

Suppliers have accelerated from the beginning to contribute to the recovery from the crisis and overcome it. Here are some examples:

Intel's processor-based SAP HANA solution turns raw, unstructured data into actionable insights surrounding COVID-19. Intel customer, Mercy, started to use an analytics system that combined structured and unstructured data to create smarter views of how COVID-19 was spreading and how it affected patients.

Cobham Advanced Electronic Solutions' Application-Specific Integrated Circuits (ASIC) were used in advanced devices to deliver the genomic sequence of the SARS-CoV-2 virus that causes COVID-19. CAES ASICs are also a key technology used by a leading global provider of computed tomography (CT) scanners used to help diagnose respiratory conditions.

In tests conducted with Yamaguchi-University, Stanley Electric has achieved 99.9% 'inactivation' of Covid-19 virus SARS-CoV-2 using its aluminum nitride-based 265 nm UV-C LEDs.

Rokid's T1 thermal glasses used an infrared sensor to detect the temperatures of up to 200 people within two minutes from as far as three meters. The devices carried a Qualcomm CPU, and 12-megapixel camera and offer augmented reality features — for hands-free voice controls — to record live photos and videos.

The "5G + 4K" video conferencing system was jointly developed by Dahua Technology and China Telecom to achieve real-time audio and video interaction at the "1 + 4" venue, providing technical support and security for this conference. The fast network capabilities of 4K HD video connections enabled by 5G broadband technology can achieve real-time sharing of images from each site.

Bluetooth IoT products and gateways provided by Cassia networks were used together with VivaLNK's medical wearable sensors to monitor COVID-19 patients through the Shanghai Public Health Clinical Center (SPHCC). Cassia's gateways allow up to 40 Bluetooth Low Energy devices to be paired and connected simultaneously.

Apollo, which is Baidu's autonomous vehicle platform, has joined hands with self-driving startup Neolix to deliver supplies and food to a big hospital in Beijing. Baidu Apollo has also made its micro-car kits and autonomous driving Cloud services available for free to companies fighting the virus.

.... And many other solutions that supported people to overcome the pandemic.

Business Expansions to Overcome Chip Shortage

Top world's chipmakers accelerated to compensate for the shortfall caused by the crisis thru investments and increasing production capacity. Here are some examples:

GlobalWafers, the world's third-largest silicon wafer maker, announced that it will build a $5 billion plant in Sherman, Texas. The new plant will be located near GlobiTech, the US subsidiary of GlobalWafers.

GlobalFoundries CEO said the company will decide by the end of this year to further increase production capacity at one of its sites in Singapore, New York, or Germany as the global semiconductor shortage has not eased. The company would continue to ramp up capacity to meet demand over the next five to 10 years, stressing its willingness to make additional investments in any of its three existing production sites.

DRAM manufacturer Nanya Technology recently announced that it will spend approximately $10 billion to build a new 12-inch wafer fab in New Taipei City, which was expected to break ground on June 23. The fab aims to start mass production in 2025, with a monthly production capacity of about 45,000 pieces of DRAM with 10nm process technology.

The world's largest contract chipmaker, TSMC, has committed to investing $100 billion over three years to ramp up production. Rival Intel announced last March that it plans to spend $20 billion on two new chip plants in Arizona, CNBC reported.

Samsung Group, the South Korean conglomerate with business interests in electronics to biologics, will invest $360 billion over the next five years in a bid to revive the economy, Bloomberg reported.

About SiliconExpert

SiliconExpert provides the relevant data and insight needed to remove risk from the supply chain.

Founded in 2000, SiliconExpert helps you make better decisions, faster. Over 400 electrical, software and data engineers handcraft our component database to deliver the most comprehensive and current tools in the industry. Customers globally use our solutions to manage risk, avoid redesigns, and mitigate obsolescence in innovative industries such as consumer electronics, telecommunications, automotive, medical and aerospace. SiliconExpert's customers include: leading commercial and government OEMs, top-tier authorized distributors, contract manufacturers and component suppliers.

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