

UPSHOT AND A WAY-AHEAD IN CHEMICALS AND PETROCHEMICALS INDUSTRY POST COVID-19

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ABSTRACT

Many sectors have been influenced by the brunt of COVID-19 extensively where the chemical and petrochemicals industry have also been impacted at a huge scale. Moreover, with an impact on production of many products in this line, the production of the associated products like fertilizers, medicines etc. too has also been impacted severely. In this regard, the agenda behind this study is to examine the impact COVID-19 has posed on the chemicals and petrochemicals industry and to render the suggestions further. The review and descriptive approach has been taken into consideration by utilizing the data available through secondary sources. It has been found that this pandemic has stricken the chemicals and petrochemicals industry as the prices of crude oil has tumbled that has affected petrochemicals positively but shortage of supply from China led to increased prices of chemical raw-materials in short and medium term. The productivity in general has also been deeply affected by production shutdown of both chemicals and petrochemicals, cash flow impediments occurred to great extent, less labour force was available due to migration which had affected chemical industry widely and there has been a reduction in imports of chemicals and petrochemicals due to an impact of COVID-19 on Middle-East and China significantly. However, there has been more emphasis on health and safety, environmental and sustainability concerns, increasing capacity of chemical production, digitalization of core business operations and supply chains, remote working and reduced global workforce movement have been observed as an effect of COVID-19. It has been suggested that feasibility of chemicals and petrochemicals operating units should be evaluated financially, financial strain should be mitigated through fiscal benefits such as reducing taxes or providing tax rebates in assessment year, rendering easy, reasonable and continuous financial backing to SMEs and MSMEs in chemical industry, incessant review of import tariffs and due concern should be given to trade policy measures to protect domestic manufacturers from the effect of dumping and imports of low quality in a short as well as long term.

Keywords: COVID-19, Chemicals and Petrochemicals Industry, Production Shutdowns, Digitalization, Remote Working, Health and Safety Measures, Sustainability and Environmental Concerns.

Introduction

No country around the world has been able to safeguard their consumers, businesses and communities from economic problems caused by the COVID-19 pandemic. The impacts are widely

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spread within no time. There has been no sure shot way to cope up with this problem and the business is not what it used to be. A number of companies had plans to continue their businesses, but they have not been able to address ways to fight COVID-19 which is so unpredictable and spread easily. One industry which has been impacted due to COVID-19 in a number of ways is chemical industry. Due to outbreak in key areas the supply chains have been disturbed, there has been some decline in demand as a result of uncertainty in the capital markets and world economy. Manpower was in danger of being infected, and governments had put restrictions on free movement. Both of these added uncertainty to the crisis.

The chemical industry is quite vital for the manufacturing of various products like fertilizers, plastic, medicines, packaging products, etc. Due to the coronavirus, a number of manufacturing plants of various type of industries had stopped. As a result, the chemicals which were being used in these industries saw a decline in their demand. The chemical industry across the globe is divided into four major parts- North America, Asia-Pacific, Europe, and Rest of the World. After seeing the impact of COVID-19 in China, India & Japan, Asia-Pacific is considered to be majorly affected and it is prominent that China is a big market for chemical industry.

According to a 2018 report by CEFIC Chemdata International, China's chemical sales was around \$1.32 trillion. In chemical importing and exporting, China stands on 8th and 12th positions respectively, according to the International Council of Chemical Associations (ICCA). The country, after China, which has been most likely to be impacted by COVID-19 is the US.

Moreover, never before, in the history of oil supply did it go below \$0 price, which forced the countries to make changes in taxes [15]. The main cause of this to happen is the declined global demand of fuel which was followed by excessive supply in the global market which as a result created, for a short period of time, a scarcity of storage facilities. As much as cheaper fuel may sound appealing to consumers in the shorter run, in the longer run this would also imply less or no dividend payments to the pension funds by the debt ridden oil companies. People who are dependent on their pension incomes would be affected indirectly.

Excise duties, around 90% of which comes from oil imports, form a large part of the government's income. Interestingly, the government has not reduced the prices for retailers and is using the extra amount to facilitate its expenses. However, after the lockdown is lifted, consumers started pressurizing the government to lower the fuel prices. Oil companies in India, majorly the E&P space (upstream) like ONGC and Oil India, would have found themselves at the receiving end of this pressure of selling the fuel at lower prices. Once the demand rises again, likes of HPCL, Reliance and IOCL, refiners and distributors (downstream), may see increased profits in the coming quarter. As far as storage is concerned, this is a right time to purchase and store oil for future, if the Indian companies are capable to manage these stocks well.

According to the Reserve Bank of India, as of December quarter in FY20, current account deficit (CAD) of India accounts for 0.2% of GDP, as compared to 2.7% in FY19 [9]. Lower oil prices are expected to reduce the CAD for the economy as more than 80% of oil consumption by India is imported. Then, the present CAD savings can be utilized in funding the emergency relief and recovery measures to fight the COVID-19 outbreak in the country.

Hence, the purpose of this study is to analyze the potential impact of COVID-19 on the Chemicals and Petrochemicals industry globally as well as nationally.

Review of Literature

This Coronavirus has placed the world economy in critical threat. The Analysts have perceived this pandemic as a result of hyper-globalization or the start of de-globalization. (De, "The Economic Times" 2020). The development in the country won't take off when lockdown restrictions are lifted due to an enormous inadequacy of workers who have returned to their home states (Chaliawala, "The Economic Times", 2020). The chemical business has been assumed to be influenced by 20% because of end of logistics (Kumar, Thombare& Kale, 2020). As a result of the impacts of the COVID-19, worldwide chemical production decreased by 3.1 percent in March 2020. Though chemical production was raised in some categories in January 2020 as compared to December 2019, production in February compared to January and in March compared to February decreased in every category (Garside, 2020). As compared to other divisions, the chemical industry isn't in a situation to stop manufacturing and send laborers home. Rather, it needs to find some kind of stability between "social distancing" and keeping plants functioning to give the basic necessities to society, as well as the antiseptics, disinfectants, protective packaging and more needed to fight

the pandemic (Accenture, 2020). The chemical business could probably be hit hard by the COVID-19 pandemic on various aspects: lesser demand and manufacturing, functioning and supply chain problems, securing money markets and the health of their work staff (PWC, 2020). COVID-19 is causing a demand-side shock in the oil and gas sectors that's still flowing through the global economy. The quick response of most oil and gas companies is to ensure the safety of its staff and regular functioning (Accenture, 2020). Industries are energetically acquiring progressed digital capabilities that incorporate their manufacturing activity with supply chain and logistics parallels so as to guarantee the on-time delivery of their product (GEP, 2020).

Research Gap

On the basis of the studies and content reviewed, it has been found that different platforms render different opinions on the determined concept. No single study has included the diversified take on various impacts at one place. Hence, in order to fill in the research gap, this study has been carried out to sum-up the diversified opinions and information of different platforms integrated at one place in order to reach out to the concrete inferences over the potential impact of COVID-19 on the chemical and petrochemical industry.

Research Methodology

Objectives of the Study

- To study the state of chemical and petrochemical industry across the globe as well as one's nation.
- To examine the impact of COVID-19 on the chemical and petrochemical industry.
- To give suggestions and the policy implications on the grounds of the discussion for further consideration.

Type of Study and Data Collection

The study is explanatory and descriptive in the nature having its roots in the reviews of the content and the data available. The data have been collected through secondary sources comprising of research articles, blogs, experts' opinion, reports of various elite companies like Deloitte, KPMG, Accenture, PWC etc.

Limitations of the Study

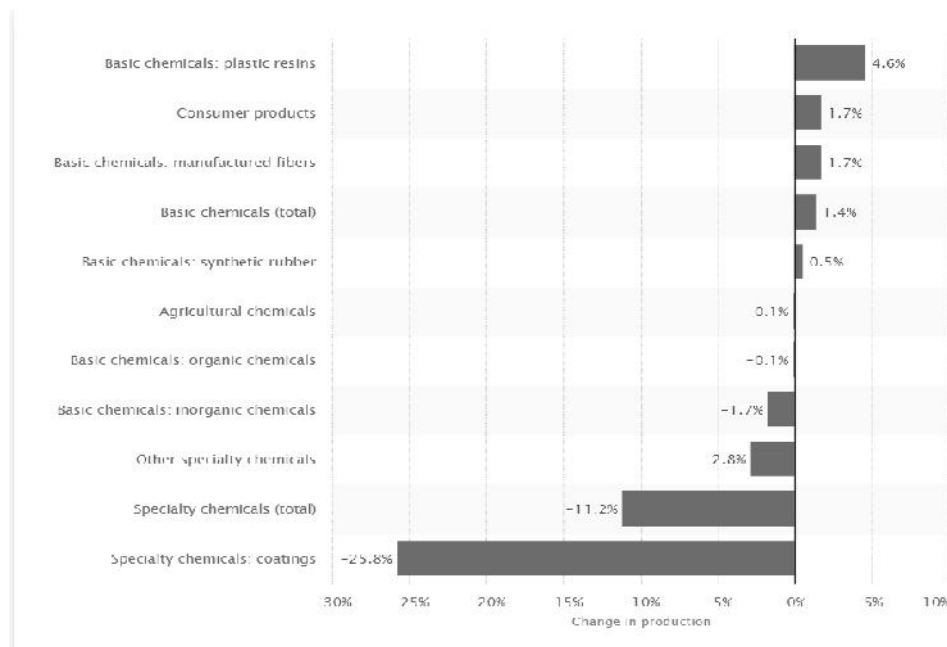
- The study is thoroughly based on secondary sources.
- The study has been confined to discuss the impact of only one sector on the economy.

Analysis and Discussion

The Chemicals and Petrochemicals sector accounts for about 3.5% of world chemical industry which makes it the sixth largest producer globally. Also, it contributes upto the extent of 1.34% of Gross Value Added of the nation and 12.5% in share of chemicals exports. However, COVID-19 has posed a huge impact on the various elements of this sector such as prices of raw material, production shutdowns, hurdles in cash-flows, interruption in supply chain, workforce, imports-exports, etc. The potential impact of COVID-19 on Chemicals and Petrochemicals industry has been discussed as follows:

Impact on Chemical Industry

Chemical Industry in India embrace more than 80,000 commercial products which makes it highly diversified industry. It has been divided into many forms like, bulk chemicals, specialty chemicals, agrochemicals, petrochemicals, polymers and fertilizers. India falls near to Middle East which is an integral source of supplies for the whole world, that contributes India for the economies of scale. It has been estimated that the Indian chemical industry will reach the mark of \$304 BN by 2025 and the demand has been projected to rise by approximately 9% in a span of next 5 years. India stands at 14th position in terms of Export and 8th position in terms of Imports across the globe and is a source of employment for more than 2 million people. However, due to COVID-19, chemical industry has been influenced vastly. The changes in the different products of the chemical industry have been depicted in the following figure:

Year-to-date change in chemical production due to COVID-19 worldwide in 2020, by type

Source: <https://www.statista.com/statistics/1112697/global-ytd-chemical-output-change-due-to-covid-19-by-type/>

It has been depicted from the figure, the production of chemicals has been increased for five categories viz., basic chemicals: plastic resins, consumer products, basic chemicals: manufactured fibers, overall basic chemicals and synthetic rubber while there has been decline in remaining categories. The production of coatings has been decreased by the largest margin so far in 2020 with the declining percentage of 25.8%.

COVID-19 has impacted the chemical industry in the following ways:

- **Price fluctuation of Raw-Material:** Since due to COVID-19, there had been production shutdown in China who has been a major source of imports of chemicals of one's nation, leading to supply shortage of raw materials of chemicals may lead to the rising prices of materials in short and medium term.
- **Workforce:** There had been a reduction of workforce as high degree of labor migration had been observed because of uncertainty as most of the operating units in chemical sector are SMEs. The task of the workforce in the chemical industry cannot be relied upon remote functions as they directly get involved in the process of production. The production capacity seems to get affected due to the curtailed workforce which can lead to productivity downfall. Since then, there has been variability observed in workforce across industries.
- **Restrained Supply Chain:** Due to the nationwide lockdown, restrictions on transport had been imposed that has posed a significant impact on the domestic supply of chemicals in a short term. Further, since the supply chain of chemical sector has been highly dependent on China, COVID-19 has led to the shutdown of major ports in China which has resulted in the disruption of the supply chain globally. This disruption has caused the producers of chemicals the risking of delivery of the finished products to the consumers due to the unavailability of sufficient raw materials.
- **Tax and Trade:** Due to the extreme dependence on imports from China and Middle-East, the quantum of imports has been affected greatly and would likely to confine importers or traders as a result of an uncertain demand attitude of India in a short term. Also, this pandemic may induce the chemical sector to think about alternative sourcing opportunities, which could invite repercussion in context of tax, transfer-pricing or customs.

Impact on Petrochemical Industry

- The petrochemical industry achieved a mark of 27,858 MT in terms of production during 2018-19 that reflected the market size at \$178 BN in the same year depicting a growth of 4.18% over 2017-18. The demand for petrochemicals has grown at 5.4% compound annual growth rate in a span of three years ranging from F.Y. 2015 to F.Y. 2018, where polymers accounts for 31% of this demand while olefins stood at 22%. The petrochemical demand is expected to grow at 7.5% compound annual growth rate from FY 2019-23. The gradual spread of COVID-19 drastically resulted in a decline of a demand and price of the crude oil. The demand for fossil fuels except LPG and domestic natural gas is continuously decreasing. As a result of the development, the refiners were emphasized to curtail their output to an extent of 25-30 percent immediately. COVID-19 has impacted the petrochemicals industry in the following ways:
- **Price fluctuation of Raw-Material:** The prices of the raw-materials have been falling drastically steered by falling crude oil prices. The diluted global demand due to COVID-19 and a price war between Russia and Saudi Arabia have been expected to pull the prices down further.
- **Workforce:** Unlike Chemical industry, the petrochemicals involve the functioning in a large plants integrated with units of refinery, which has not got hampered that much with the migration of workers. Still, as an immediate response to the situation of the pandemic, the oil and gas companies were required to ensure the safety of the workforce for the smooth continuity of the operations.
- **Restrained Supply Chain:** Likewise, chemical industry, the lockdown effect on transport and global disruption in supply chain have influenced the petrochemical industry at a large scale. This has somehow led to facing difficulties in meeting the demand situation in the market. Even after lockdown has been lifted, the transportation has not become that smooth as it was earlier, thus affecting the supply chain adversely.
- **Tax and Trade:** Due to huge outbreak worldwide and being an importer of various chemicals from the global market which eventually contributes in production of petrochemicals, the imports has been highly affected. Moreover, the global downfall in demand and restrained supply chain impacted exports too but exports from India accounts for less than 15% of total production approximately, hence has not impacted domestic industry considerably in that sense. Also, the shift in import opportunities has demanded an outlook for the tax implications arising out of it.

Findings of the Study

On the basis of the above discussion, it can be easily said that the chemical and petrochemical industry have been affected by the smash of COVID-19 pandemic which has led to the various repercussions in the sector like production shutdowns, shortage of raw-material, disruption in supply chain, reduced imports, cash flow constraints and other barriers in smooth functioning of the business. However, the industry is giving a tough fight to the situation and dealing with the situation by weighing every consequence and risks efficiently and turning threats into the opportunities in a medium and long term. The industries working in these sector are now emphasizing more on health and safety measures and maintaining sustainability and environmental concerns. There has been a continuous effort to increase capacity of chemical production and industries are working remotely along with adopting new models. There has been reduced movement of global workforce has been observed post pandemic and globalization of supply chains has also been decreased. The remote or digital sales channel have been seeking a promotion and the core business processes have also been moving towards digitalization extensively. While, there are a few uncertainties that remains the potential menace for the industry to dealt with like demand outlook, market situation, price volatility, workforce retention, variability in workforce movement etc. It is essential to address the key issues that can create hurdle in the smooth operations of the companies which can lead to hamper the recovery process post COVID-19.

Suggestions of the Study

In the light of the above discussion and findings, the suggestions have been rendered specifically for chemical and petrochemical industry, which have been mentioned and explained as follows:

For Chemical Industry

- **Continuous Financial Stress for SMEs and MSMEs:** The maximum chemical companies are small or medium term enterprises which do not possess the working capital storage. The financial assistance in a form of working capital loans will be required for them to stay in

business backed by the flexible and favorable conditions in a short term. While in medium or long term, there has been an uncertain demand outlook exist, the loan or capital assistance will be significantly needed to restore market outlooks leading to production upsurge in future.

- **Workforce Management:**There can be various measures in the favor of the workforce which should be implemented to ensure smooth functioning of the chemical business. The safety and protection of the employees should be kept at prime importance involving sanitation rules at workplace and promote remote working wherever possible. There should be a discussion on a change management and adhering to flexible work arrangements that can be associated with assessing strategies and plans of employing or deploying workforce in case of slowdown or for the purpose of risk minimization.
- **Supply-Chain Management:**There has been a necessity to generate keen knowledge and concurrent awareness of the supply chains in order to evaluate the various links that exist and eliminate the weaker one potentially that has been influenced by the effect of COVID-19 currently and can contribute in disruption of the supply chains in future.
- **Switch to Automation Solutions:**The density of workforce in the manufacturing plants and back-offices has become a concern in line with the effects created by this COVID-19 pandemic, thus, it is required to swap conventional processing with automated processing of repetitive tasks by industrial robotics or mobile robots and predictive maintenance by the use of artificial intelligence.
- **Liquidity and Investments:**The assessment of loans, profitability, cash and credit flows etc. are required to be done in order to know the assistance it can render in such a low income generating time period for meeting the present and projected cash operating expenses. Moreover, the capital and corporate cost budget is being required to be reviewed so that the identification of the marginal investments and optional items capable of being eliminated can be done. The distribution of capital, liquidity and cash-flow plans are needed to be reconsidered so that the cash would be preserved for future uncertainties as the stretched influence has been expected on some of the chemical products.

For Petrochemical Industry

- **Fiscal and Non-Fiscal Benefits for Operating Units:**For the purpose of assisting petrochemical operating units, various fiscal and non-fiscal benefits can be rendered by the government in a form of reducing tax burden, tax incentives or deferrals, energy inputs, extension of lines of credit, reduction in infrastructure cost, supply-chain assistance, short-term funding etc.
- **Promoting Digital Work Environment:**As the economy and the businesses in it hit by this pandemic, there has been a need to revise the culture for the work environment. The virtual environment should be incorporated in the operations to reduce the intensity of the workforce at the workplace to align the working policies with the social distancing norms. The remote network connectivity should be enabled which must be reliable, safe and universal to ensure the business continuity.
- **Rebalance Capital Expenditure and Portfolio:**All the capital spend and the resource allocation that assist in growing the existing business or scale new business should be re-evaluated to cater the needs of the present without stimulating the future prospects and objectives. The assessment of every asset or capital spend should be done precisely by considering current actuality of lower and flexible commodity prices. Also, the securities are needed to be re-assessed in such a manner that higher bar for the risk should be kept and flexibility can be incorporated into the portfolio decisions as there is a chance of high volatility in upcoming months.
- **Supply-Chain Management:** It is significant to address the alternatives of suppliers which can be identified by preparing for supply-chain twists and improving supply chain visibility. For this purpose, lines of communication should be enhanced in such a way that it detects and remediate probable issues efficiently. This can be done through digital supply chain solutions while in absence of it should be done through self-reporting to the critical suppliers regularly and transparently.

- **Review of Import tariffs and trade-policy measures:**The import tariffs and trade-policy measures on the essential raw material supplies of chemicals should be reviewed so that uninterrupted supply can be assured and through efficient trade policy measures, the domestic manufacturers can be prevented from dumping and inferior quality imports by imposing adequate anti-dumping duties and other measures.

Conclusion and Scope for Further Research

Chemical and Petrochemical Industry, like any other industry, has been imperiled by the wreck of the disturbance created by the COVID-19. In upcoming future, they would work upon to keep their workforce secure in consort with keeping functioning of the business effective and efficient. The chemical and petrochemical industry have to deal with price fluctuations, supply and logistics barriers and an uncertain demand in future. For that purpose, it is essential for the industry to find the appropriate alternatives to prevent itself from huge dependence on supplies from China and affected nations. It is important to examine that how the future work will look like and bring into line the strategies that it should be able to position itself in the current position i.e. in suppression of this virus as well as in the post COVID-19 scenario that would lead to its efficient recovery.

The further study can be carried out by taking survey of the officials and the employees of the companies of Chemical and Petrochemical industry. Also, different sector can also be taken into consideration to analyze the impact of COVID-19. Moreover, the data of the companies of chemical and petrochemical sector can be further tested and analyzed by appropriate testing tools to generate more empirical evidences of the results.

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