

**ARIV***International Journal of Business***Paper ID: AIJB11032020****Issue 1 Vol1 2020**

Supply Chain Management Strategies of Crude Oil Production in India

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Abstract

Crude oil production is outlined because the quantities of oil extracted from the bottom once the removal of inert matter or impurities. It includes fossil fuel, fossil fuel liquids (NGLs) and additives. NGLs square measure the liquid or liquefied hydrocarbons made within the manufacture, purification and stabilization of fossil fuel. The liberalization is as making economics free to enter in the market and establish their venture in the Indian country. Privatization is the control of economic and sifted from public to a private hand. Globalization is described as the process by which regional economies, societies, and cultures have become integrated through a global network of communication, transportation, and trade. The energy market deals with crude oil, heating oil, natural gas, gasoline and so on. In this study discussed more relating to crude oil because the top of the news in everyday and crude also top of the commodities to trade in regular base compare with another commodity in India. India produces a little under a quarter of its crude oil demand.

Keywords: crude oil, production, transportation, privatization, financial stability.

Introduction

Crude oil production is defined as the quantities of oil extracted from the ground after the removal of inert matter or impurities. It includes crude oil, natural gas liquids (NGLs) and additives. This indicator is measured in thousand ton of oil equivalent (toe). Crude oil is a mineral oil consisting

of a mixture of hydrocarbons of natural origin, yellow to black in colour, and of variable density and viscosity. NGLs are the liquid or liquefied hydrocarbons produced in the manufacture, purification and stabilization of natural gas. Additives are non-hydrocarbon substances added to or blended with a product to modify its properties, for example, to improve its combustion characteristics (e.g. MTBE and tetraethyl lead). Refinery production refers to the output of secondary oil products from an oil refinery.

Objectives of the study

1. To understand the theoretical background of the crude oil in India.
2. To study the importance of crude oil production.
3. To measure the future of crude oil industry in India.

Review of Literature

Yuhang Zheng, and Ziqing Du (2019) Crude oil plays an important role in economic activities, with both commodity attributes and financial characteristics. Through comprehensive review of the literature on crude oil prices, the following phenomena are presented. First, the forecasts and risk management of crude oil prices are still important topics when researchers conduct studies, however, the uncertainty of economic activity has aggravated the fluctuation of crude oil prices. Second, factors from supply side and demand side are main drivers of movements of crude oil prices, and investor sentiment gradually becomes an important factor affecting the expected level of crude oil prices. Third, economic activities and financial stability are influenced by shocks of crude oil prices; meanwhile, many studies confirm the asymmetric effects. However, due to changes in the external environment, more complex nonlinear time-varying features are exhibited. In addition, the advent of text mining technology and artificial intelligence technology provides new and effective methods for forecasting the trend of crude oil prices and conducting risk measurement in crude oil market. Balcilar et al. (2017) also find that EPU and equity market uncertainty (EMU) have strong predictive power for oil returns over the entire distribution barring regions around the median, but for volatility. Moreover, crude oil price forecasting results are sensitive to the modeling sample interval selection, sample data frequency and sample structural breaks.

Aastveit et al. (2015) explore the role of demand from emerging and developed economies as drivers of the real price of oil. They find that demand from emerging economies is more than twice as important as demand from developed countries in accounting for the fluctuations in the real oil price and in oil production. Pushpa, Chakra borty and Mathur (2011) investigated the existence of long-term relationships between oil prices and stock market prices of two big emerging economies in Asia viz., India and China. Since India and China were the major oil consuming market, their stock markets were likely to be susceptible to oil price fluctuations. A data series from January 2000 to May 2011 was considered. The stationarity of the data series was checked using ADF Test. Johansen's co-integration model was applied to find out the co-integration among the oil prices and stock prices of India and China. VECM was employed to trace the existence of long run relationship between the variables.

Haesun, Mjelde and Bessler (2008) studied the relationships among eight North American natural gas spot market prices. The study provided a dynamic picture of daily information flow among natural gas spot markets from 1998 to 2007. The study used the error correction model (VECM) as the basic tool for analysis. Results indicated that the Canadian and U.S. natural gas market was a single highly integrated market. Further results indicated that price discovery tends to reflect both regions of excess demand and supply. Across North America, Malin Hub in Oregon, Chicago Hub, and Illinois, West Texas Intermediate, Henry Hub and Louisiana region were the most important markets for price discovery. Opal Hub in Wyoming was an information sink in contemporaneous time, receiving price information but passing on no price information. Alberta Energy Company (AECO) Hub in Canada received price signals from several markets and passes on information to Opal and the Oklahoma region.

Maslyuk and Smyth (2009) studied co-integration between oil spot and future prices of the same and different grade in the presence of structural change. The purpose of the study was to examine whether crude oil spot and futures prices of the same and different grades were co-integrated using a residual-based co-integration test that allows for one structural break in the co-integrating vector and high-frequency data. For the analysis, U.S. WTI (West Texas Intermediate) and UK Brent was chosen as the representative crudes since these two crudes have well-established spot and futures markets. The results revealed that spot and future prices of the same grade as well as spot and

future prices of different grades were co-integrated. Matthew, Jian and Kuan (2009) examined whether Dubai crude oil and Brent crude oil futures prices were stationary as well as whether there exists a long-run equilibrium relationship in the oil markets. Further, they investigated the dynamic process of the endogenous variables and future periods through VECM. The study period was from January 3, 2000 through October 1, 2009 with a total of 2481 daily samples. They found that Brent crude oil prices lead Dubai crude oil prices, and in the long-term, however, both Dubai and Brent crude oil prices will reach equilibrium. Their co-integration and VECM results were consistent with the one-great-pool concept advocated by Adelman (1984).

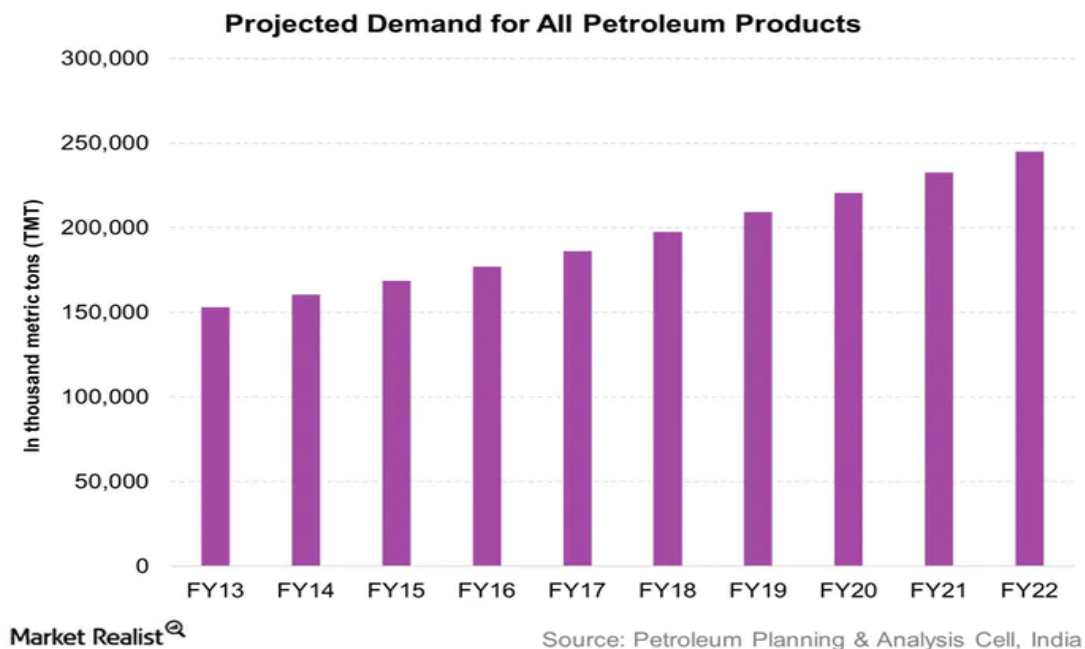
Shaharudin, Samad, Fazilah, Bhat and Sonal (2009) examined the effect of oil prices movements on the stock price of oil and gas companies in three different markets (U.S., India and UK) using daily data. The dynamic interaction between oil prices and stock prices was investigated in the presence of economic variables like interest rates and industrial productions. They collected the daily data for the period August 08, 2003 to August 8th, 2008. The oil price was the London Brent crude oil Index. The oil stocks included the Exxon Mobil and Chevron stocks from the NYMEX. Reliance Industries and Indian Oil Corporation Limited stocks were collected from the NSE of India and Royal Dutch Shell and Gazprom stocks from the LSE. They employed unit root tests, co-integration tests, variance auto regression, error-correction models with variance decomposition and impulse response and ARCH/GARCH models. The results suggested that there exists significant short run and long run relationship between oil price and the oil stocks including the effect of the other variables such as interest rate and the stock index. The oil price volatility transmission has a persistent effect on the volatility of the stocks of the oil companies in all the countries that were taken up for the study.

Raymond Li (2010) evaluated in a multivariate framework the leading and lagging relationship among the spot prices for crude oil, gasoline, heating oil, jet fuel and diesel to assess whether or not the direction of price information flow that was to be predicted from derived demand theory was observed. Monthly spot prices of WTI light sweet crude oil, New York Harbor conventional gasoline, No.2 heating oil, kerosene-type jet fuel and Los Angeles No.2 diesel were used in the empirical analysis for a period from June 1990 to May, 2010, with 240 observations. Econometric tools such as ADF & PP test, Residual Diagnostic Test, Johansen multivariate co-integration test

and Granger causality test were used for the study which showed strong evidence that the price of crude oil and its refinery products were co-integrated. At the same time, the weak ergogeneity test revealed that crude oil price transmitted exogenous shocks to the system in the long run and changes in oil price were passed through to the refined product prices in the long run.

Methodology

Secondary data have been collected from the published sources such as Commerce Ministry, Government of India, Websites, World Trade Organization and various reports published in journals and reports.



It shows that India hasn't been plagued by a demand reduction. Its demand remains higher than the world's demand. This is important to know. If India's demand had fallen, like the US, then analyzing the impact of a fall in crude oil price wouldn't mean much.

This year, the fall was negative for energy ETFs—the like Energy Select Sector SPDR Fund (XLE), the Van Eck Vectors Oil Services ETF (OIH), and the SPDR S&P Oil & Gas Exploration & Production ETF (XOP). However, Indian ETFs—like the Wisdom Tree India Earnings Fund (EPI) and the Power Shares India Portfolio (PIN)—that has significant exposure to India's energy sector, would have seen a limited impact.

History of Crude Oil

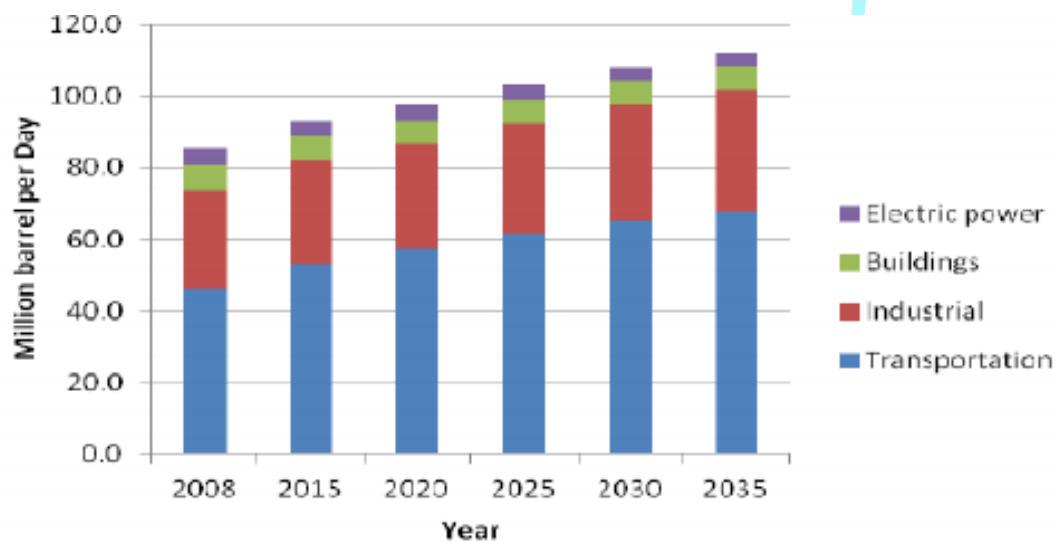
"Crude oil" redirects here. For the 200film, see Crude Oil (film). For the fuel, see Petrol. For other uses, see Petroleum (disambiguation). Pump jack pumping an oil well near Lubbock, Texas. It is commonly refined into various types of fuels. Components of petroleum are separated using a technique called fractional distillation, i.e. separation of a liquid mixture into fractions differing in boiling point by means of distillation, typically using a fractionating column. It consists of hydrocarbons of various molecular weights and other organic compounds. The name petroleum covers both naturally occurring unprocessed crude oil and petroleum products that are made up of refined crude oil. A fossil fuel, petroleum is formed when large quantities of dead organisms, usually zooplankton and algae, are buried underneath sedimentary rock and subjected to both intense heat and pressure.

Petroleum has mostly been recovered by oil drilling (natural petroleum springs are rare). Drilling is carried out after studies of structural geology (at the reservoir scale), sedimentary basin analysis, and reservoir characterization (mainly in terms of the porosity and permeability of geologic reservoir structures) have been completed. It is refined and separated, most easily by distillation, into a large number of consumer products, from gasoline (petrol) and kerosene to asphalt and chemical reagents used to make plastics and pharmaceuticals. Petroleum is used in manufacturing a wide variety of materials, and it is estimated that the world consumes about 95 million barrels each day.

Concern over the depletion of the earth's finite reserves of oil, and the effect this would have on a society dependent on it, is a concept known as peak oil. The use of fossil fuels, such as petroleum, has a negative impact on Earth's biosphere, damaging ecosystems through events such as oil spills and releasing a range of pollutants into the air including ground-level ozone and sulfur dioxide from sulfur impurities in fossil fuels. The burning of fossil fuels plays a major role in the current episode of global warming.

Crude Oil Industry in India

Crude oil Industry is considered to be the backbone of an economy, because this is the main source of energy till date. Any economy around the world would fail to precede a single step in the absence of crude oil industry including the refining of crude oil. The price of crude oil is determined by the demand, supply mechanism around the globe. Crude oil is not a domestic product and any kind of shortage in the same has serious ramifications on all possible industries along with the economies all over the world. Crude oil industry always needs to perform exploration research all over the world for finding more crude oil sites which also become instrumental in the setting up of crude oil industry.



Source: Crude oil production in India

India is one of the largest importers of oil and petrol in the world. Like many other Indian industries, the development of the Indian crude industry began very slowly. It started mainly in the northeastern part of Indian especially in the place called Digboi in the state of Assam. Until the 1970's the production of crude oil and the exploration of new location for extraction of crude oil were mainly restricted to the northeastern state in India. However, an important advancement in the Indian crude oil industry came with the passing of Industrial Policy Resolution in 1956, which emphasized focus on the growth and promotion of industries in India. The crude oil industry has contributed heavily to the manufacturing industry in the country through foreign trade in petroleum products. Rapid globalization, fast-changing technology, and the changing methods in

the way business is conducted have brought significant changes and enormous opportunities for petroleum companies in India to flourish and expand their operation to global markets.

Crude Oil Industry in Global

The global oil industry is a very complex industry. It is one of the oldest in the world as well as one that affects tremendously all aspects of business. Oil is a precious energy source that fulfills 40% of the global energy needs. The products of oil companies revolutionize daily life and the way we do things. Upstream and downstream are two major sectors in the oil industry. In between, there is another sector namely the midstream. The midstream sector processes, stores, markets and transports commodities such as crude oil, petroleum, natural gas liquids as ethane, propane and butane. The upstream sector involves the processes of oil exploration and drilling. Over these years, because of technological advancement, oil producers have been able to access more deposits which resulted in an increase in reserves. The downstream sector involves refining, transporting and marketing of oil and oil products. At the production unit, it is processed and refined into different products that include gasoline, kerosene, residual fuel oil and asphalts.

The Indian Crude oil Industry was dependent from the very beginning on foreign capital, expert personnel, and technology, which led to the industry's globalization. Globalization entails and integration of the nations' economies through corporate investments, financial flow, and trade in goods and services between nations. The Indian Crude oil Industry's Globalization took place since foreign involvement in the various important stages such as production, refining, exploration, and transportation increased oil consumption. To encourage Indian Crude oil Industry globalization has offered the contract of discovered fields to foreign and private companies. The various companies that have helped in the globalization of the Indian Crude oil Industry are Enron Oil and Gas Company, Videocon Petroleum Ltd, Reliance industries Ltd, Ravva Oil ltd, and Command petroleum.

Importance of Crude Oil

Plastic

This is probably the most widespread use of oil that I can think of. Plastic is used in just about everything that you can find in a store. If an item doesn't contain plastic, then it is probably stored or packaged in the oil-based polymer. Plastic is also used in the production of computer cases, shoes, car bumpers, kids' toys, and thousands of other everyday items.

Clothing

Petroleum is used to help make clothing non-flammable and colorful. It is used in the production of rayon, nylon, polyester, and even artificial furs. Also, hangers are strengthened by petroleum-based resins.

Furniture

According to Conoco Phillips, couch cushions are often filled with durable, lightweight polyurethane foam. Also, if you have carpet or linoleum flooring, you probably have a petroleum-based product in your home.

Insulation

The insulation that you find in your home – which keeps unwanted heat from escaping or entering – is a petroleum-based product! This means that we depend on crude oil to regulate the temperature in our homes in more ways than we realize.

Kitchen Items

There are a number of items in your kitchen that rely on petroleum as a part of their production. For your refrigerator, the molded interior panels, door liners, and even the foam insulation are all manufactured using crude oil. Many stoves function by using natural gas. Most of us now use non-stick pots and pans. The coating that provides temperature resistance (PTFE) is created by using petroleum.

Cars

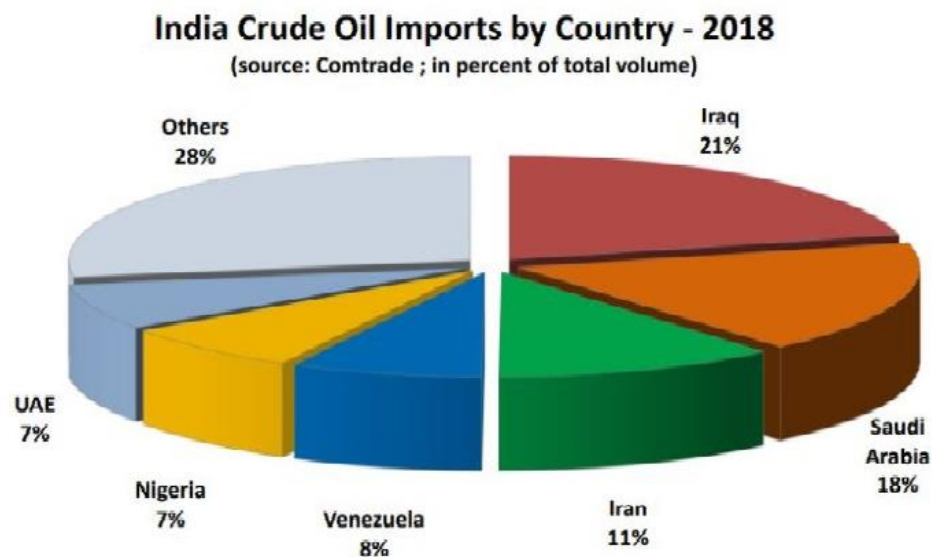
In the same Conoco Phillips info graphic, it tells us that: High-performance plastics have replaced heavier materials throughout the average vehicle – from the interior to the engine block – reducing weight and improving fuel economy and enhancing safety.

Food

Crude oil plays a part in the growth of your food. Fertilizer is something that relies on petroleum; thus, when the price of oil goes up, it gets more expensive to grow food. Many of our food items are stored and or packaged in plastics as well; meaning that crude oil plays a large part in the production of food. This is one of the things that make high oil prices so scary. If it costs more money to grow, store, package, transport, and regulate the temperature of our food, then that cost will be passed on to the consumers.

Crude Oil Imports by Country

Below are the 15 countries that imported the highest dollar value worth of crude oil during 2017: China: US\$162.2 billion (18.6% of total crude oil imports), United States: \$139.1 billion (15.9%), Japan: \$63.7 billion (7.3%), India: \$60.2 billion (6.9%), South Korea: \$59.6 billion (6.8%), Netherlands: \$37.4 billion (4.3%), Germany: \$36.2 billion (4.1%), Italy: \$26.1 billion (3%), Spain: \$25.7 billion (2.9%), France: \$23.8 billion (2.7%), Singapore: \$21.4 billion (2.5%), United Kingdom: \$20.9 billion (2.4%), Thailand: \$20.1 billion (2.3%), Taiwan: \$16.9 billion (1.9%), Belgium: \$15.3 billion (1.7%).



Source: Comtrade

The listed 15 countries purchased 83.4% of all crude oil imports in 2017 (by value). None of these top importers experienced a boost in the value of their crude oil purchases from 2013 to 2017. Among the above countries, the fastest-declining crude oil importers since 2013 were: India

(down -59.3%), Japan (down -56.3%), Germany (down -52.2%), United States (down 50.2%), Taiwan (down -49.7%), Thailand (down -48.5%) and United Kingdom (down -48%). India accounted for 0.92% of world oil production in 2016-18.

Conclusion

The commodity is basically three types such as bullion, base metals, and energy and agric commodity. The crude oil is one of a good commodities under the energy on the Indian commodity market. This research paper fully covered the productions of crude oil in India, which is highly impact on the commodity market of crude oil. The crude oil is the best commodity to invest the money in the online commodity market. Demand for crude oil is growing in leaps and bounds, shifting focus to more production of olefin - ethylene, propylene, and butadiene. Price and availability of crude oil and gas as feedstock would still be critical factors. The demand of the end products would affect the demand of the intermediary products.

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