

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Department of Economics**



**Diploma Thesis**

**Economic Analysis of Nepal Oil Corporation**

**Author: Dahal Saraswati**

**Supervisor: Ing. Zdenek Tousek, Ph. D**

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## DIPLOMA THESIS ASSIGNMENT

B.Sc. SARASWATI DAHAL

Economics Policy and Administration  
Business Administration

Thesis title

**Economic analysis of Nepal Oil Corporation**

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### Objectives of thesis

The main objective of this diploma thesis to analyse what kind of impact Nepal Oil corporation monopoly market has created in Nepal economy, the positive and negative impact due to its monopoly market and the price strategy .

The factors that influence Nepal oil corporation and its monopoly market, its financial position, economic effect and unstable political condition are considered for stability and economic condition of Nepal oil corporation .

### Methodology

Economic Analysis of NOC Nepal oil corporation using secondary data mainly available on NOC website. The thesis will use comparative and descriptive methods.

## The proposed extent of the thesis

60 – 80 pages

## Keywords

Nepal oil Corporation, monopoly market, economy of nepal, pricing strategy, effect on economy,

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## Recommended information sources

HYMAN, D N. *Economics*. Homewood: IRWIN, 1992. ISBN 0-256-08381-9.

MAITAH, M. – ČESKÁ ZEMĚDĚLSKÁ UNIVERZITA V PRAZE. KATEDRA EKONOMIKY. *Macroeconomics : issues and exercises*. V Praze: Česká zemědělská univerzita, Provozně ekonomická fakulta, 2017. ISBN 978-80-213-2748-1.

SAMUELSON, P A. – NORDHAUS, W D. *Economics*. New York: McGraw-Hill, 1992. ISBN 0-07-054879-.

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## The Diploma Thesis Supervisor

Ing. Zdeněk Toušek, Ph.D.

## Supervising department

Department of Trade and Finance

Electronic approval: 20. 11. 2019

**prof. Ing. Luboš Smutka, Ph.D.**

Head of department

Electronic approval: 21. 11. 2019

**Ing. Martin Pelikán, Ph.D.**

Dean

Prague on 06. 04. 2020

**Declaration**

I declare that I have worked on my Master thesis titled " **Economic Analysis of Nepal Oil Corporation** " by myself and I have used only the sources mentioned at the end of the thesis. As the author of the Diploma thesis, I declare that the thesis does not break copyrights of any person.

In Prague on 06.04.2020

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Dahal Saraswati

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# **Economic analysis of Nepal Oil Corporation**

## Summary

Nepal economy growth is way behind than other countries economic growth; Energy, one of the major influencing factor of economic condition of a country. Oil is one the most widely usable energy source in the world, Nepal oil industry entirely depend on import oil from foreign countries. The government created monopoly market of Nepal oil industry has remarkable effect on economic growth of Nepal, the main aim of this thesis is to investigate how a monopoly industry activities are affecting the GDP of Nepal, increasing trend of demand of oil, the price of oil in the foreign market and its effect in the oil industry of Nepal is major concern of this research. For this purpose, some theoretical overview, analysis of external market ratio analysis and regression analysis has been used as analysis tool. Two hypothesis tested,

H<sub>0</sub>: There is no significant impact of NOC's imports on GDP of Nepal.

H<sub>1</sub>: There is a significant impact of NOC's imports on GDP of Nepal.

The research has identified deep correlation between the amount of import and consumption of oil and its direct effect on economy of Nepal.

Base on research result the monopoly market and 100 % dependency on import of oil product and scarcity of oil given clear picture to Nepal economy an opportunity to improve condition of economy, investing on research and development to produce own energy to get rid of economic recession.

**Keywords:** Nepal, List develop country, India, Crude oil, Nepal oil Corporation, Monopoly Market, Petroleum product, import, Consumption, Environmental Analysis, Regression Analysis.

## Souhrn

Růst Nepálské ekonomiky je nižší než růst ekonomiky jiných zemí. Energie, jeden z hlavních faktorů ovlivňujících ekonomický stav země. Ropa je jedním z nejpoužívanějších zdrojů energie na světě, ropný průmysl v Nepálu je zcela závislý na dovozu ropy ze zahraničí. Vláda vytvořila monopolní trh nepálského ropného průmyslu, který má pozoruhodný dopad na ekonomický růst Nepálu. Hlavním cílem této práce je prozkoumat, jak monopolní průmyslové aktivity ovlivňují HDP Nepálu, zvyšující se trend poptávky po ropě, cenu ropy na zahraničním trhu a její vliv na ropný průmysl v Nepálu a je hlavním zájmem tohoto výzkumu. Za tímto účelem byl jako analytický nástroj použit nějaký teoretický přehled, analýza vnějšího trhu a regresní analýza. Byly otestovány dvě hypotézy:

$H_0$ : Dovoz NSR nemá významný dopad na HDP Nepálu.

$H_1$ : Dovoz NSR má významný dopad na HDP Nepálu.

Výzkum odhalil hlubokou korelaci mezi množstvím dovozu a spotřeby ropy a jeho přímým účinkem na ekonomiku Nepálu.

Na základě výsledků výzkumu monopolní trh a 100% závislost na dovozu ropných produktů a nedostatek ropy dávají nepálské ekonomice jasný obrázek, jak zlepšit stav ekonomiky, investovat do výzkumu a vývoje na výrobu vlastní energie, aby se zbavil hospodářské recese.

**Klíčová slova:** Nepál, rozvojové země, Indie, ropa, Nepálská ropná korporace, monopolní trh, ropný produkt, dovoz, spotřeba, environmentální analýza, regresní analýza



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## **Abbreviations**

NOC- Nepal Oil Corporation

IOC- Indian oil corporation

b/day – Barrel per day

GDP- gross Domestic product

MR- Marginal Revenue

P- Price

LRATC- Long- Run Average Total Cost

MC- Marginal Cost

ATC- Average Total Cost

Q- quantity

AC- Average cost

SMC- Social Marginal cost

D- Demand

USA- United State of America

OPEC- Organisation of the petroleum Exporting Countries

MBD-Million Barrel per Day

HELP- Hydrocarbon Exploration and Licensing Policy

OALP- Open Acreage Licensing Policy

PSCs- Production Sharing Contracts

MT- Metric Tonne

MMT- Million Metric Tonne

MMPTA- Million Metric Tonne Per annum

LP- Liquefied petroleum

OT- Opportunity Threat

MW- Megawatts

LTD- Limited Company

ATF- Aviation Turbine Fuel

CIS- Commonwealth of Independent States

MOFA- Ministry of foreign Affair

DTA - Debt to Assets

## 1.0 Introduction



A landlocked country of South Asia border, east, west and south by India and china in the North. Home of Himalayas and contains eight highest peaks out of tens of world highest peaks. The government system is multiparty federal republic. Varies cultural and languages are the one of the interesting fact that represent Nepal in the world. It lies between latitudes 26°15' and 30°30' north and longitudes 80°00' and 88°15' east. The total population of Nepal is 29.9 million (CBS, 2018) with an annual growth rate of 2.27 percent (period 2010-2019).

Nepal is known as One of the least developed country in the world. Landlocked by two giant countries India and China, lack of resources, its geographical structure, inadequate transportation system and unstable political environment are the main ground of being under developed nation. Lack of technologies and inadequate resources Nepali market are mostly depending on all the basic material import from foreign market. Nepalese economy is mainly based on Agriculture one third of its population are engaged on agriculture activities. The main agriculture activities are cultivation of rice, maze, mustard and farming of poultry and cow and other animals. Although agriculture is main income sources of Nepalese household, tourism plays the vital role in the process of national development, which is a boon to a country like Nepal among other limited resources. Agriculture has covered 26.24% of GDP of Nepal. 65.8 %(2018) of population are engaged on agriculture their main income source is agriculture. Tourism and foreign income sources are other core factors that influence Nepalese economy. The total GDP was growing by 6.3% comparing to 2017 and 2018 fiscal year which was \$28,812m(USD) and \$24880m respectively. The per capita income of Nepal is 815.2 USD, (source: Tradingeconomic.com world bank, 2019). On Nepali GDP impact of both public sector and private sector market are remarkable.



## **1.1Nepal Oil Corporation**

Nepal Oil Corporation (NOC) is a government owed oil company which was established in 10 January 1970 its headquarter is in Babarmahal Kathmandu, Nepal, with the aim of import, store & distribution of petroleum product throughout the country. The government owes the 98.63 % of its shares and remaining are contributed to other four enterprises, Nepal Bank LTD, Ristriya Baniyya Bank, Ristriya Beema Sasthan and Nepal Trading LTD. The storage capacity of NOC is 68364KL(kiloliters). It has 600 (2018) employees throughout its five Regional offices, three Branch Offices, seven Aviation Fuel Depots and two Aviation Fuel Refueling Stations. NOC has 4 types of petroleum product range which are Petrol, Diesel, Kerosene and LPG. Fuel storage is one of the cycle problem of Nepal which has no clue of any solution, Anti competitive practice is in the petroleum sector is rife of storage problem. When a country imports all of its needed petroleum products the anticompetitive practice becomes falter for whole economy. Nepal's monopoly on petroleum sector raise since it started to sourcing fuel, in 1974 Nepal and India has memorandum understanding(MOU) agreement to import fuels exclusively from Indian Oil Corporation(IOC). Every 5 years' agreement with IOC and NOC revive to balance changes in the prices and costume policies of both countries for smooth supply of petroleum products from the nearest border sea port Haldia, Kolkota at the distance of 900km. Anti competitive practice of government policies on petroleum sector, NOC is the solo distributor of petroleum product through out the country. There is no other competitor who can create competition with NOC, some private company are operating under the NOC only for distribution of crude oil where NOC is not able to reach out.

The pricing and distribution strategy are set by government on its own because it has control over supply of product throughout the country. Government of Nepal doesn't allow to enter other competitor in the market to control the quality and cost of the crude oil product considering the income level of inhabitances of Nepal. Increasing demand and the market of petroleum product is huge due to the monopoly market created by Government of Nepal, the big gap between demand and supply has never full fill by the company. NOC is not being able to meet



the market demand since the resources are not sufficient to established maximum storage capacity since petroleum product are highly hazardous so it need to be store only in storage locations. transportation vehicle's, capital and the political issue. The main reason of being failure of supplying product to the market is the poor transportation system of Nepal and second it's dependency on only one importer of the country which is India. Nepal petroleum market relay on NOC at the same time NOC relay on IOC. Nepal doesn't produce any petroleum product of its own, therefore Nepal depends on importing petroleum product from its neighbor country specially from India and China. The facilitated roadway and the open border has created the situation that Nepal has to depends totally on India's petroleum products.

Types of petroleum product available in Nepal

1. Petrol
2. Diesel
3. Kerosene
4. Aviation Turbine Fuel
5. Light Diesel
6. Furnace

## **2.0 OBJECTIVES AND METHODOLOGY**

### **2.1 OBJECTIVES**

- The aim of this thesis is to explore and analyze the impact of oil industry, impact on the Nepal GDP and Monopoly practice in Nepal.
- To understand the impact of import of Petroleum from NOC on GDP of Nepal
- To analyze impact on GDP of Nepal because of the monopoly market of petroleum industry.
- To analyze the ration of import and consumption of crude Oil and gas.
- To research the key theoretical dimension which are related to the Nepali economy that has been affected by the applied monopoly market of oil.
- Analyze the global trend of use of energy and tendencies of the oil market, and research how dependency has imposed scarcity of oil products due to the political relation with the open border country.

## **2.2 Methodology**

The fundamental purpose of this project is all about theoretical explanation of a monopoly market of a firm, its structure, why monopoly emerge and its impact on GDP of a country whether a monopoly market essential or opportunity of new entrance should conduct to balance market needs. To illustrate the theoretical framework into the practical knowledge about monopoly market, main focus will be on details of import, export, dependency, the GDP of Nepal, pricing strategy of the company and whether it is being able to meet the demand of consumer or not? Also there will be an examination of the current situation of the company, opportunities and threats that can generate huge difference in future business, the analysis of external environment on which company is operating, the impact of changes on environment and the result that can influences company in uncertain future.

Afterward, there will be some research based on the result of from the theoretical and practical analysis, how the existing monopoly in petroleum sector is contributing to Nepalese economy or it is better for economy of whole Nepal to introduce new entrant practice for other company into the market? Also there will be interpretation of different scientific research articles and journals in part of literature review. The recommendation for the future investment to bring novelty on energy sector.

Regression and Ratio analysis will be used as a tool to research about the current situation of import, consumption and the effect on GDP of Nepal and financial situation of NOC which help to understand how a country GDP can be affected by a certain market structure, what are the further step that can be introduce to meet the demand of a nation and to end the dependency culture.

## **2.3 Hypothesis**

H<sub>0</sub>: There is no significant impact of NOC's imports on GDP of Nepal

H<sub>1</sub>: There is a significant impact of NOC's imports on GDP of Nepal.

## **3.0 Literature review**

### **3.1 Economic Theory of Monopoly**

Léon Walras was the first economist to express the classic economists were virtually silent on monopoly theory. Walras claims that Antoine Augustin Cournot (1838 [1897]) and Jules Dupuit (1844 [1952] and 1849 [1952]) were founders of formal theory of monopoly. A monopolist is the firm that is the only producer and supplier of good that have no other close substitutes. Monopoly creates when an industry controlled all the market by a monopolistic firm. Monopoly arises when a monopoly firm create some barrier to enter in the market for new business which situation is known as 'barriers to entry'. There are four types of barriers i.e. Control of scarce of resources, Economies of scales, Legal barriers to entry and Network externalities. For the better understanding of theory of monopoly, it is better to understand the first the types of market structure that are existence into our market.

### **3.2 Perfect Competition**

hypothetical market where competition is at its greatest possible level.

The key characteristic of perfect competition is:

- A) In this kind of market, the information is perfect without any failure knowledge, all the knowledge is updated time to time. All the knowledge is freely available for all the concern parties which says that risk of failure is minimum and the limited role for all the entrepreneurs.
- B) The perfect knowledge to the producer and consumers help to make critical decisions about maximizing their self interest towards the business in terms maximum use of products and services and for consumer exceeding profit at high level.
- C) Open entrances for the new business, no such barriers in market.
- D) All factors that are in market are homogeneous such as labor.
- E) The price and market conditions are influenced by whole market not by a Single firm.

- F) In the perfect competition market its not necessary to interference of government due to the balance economic market.
- G) The main difference between two monopolist and perfectly competitive firms is that the demands for its product as perfectly elastic at the market price ( $MR = P$ ). In monopolist market, because they know even if they raise the price of products it does not lose its costumer ( $MR$  not equal to  $P$ )

### **3.2.1 Causes of Perfect Competition**

The price Taking behavior creates a Perfect competition market, when the demand of each output of product is perfectly elastics, producer has no choice of setting the price, they should take the price that has given by the market. There are mainly two condition, First, in the perfect competition market, there are huge number of sellers so the impact of single farms can not affect the decision of the market, so that the output of any one seller is negligibly small proportion. Secondly, the buyers have plenty of substitute products, rivals' sellers, so the market automatically will be perfect.

### **3.3 Imperfect Competition**

Imperfect competition arises when large number of sellers selling heterogeneous goods, this is opposite of the perfect competition market structure, this is the market scenario which lies in between perfect competition and pure monopoly. In this kind of imperfect competition market, the firms and industries has competitors but they do not face direct competition with each other due to the sell of heterogeneous goods and firms are the price taker.

#### **3.3.1 Causes of Imperfect Competition**

Imperfect Competition arise when perfect competitive market is fail to fulfill all the conditions, in every industry imperfect competition exist due to the different product and services available in the market on which price are not set by supply and demand ratio, lack of complete information about products and price to the consumers and the competition of the market shares.

### 3.4 Oligopoly

- An oligopoly is a market which is controlled by very few producers who has the power in the pricing and output policies of their products and services. An oligopoly market is kind of perfect competitive firms who is interdependence on their strategies. Due to the small numbers of seller and the dependency on the pricing policies it has rivalry market condition between cooperation and self interest. An oligopoly market has better quality of products than the monopoly market where as quality of the output will be lower than competitive market. The effect on the price strategy in the oligopoly firm will be is less than the monopoly price but greater than the competitive price (which equals marginal cost). Characteristics of an Oligopoly Market
  - Small number of seller selling the similar or substitute products. Products.
  - Interdependent on decision making.
  - True competition due to the small number of sellers, one small move of a rival can create huge competition so they need to be alert with its rivalry.
  - Being a kind of monopoly market on its decision making process Oligopoly market should consider its competitor's strategies of pricing and output but this firm can charge high price above marginal cost for small quantity of output.

#### 3.4.1 Causes of Oligopoly

The causes of oligopoly are as follow:

- A) Huge investment of capital creates the small number of entrances in the market so there will be very less firms.
- B) A few firm may control the requires resources of cost overall which give them an opportunity to set high price to operate profitably on which others can not survive.
- C) The high cost of Legal restrictions and patents
- D) Economics of scale (few farms can meet entire demands of publics while other firms could not meet the public standers)
- E) Some established entrepreneurs' whose costs are lower then inferior firms leads to Oligopoly.

- F) The merger strategy to build to combined two interdependent firms to have strong power of resources, Economic of scales and huge target market extension to established a secure place.
- G) One biggest difficulty in oligopoly industries is the requirement huge capital for the new entrance, the risk of failure due to the small changes by one small firm entrepreneur are depressed to invest in such types of industry.

### **3.5 Monopoly**

When a firm is the only one firm which is prevailing its own types of industry is called as monopoly industry. The only the seller of its goods and services and it has no other close substitutes, and the power of market is on its controlled, it is considered as a monopoly. Simpson (n.d.) argued that the economic concept of monopoly emphasizes on number and size of firms in an industry. When a large size of firm in small number of amount exist in the market the power of monopoly will be high. Furthermore, he clarifies that monopoly power can arise certainly out of the market simply by firms becoming the only firm in an industry. He concludes saying that “the higher the market shares the firm has the greater is monopoly power.” According to Haimson (2015) a competitive market is corresponding to a monopoly market because of various common denominator such as; economies of scale, technological advantage, which will lead to minimizing the cost and maximizing the profit. On other hand scholars also mention that both markets are different in case of product differentiation, number of competitors, barriers to entrance, supply curve and profit maximization.

#### **3.5.1 Characteristics of Monopoly**

- Barriers to entrance: The main reason for difficulties in market new entrance is lack of competition into the market. According to Hubbard et al. (2010), there are mainly four reasons for barriers to entrance such as government restrictions for new entrance into the market, lack of raw material which is necessary to produce goods and services, network externalities and natural monopoly. Barriers to entrance includes control over key resources. Natural barriers to entry can lead to natural monopolies. There are two reason in barriers to entrance

- A) Sometimes public interest loyalty and the brand image is best served by having a single seller in a market
- B) Legal properties take a form of,
  - Protection of intellectual properties
  - Government franchise – usually granted in cases of natural monopoly.
- Single seller: In monopoly Market, only an individual firm is producer and seller of goods and services into the market. Therefore, there is no competition at all into the market as new entrance into the market is very difficult because of available resources, high cost and restrictions from the government (Friedman and Friedman, 2002).
- Absence of identical goods and services,
- Price maker
- Profits maximum

### **3.5.2 Causes of Monopoly**

Generally, there are various reason of monopoly market, the main reason of monopoly market is the government regulation under the certain industry, the legal principle to enter into the market is very high in the monopoly market. Limited availability of the technology used to produce goods and services is another reason of monopoly, large amount of capital may not be affordable to invest, Therefore , a firm remain only the seller of goods and services into the market because of restriction in entrance or other firms can't compete with existing firm (Mankiw, 2008). It is likely possible for a firm to have monopoly in market when there us no other competitors to crucial supply to market is owned by a single firm, when government allows exclusive authority to a single firm for production and sell of certain goods or services and when a firm lead to economies of scale than enormous number of producer (Mankiw, 2008). Further, Friedman and Friedman (2002) believe that monopoly remain in the market when a particular individual or firm hold full control over the determination of supply and cost of a specific goods and service considerably the term on which other individuals shall have to access to it. Moreover, monopoly is not healthy market policies people has to spend more for less quality products. Monopoly creates two type of problems into our society; firstly, the presence of monopoly into the market means there will be limited alternatives or no alternatives available

to the individuals. Secondly, the existences of monopoly will lead to greater social responsibility to a firm because there will not be any other competitors or participants into the market to share its social burden and to fulfill the demand. The economists Smith (2001), refers that a monopoly permitted either to an individual or a firm which has the same effect as a secret in trade or manufactures. When there are no other close substitute products in the market, monopolists take the advantages to sell the goods or services above their marginal cost. compare to the price in competitive market for the similar product is lower because of availability of other substitute products. He also added, in some cases monopolists try to keep the market frequently under stocked by not fulfilling the demand of individuals to raise the price of products in future.

### **3.5.3 The Effects of Monopoly**

The effects of monopoly can be positive or negative; the government intervention also determines the effects of monopoly within the market. The key problem associated with monopoly market is that producer will be the price-taker they decide the price as per their concern no other firm will be able to interface on their decision. For monopolist industry, there is nothing to worries about other firms. Where as in a competitive market, the single firm cannot directly influence the price i.e. if the price taking-competitive firm tries to raise the price, it will simply lose the sales to the other firms in the market. When a single firm holds the power to raise the price at higher level of competitive price which is known as market power. The crucial goals of monopoly market are to earn highest possible profit at lower marginal cost and hold the power of market leader.

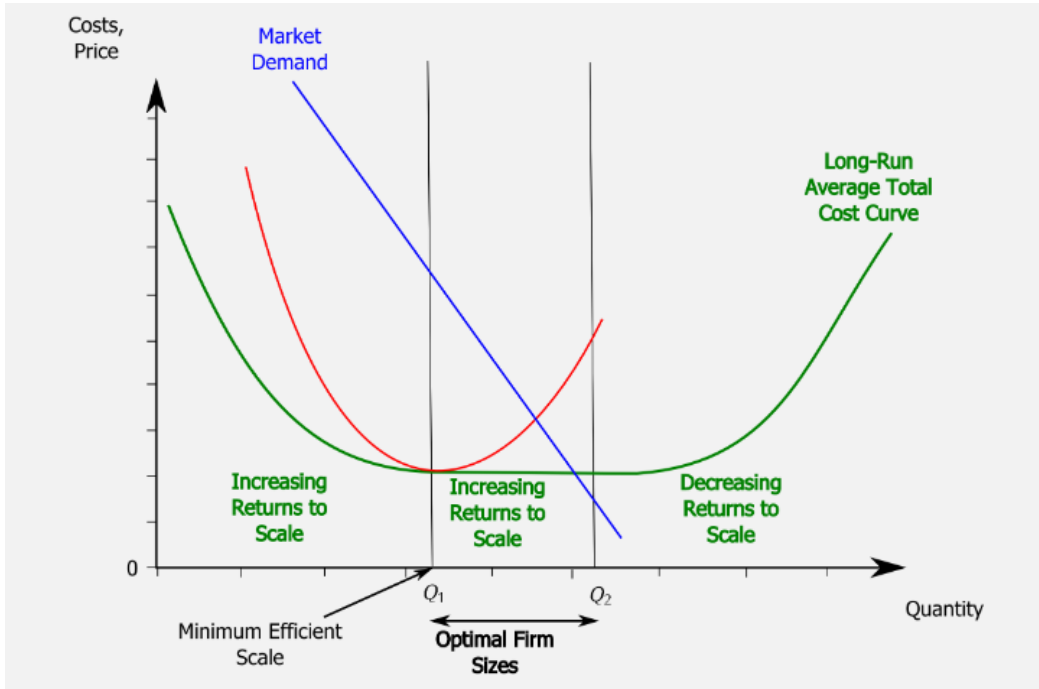
### **3.6 Natural Monopoly**

A natural monopoly will be emerged when there is no direct government involvement. if the firms LRATC curve is declines over the range of outputs likely demanded for the entire outputs. In this situation, as a single firm can easily meet the market demand within the lower cost then other two or three firms. When a large amount of fixed cost associate with the production arise then the natural monopoly tend to emerge. The most common examples of natural monopolies around the globe are local utilities such as water, gas, electricity, local cable and local land-lines



etc. Natural monopoly occurs when a firm has the capacity of the production of economic of scales.

Figure 1. The natural monopoly

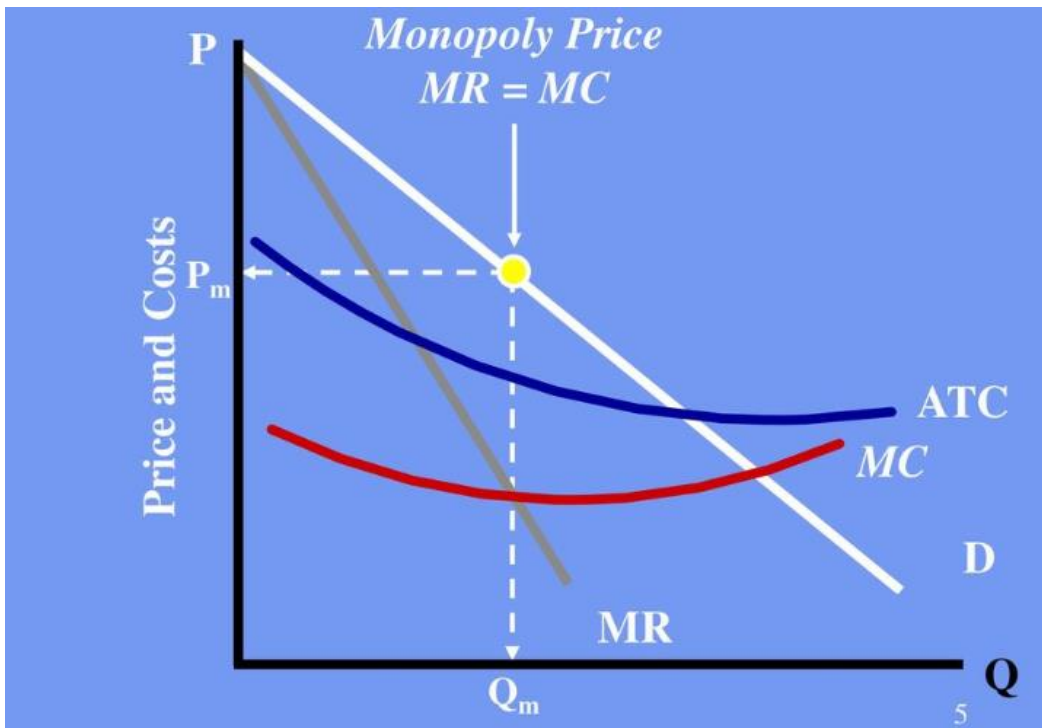


(Source: Posner, R.A., 1999)

### 3.7 Regulated Monopoly

Although ownership of the regulated firm remains in public hands but the pricing and production decisions are monitored by the government. The government of monopoly market tend to regulate policies regarding price and quality of product through various ways such as; price capping, merger, investigation into unfair practices to prevent excess prices, quality of product and services and promote competition.

Figure 2: Regulated Monopoly



(Source: Spence, A.M., 1975)

### 3.8 Private Monopoly

Private monopoly emerges when an intellectual property is not easily available in the market which is the major aspects in private monopoly. It encompasses artistic, literary, scientific invention and musical work, in this aspect government strikes a compromise

- This allows the creators of intellectual properties to enjoy economical profit for limited periods of time.

- Once given times is up, other sellers will be allowed to entre the market and it is expected that the price will comes down later of the same product.

Here are some importance aspects of legal protection for intellectual properties,

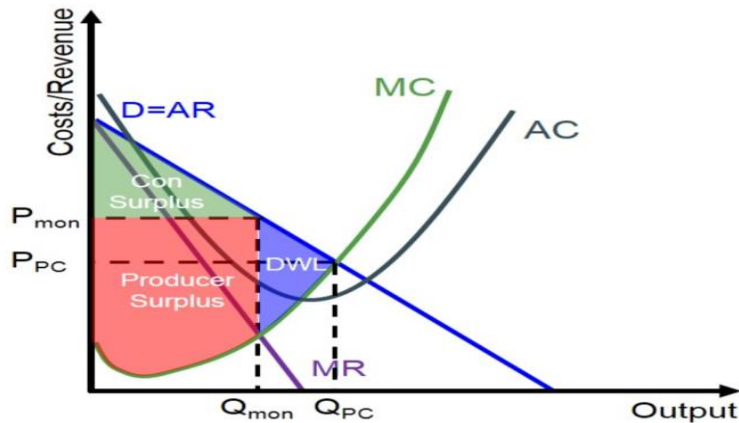
- Patents: – it's a regulation which allows an inventor to take benefits of monopoly market for certain period of time. (Generally for 16- 20 years).

- Copyright: (Generally lifetimes + 70 years) – gives an opportunity to the creator a literary or artistic works sole rights to earn maximum profits from that work.

If monopolist firm want to sell its copy rights and patent that can be possible but that doesn't change the status of monopoly market due to the lack of competitor.

### 3.9 Social Cost of Monopoly and Regulation

Figure 3: social Cost of monopoly & regulation



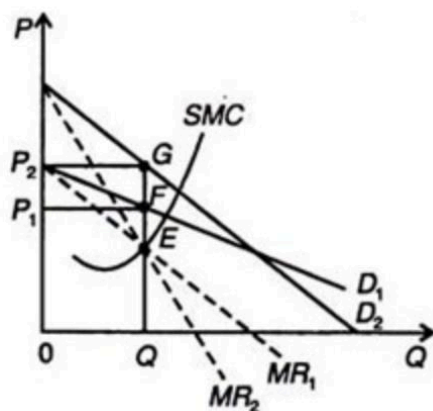
(Source: Posner, R.A., 1975)

### 3.10 Supply curve in monopoly market

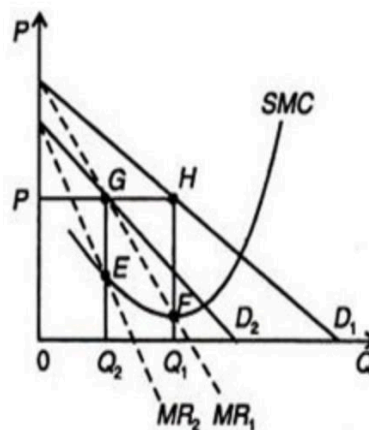
Generally, a supply curve represents the positive relationship between price and quantity of supply, in a competitive market when a firm produce certain amount of product in a certain price that help to analysis the amount of production and the price for future production strategy. Monopoly market deals only with price and production, a firm can produce same amount of product in different prices or production can be less or high on the same price thus there is not any supply curve in monopoly graph. when price of a product or services increased the supply will be increase automatically, the reason behind this is the competitive firm demand curve is horizontal when the demand curve shifts up and down the price and marginal cost will be equal. On this situation marginal cost curve work as supply curve.

Figure 4: Supply Curve in Monopoly Market

A)



B)



(Source: Tynan, N., 2007)

The figure A above shows the quantity  $Q$  can be sold at price  $P_1$  if demand is  $D_1$  or quantity  $Q$  can be sold at price  $P_2$  if demand curve shifts to  $D_2$  there is not any relationship in price and quantity. At the same time figure B shows at quantity  $Q_1$  can be sold the demand  $D_1$  is at given price or quantity  $Q_2$  can be sold if market demand  $D_2$  at same price.

#### 4 .0 Monopoly market

A market where is no competition at all of its unique product, a single firm has full power of being distributor/ seller is called monopoly market. Monopoly is a market structure where a firm sells a specific product throughout the market by itself. There are not any other substitute competitors. On the monopoly market one single company has control over of its market structure to supply of its product, the particular firm itself is an industry for that market. Monopoly market has zero elasticity of demand of the product. Since there is not any significant substitute competitor in the market a monopoly firm can charge any price that the firm wants. The price and the quality of product are influences by company's own strategy, there wont be any intervention of government or any other industries. Hence monopolistic company is the price maker not the price taker like in perfect completeive market. Since the market is handle by

monopoly firm it can gain remarkable profit, but for a company itself is impossible to reach out all the demand of its huge market. Thus there will be existence of demand at all the time. The gap between demand and supply always remain on monopoly market which means monopolistic company will never satisfy its customer.

#### **4.1 Why monopoly arise**

Monopoly arise when there is only one firm who is distributing a specific product or service in the market and lack of any other substitute product that create a firm to be a market itself. The government barriers to entry is the main fundamental reason of introducing a monopoly market. The huge capacity of the production and the allocation of resources lead to lower the cost of production and distribution to achieve executive right to be a sole seller by government.

#### **4.2 Government created monopoly**

The fundamental rationale of monopoly market is government practice on barriers to new entrances. Government strict rules for the substitute product to enter to the market creates the monopoly market for a firm. The main purpose of creating monopoly market by government is to keep the price down of some essential product to benefits consumers and maintain the quality of product, Though the government gives full power to a specific company to supply the product to the market.

#### **4.3 Impact on Production and Pricing**

Monopoly firm itself is a market, production and pricing strategy will be relay on the firm itself, they can have fixed the price as per their desire without any calculation due to the its solo power in the market. In any monopoly market the price is basically high, the crucial reason of monopoly market is to set high price to gain maximum profit.

The quality of product controlled by monopoly firm so consumer have pay high price to low cost product, basically the monopoly market applies on essential consumer product so consumer have to pay the high price for low grade product due to the lack substitute in the market. To reach the market demand company tend to produce mass production at very low cost that creates economics of scale in market.

#### **4.4 Distribution Strategy**

Distribution Strategy of a monopoly market relay on firms own strategy. The government own monopoly firm has control over entire strategies of firm by government where as a company its has monopoly market ruled by company it self accordance to its behaviors. In terms of petroleum sectors the distribution strategy generally implies by the market size and its demand, the storage capacity and total cost plays vital role to set the price of the petroleum product. If we look at global trend of monopoly market specially at oil industry most of the counties gives authority to other private companies to reach out all the demand of whole nation.

#### **4.5 History of Crude Oil**

Before the oil the worlds energy resources were wood for the purpose of cooking. The History of oil innovation says Baku is the innovator of oil in the world in 1837, which was the first oil refinery was constructed to Distil into the Paraffin which used for lamp and heating oil. After few years gap the oil innovation was followed by Bobrka, Poland in 1854, Bucharest, Romania in 1857, Ontario, Canada in 1858 and Pennsylvania, USA in 1859. USA was the fastest in the commercialize oil in the market in those years in a very short period of time, it was already producing half of the worlds oil and the price increased so quickly in the market from \$0.48 to \$.59 in 1861 to 1865. A liquid fuel which is located underground can be carryout through drilling is called crude oil. Crude oil is the result of the combination of between 50% to 97% of hydrocarbons, 6% to 10% of nitrogen, oxygen, sulfur and a tiny amount of Cooper, nickel, vanadium and iron. Crude oil is mainly used for petroleum product and transportation, one of the most consumed commodity in the world is Crude Oil. Crude Oil is also known as Fossil fuel which was invented 400 millions years back (The balance,2019).

The first commercial oil was introduced in the market by John D. Rockefeller through the company Standard Oil Co. in Ohio in 1870. The company became dominant player in very short time and started to drive the price at low and began to buy high amount to operate competitively. Soon later standard Oil expanded its operation across the country and started to export internationally, the dramatic success of Standard oil leads it to controlled almost 90% of refined oil market in US by 1890. The high demand of oil market and new entrances of oil companies

tend to create competitive market on which brought Seven Sister in the oil industry through merger and expansion of some companies. The Seven Sisters is the foundation of international companies (IOCs) who came together to cover the 85% of world oil reserve at early 1970, these companies are BP, Chevron, Exxon, Gulf Oil, Mobil, Royal Dutch/Shell and Texaco. In 1960 officials from Kuwait, Iran, Saudi Arabia, Venezuela came together and meet at Bangladesh to discuss about to create a strategy to handle the price at lower and reduce the competition in the national and international market and agreed to established a novel organization called organization of petroleum exporting countries (OPEC).

The current oil market, the influences of the OPECs has been decline due to the technologies and novel advancements ease the production of oil through hydraulic fracturing in US therefore the price of oil fall down. In the recent years, price is mostly depending on US shale oil Production to figure out the shape of demand of Asian Market.

#### **4.6 Use Crude Oil**

One of the core petroleum product of human life is Crude oil its been used for varies purpose such as, to operate transportation system and to produce heating and electricity as Fuel, gasoline, jet oil and diesel. A huge market governing product is crude oil, which can use to produce plastic bags, pipes, carbon fiber for aircraft. The world most consumed crude oil an essential part of human life. Beside as a fuel for vehicle it can be used for producing almost thing that contain plastic such as, computer, cameras, speakers, routers, MP3 players and many more. To produce clothing it can be use for non flaming and colorful clothes, Rayon, Nylon, Polyester and artificial furs there most be very less action where we don't use oil therefore The price of oil can change the whole economy due to its impertinence in every thing thus Oil is most important commodity of the word.

#### **4.7 Types of crude oil**

There are four major types of crude oil which are listed below.

1. Very light oil – Jet fuel, Gasoline, Kerosene, Light virgin Naphtha, Heavy Virgin Naphtha, Petroleum Ether, Petroleum Spirit and petroleum Naphtha are the very light type of oil. These kind of oil are highly volatile and volatilize in few days which minimize the toxicity level very quickly.

2. Light oil- Grade one and grade two fuel oils, Diesel Fuel Domestic Fuels, light crude Marine Gas oils are the types of light oil these can be moderately volatile and minimum evaporate and moderate toxic.

3. Medium oil- This type of crude oil is very popular in the market. Less volatility makes for filthy than light oil and hard to clean up and increase toxicity level beneficial for environmental cleanup.

4. Heavy fuel oil- Heaviest grade 3,4,5 and 6 fuel oil along with Heavy Fuels. Most sticky and less volatile and most toxic is the main feature of this crude oil.

#### **4.8 International market of crude oil**

One of the most expensive commodity in the world is crude oil. Although crude oil is produced by very small companies comparing with other commodity producer in the world. Crude oil is produced mainly in very unconnected areas for the consumption and trade. Trade of crude oil is very tough to transport to the various locations. Almost 80% of crude oil transactions internationally happen through waterway in supertankers, (family, n.d.). Most of the oil traders are very efficient to redirect transactions of oil to the market where the price is very expensive than less expensive markets.

Oil and coal are one of the global commodities which are consigned worldwide therefore the supply and demand control the value of these energy all over the world. Looking at the scenario the price of energy is high globally specially in Asian developing countries. Most of the Asian countries are rapidly growing thus the demand of energy on the countries are very high, due to the high demand and high price of oil and gas in Asian countries reflect the price of in other

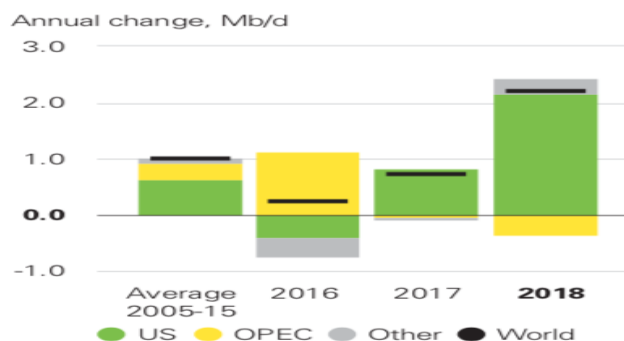


countries at high. Unstable political environment in oil producing nations also reflect the price at high level.

Year 2018 was turbulence year for global oil market, at the starting price was slightly increasing trends, in the October price reached to the high pick level which was extremely high(\$85bbl), at the end of the year price decrease to \$50bbl. The growth of demand, supply and the price Consumption of primary energy growth rate was 2.9% pervious year, which is almost double compare to past 10 years of average of 1.5% per year. The annual average oil price increase to \$71.31 per barrel from \$54.19 per barrel in 2017. The consumption of oil increase by more than average which is 1.4 million barrels per day or 1.5%. Higher consumer of oil and gas in the world are China and USA who consume oil 680,000b/d and 500,000b/d respectively, these numbers indicate China and USA are the biggest contributors of the growth of oil industry and economy (Eckbo, P.L., 1976).

US is the largest oil producer, Saudi Arabia held second position on largest oil producing countries. The production of oil globally raised by 2.2 million b/d. As demand is increasing the discoveries of oil are increasing at some point in the world. Compare to last year oil discoveries and this year has been fallen by 2 billion barrels which was 10 and 8 billion barrels respectively (Eckbo, P.L., 1976). Worlds oil market reflects by world economy. Price and supply of oil determines by the growth or declines economic condition of world. Price of any commodities are reflects by the supply and demand of product.

**Figure: 5** Global oil production changes annually

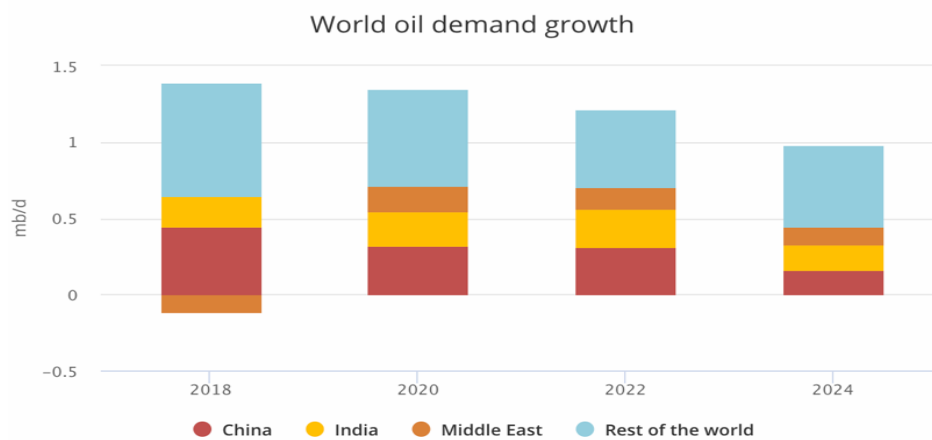


(Sources: BP statistical 2019)

The production of oil by OPEC, Venezuela and Iran decrease by 0.3 mb/d, 0.6 mb/d and 0.3 mb/d respectively in 2018 while Saudi Arabia made apparent increase by 0.4 mb/d. Increase production trend of US started at the middle of the year 2018 when the extension of OPEC agreement of 2016 to continue to cut the production. The outcomes of production of OPEC + group increased by 900 kb/d although Iranian and Venezuelan production slow down by further 1 Mb/d. The issues to fixed oil market is the existence of other inconvenience development that hadn't anticipate, production of Libya and Nigeria increased beyond the expectation 500 kb/d between June and November of 2017. As a result, 2018 was the highest production year for US in its trend, (BP statistical 2019).

#### 4.9 Global oil Demand, Annual changes

Figure: 6 Global Oil Demand, Annual Changes

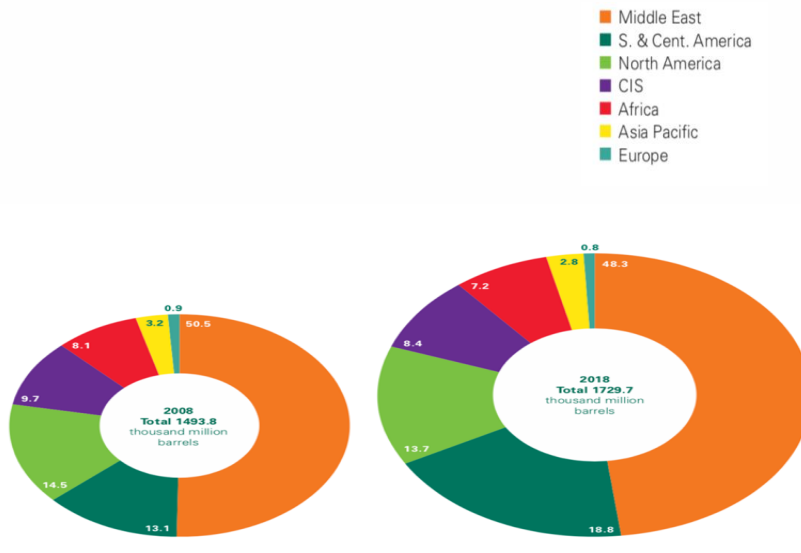


(Sources: BP statistical 2019)

The graph above shows the annual global oil demand growth. The global oil demand growth continues on steady trend, China's demand of oil slows down when the demand of India remains high, the forecast shows annual demand of India will be equivalent with China by 2024. Growth on demand of rest of the world influences by petrochemical projects, specially in US market due to home production of initial raw material at cheaper cost which is beneficial to US. From the analysis of Oil exploration and development projects all over the world more than 49 million barrels per day additional production reach by 2020 its more than half the current production capacity 93 mbd

#### 4.10 Distribution of Proved Reserved Oil in 2008 and 2018

Figure: 7 Distribution of proved reserved oil years



Source: BP statistical 2019

The pie chart above represents the reserved oil in the world, crude oil is the main source of energy around world. Middle East has highest potential of oil supply due to huge capacity of oil reserve 48.3%, south and central America is second largest country in oil reserve and supply 18.8%. compare to 2008 and 2018 data the capacity of oil reserve of middle east has been decline by 2.2% while south and central and America volume has been increase by 5.7%.

Oil reserved data from 2018, 100 million barrel per day has been used in the world, in 2019 the number is forecasted to reach 100.8 million. Oil reserve indicated the specific location where the oil preserved and distributed to the world with the technological at reasonable cost at the current market price. Venezuela hold the highest capacity of oil reserve in the world with 300.9 barrels, Saudi Arabia is the second capable country for oil reserve with 266.5 billion barrel. Although having huge capacity of oil reserve and supply Venezuela's economy is very weak and living standard of people is very low, population wise Venezuela and Saudi Arabia are quite similar but the economy of Saudi Arabia is twice large.

#### **4.11 Indian Crude Oil and Gas**

Looking at the current scenario Indian economy is one of the rapidly growing economy of the world. Due to the steady growth of economy has created huge demand of oil and gas. India has invested huge amount of resources to fulfill the drastic increasing demand of energy. The growth rate of GDP of India 7.3% compare to 2015-16 and 2017-2018 which is highest GDP growth rate among the economic of globe, (United nation data 2019). Consumption of energy at domestic level in India has triggered to the highest level.

India is largest country of south Asia and seventh largest country of the word large country rank. The population of India is 1,369,788,42(September 2019), (United nation data 2019). Population is the major influencer of any business industry of a nation and low labor cost is another influencing factor of multinational companies to operate their business in India. India is becoming a business hub of multinational companies. One of the business sector that has huge influences in the India's GDP is petroleum sector. Demand of petroleum products are increasing over the times. To cover the huge inhabitances demand India was facing difficulties. Indian government has introduced varies way to increase novelty on research & production of oil and gas through out the country which include Inter alia Hydrocarbon Exploration and licensing policy(HELP), Open Acreage licensing policy (OALP), introduced small field policy, new gas pricing strategy for tough areas, Marketing freedom for those tough area, National seismic programmed for rural area, National Data repository and Policy for extension of production sharing contracts(PSCs). Consumption rate are influences by the population of a country. India is in the list of 3<sup>rd</sup> largest energy consumers, 2<sup>nd</sup> largest energy refiner and 4<sup>th</sup> largest importer of refine oil and gas in the world. The statistic data shows the consumption of petroleum product and natural gas in India are 204.92MMT and 58.64BCM respectively, (United nation data 2019).

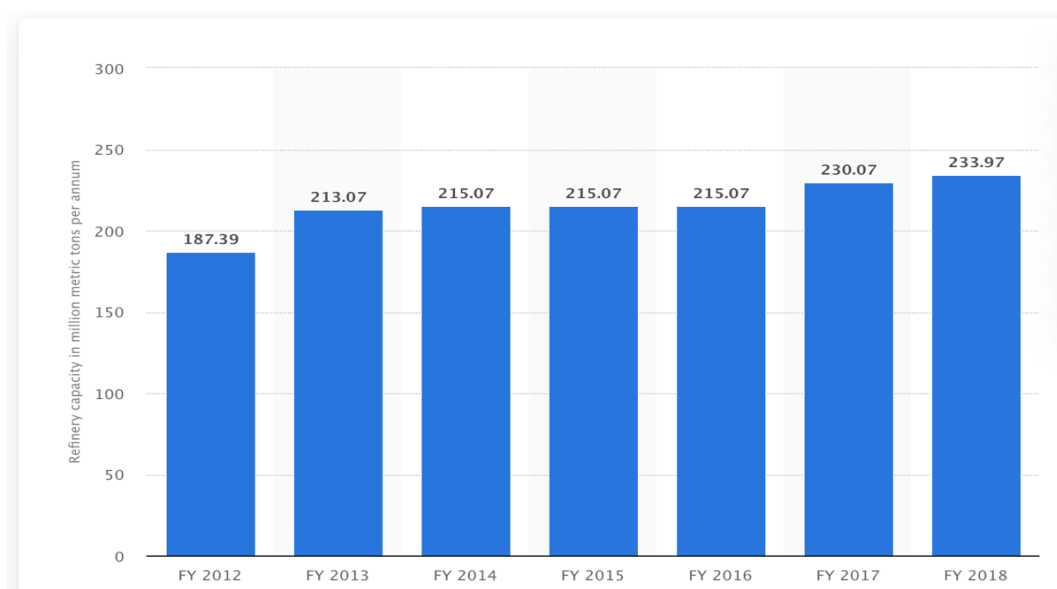
#### **4.12 Refining capacity of India**

India stands on one of the largest county in south Asia on energy transaction (production, imports, consumption). Oil market in India is increasing highly each year the population is the major contributor of the increasing demand and due to the low labor cost India is becoming business hub for international market all those facts are the reason behind the increasing demand of oil in Indian market. Hundreds of public and private oil company are operating in Indian

market to distribute fine oil to all the oil company India has nine refineries. Among those nine refineries Indian oil corporation holds the highest shares 28%(69.2MMPTA) of total refining capacity (sadhvani, 2018).

The graph below represents the increasing amount of oil refinery capacity of India since 2012 to 2018. Year 2014 to 2016 has constant volume of refining, since 2017 the the volume has been increasing and reached to the 233.97 million metric tones in 2018. The total annum refinery volume of crude oil is about 235 million metric tones per year.

**Figure: 8** Refining capacity of India



(Source: Sadhwani 2018)

#### **4.13 Consumption of petroleum product**

Research shows that India has proved itself as a strongest oil and gas refiner country in the world. The capacity of refining oil and gas stand at 257.2\*MMPTA at present 2017-2018 which is 4.46% higher than 2016-17, (sadhvani, 2018) In the year 2017-18 the total consumption of petroleum product was increased by 5.3% compare to 2016-17 consumption rate which was 204.92 and 194.60 respectively (sadhvani, 2018). Indian oil corporation(IOC), Bharat Petroleum corporation and Reliance industries are the top three petroleum refiner and distributor

of Indian market which cover 66.7% of total refining production from FY 2018-2019, (sadhvani, 2018). From the current scenario India has 16,788KM natural gas pipeline is in operation and 14,239Km are under the development stage. The production and the distribution of petroleum product of India has reaches steady increasing level over the past years. Compare to 2015 to 2016 and 2017 to 2018 the production of petroleum product in India has increase by 30.4 MMT (231.9MMT to 262.3MMT), (sadhvani, 2018).

#### 4.14 Market Price of products of IOC

The table below represent the wholesale price of petroleum product of India. At the same time government of India has declare consumer and producer price which are variable time to time.

Table:1 Market price of IOC products  
(Price per liter in USD except LPG, NRS 1= \$0.0094)

Items	Weights %	2015-16	2016-17	2017-18
Crude petroleum & Natural Gas	2.4096	1.08	1.03	1.03
LPG	0.64481	1.08	1.01	1.16
Petrol	1.60470	1.07	1.02	1.13
Naphtha	0.86678	0.94	0.94	1.05
Kerosene	0.18686	1.24	1.33	1.66
AviationTurbine Fuel	0.31991	0.98	0.98	1.11
High speed diesel Oil	3.09548	1.03	1.05	1.19
Furanc Oil	0.66576	0.76	0.82	0.97
Lube Oil	0.29199	1.70	1.64	1.60
Bitumen	0.22677	1.08	0.96	1.00
Petroleum coke	0.04663	1.10	1.31	1.65
Total petroleum Products	7.94968	1.04	1.03	1.16
Crude petroleum	1.94537	0.86	0.90	0.91
Natural Gas	0.46423	2.01	1.58	1.50
All Commodities	100	1.54	1.57	1.62

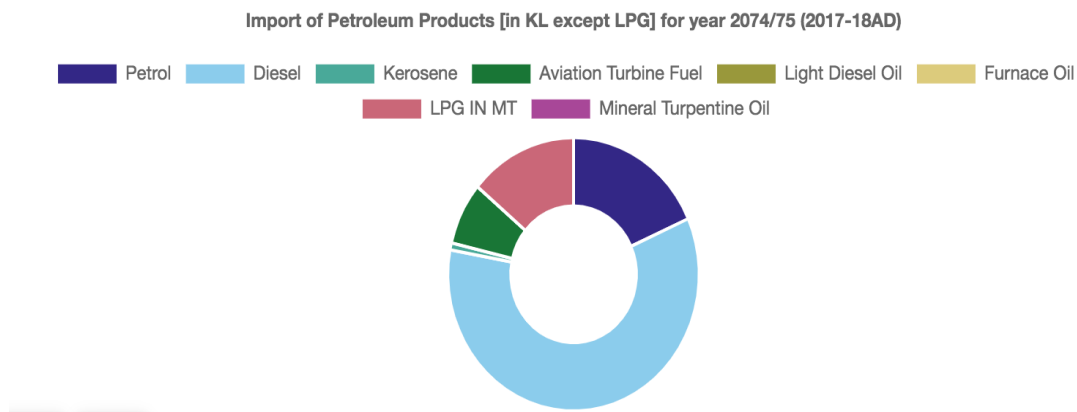
(Source: Sadhwani 2018)

#### 4.15 Import of Crude oil

The amount of import petroleum product decrease by 1.09 MMT in the year 2016- 2017 and 2017 – 2018 shows which is 36.29 and 35.89 MMT respectively (Sadhwani, 2018). The figure indicates India has less import and invest its resources to produce oil and gas within the country. The growth of exporting petroleum product compare to year 2016-17 (65.51MMT) to 2017 – 18(66.76MMT) was by 1.90MMT, which indicate India is doing well on exporting petroleum product. (Sadhwani, 2018)To attract foreign direct investment in the petroleum sector Indian government has been liberalize the policy for new entrance. It has allowed 49% of foreign equity under automatic route instead of going through foreign investment promotion board. India has increase the budget on research and development of energy compare to 2017-18 and 2018-2019 by 3.8% which indicate India is position to supply the desirable amount of demand, (sadhvani, 2018).

The table and pie chart below represent the quantity of petroleum product imported by NOC from IOC every fiscal year since 2008/2009 to 2017/2018. The increasing demand and the future market of petroleum product of Nepal seems very high level. Government of Nepal should have allowed some other private or international company to enter to market to fulfill the demand or increase its capacity of imports and storage facility to reach the demand.

Figure: 9 Total Import of Crude Oil 2016/17



(sources: NOC, 2019)

Table:2 Import of Crude Oil (In KL except LPG)

Fiscal Year	Petrol	Diesel	Kerosene	Aviation Turbine Fuel	Light Diesel	Furnace	LPG IN MT	Mineral Turpentine
2074/75 (2017-18AD)	488675.0	1588869.0	22337.0	197220.0	0.0	0.0	370560.0	0.0
2073/74(2016-17AD)	407270.0	1319873.0	19607.0	164836.0	0.0	36.0	312928.0	0.0
2072/73(2015-16AD)	240386.0	785685.0	14194.0	83819.0	0.0	77.0	214194.0	0.0
2071/72 (2014-15AD)	287473.0	921714.0	19653.0	141404.0	0.0	883.0	258299.0	0.0
2070/71 (2013-14AD)	253381.0	808567.0	18409.0	125678.0	0.0	2172.0	232660.0	0.0
2069/2070 (2012/2013 AD)	223087.0	721203.0	24065.0	115896.0	260.0	2456.0	207038.0	0.0
2068/069(2011/2012 AD)	202467.0	653560.0	41609.0	109904.0	0.0	440.0	181411.0	0.0
2067/068 (2010/2011 AD )	188082.0	652764.0	43399.0	99990.0	228.0	1434.0	159286.0	0.0
2066/067 (2009/2010 AD)	162902.0	608065.0	52714.0	82824.0	240.0	2612.0	141171.0	0.0
2065/066 (2008/2009 AD)	128372.0	489219.0	77799.0	74306.0	380.0	2188.0	115813.0	0.0

(source: NOC, 2019)

#### 4.16 Distribution strategy of NOC

NOC is solo decision maker of its distribution strategy. Due to the government created monopoly into the petroleum market NOC has its control over quality measurement and supply of the products through own distribution channels across the country.

The map below represents the distribution strategy of Nepal oil corporation. To fulfill the increasing demand of petroleum products Nepal oil corporation has enhanced the strategy of distribution channel by opening new outlets in big cities with maximum amount of storage capacity. Under the distribution strategy Nepal Oil Corporation has open the storage hub in the different cities of Nepal to import petroleum product from closet Indian Petroleum Depots to minimize the cost of transportation and distribute to the market at minimum price.

#### 4.17 Storage capacity

The table below represent the storage capacity of Nepal oil corporations on its various storage location. Amlekhgunj holds highest storage capacity due to the nearest location from border



and the ease facility of transportation. Kathmandu is second highest hub of storage capacity due to the population and the business hub of Nepal.

Lack of electric and solar system Nepal imports maximum amount of petroleum product from India. The table below shows that Nepal import maximum amount of Diesel which is 42385 MMT, this indicates as per demand NOC has storage facility of its all products. The storage capacity of petrol, Kerosene and Jet A1 are 5175L, 15619 cylinder, 8495L and 71674L respectively.

Nepal oil corporation has managed to store maximum volume of its product to supply in time and affordable cost. From current scenario Nepal Oil corporation hold the total amount of 71674 kililiters storage capacity, this amount is sufficient for 20 days. To enhance the storage capacity Nepal oil corporation is working on expansion of storage capacity to reach the demand at least for 30 days.

Table:3 Storage Capacity NOC (Unites in KL0)

Location	Petrol	Diesel	Kerosene	Jet A1	Total
Kathmandu	1870	8400	4960	7710	22940
Amlekhgunj	1930	15700	5600	0	23230
Biratnagar	560	8910	2170	280	11920
Janakpur	30	140	70	0	240
Bhairawa	140	3055	394	56	3645
Pokhara	350	2280	760	64	3454
Nepalgunj	210	2280	760	280	3530
Surkhet	0	0	45	60	105
Dhangadi	85	1590	830	45	2550
Dipayal	0	30	30	0	60
<b>Total</b>	<b>5175</b>	<b>42385</b>	<b>15619</b>	<b>8495</b>	<b>71674</b>

(Sources: NOC 2019)

#### 4.18 Sales of petroleum product (2008-9-2017-18)

Nepal is developing country thus thousands of projects and business are establishing every next day, therefore the demand of oil and gas obviously rapidly grown. Petroleum product are basic needs of human life, as population and innovation of new technology innovate demand of petroleum product will be increase. To meet rapidly growing demand import and sales has to be at same level.

The graph below represents the volume of sales of petroleum products in Nepali market per year basic. The rapidly increasing Trend of sales of petrol in 9 year's period has shows the almost 5 million of liter has been increase in sales. Sales of diesel increased by 11million liter in nine year's time. Petrol and diesel are the most consumed petroleum commodity of Nepalese market. Sales of these two product are highest than other products. Sales of Kerosene has decrease by 47,778 liters in those 9 year's time. The innovation of gas stoves and electricity heater are the reason of decrease amount of kerosene.

In general, the innovation of technology, increasing population and industry revaluation tend to increase sales of petroleum products.

Table:4 Sales of Petroleum Product

Fiscal Year	Petrol	Diesel	Kerosene	Aviation Turbine Fuel	Light Diesel	Furnace	LPG IN MT	Mineral Turpentine
2074/75 (2017-18AD)	484781.0	1597551.0	22311.0	194358.0	0.0	0.0	370560.0	0.0
2073/74(2016-17AD)	402278.0	1297066.0	19459.0	164299.0	0.0	36.0	312928.0	0.0
2072/73(2015-16AD)	238578.0	782451.0	14858.0	80119.0	0.0	77.0	214194.0	0.0
2071/72 (2014-15AD)	283567.0	901393.0	18628.0	139404.0	-	883.0	258299.0	0.0
2070/71 (2013-14AD)	251451.0	811100.0	19064.0	123527.0	0.0	2172.0	232660.0	0.0
2069/2070 (2012/2013 AD)	221676.0	716747.0	24721.0	115786.0	258.0	2450.0	207038.0	0.0
2068/069(2011/2012 AD)	199749.0	648513.0	41808.0	109808.0	0.0	435.0	181411.0	0.0
2067/068 (2010/2011 AD )	187641.0	655128.0	49495.0	101314.0	227.0	1415.0	159286.0	0.0
2066/067 (2009/2010 AD)	162275.0	612505.0	55788.0	82631.0	238.0	2589.0	141171.0	0.0
2065/066 (2008/2009 AD)	124169.0	446468.0	70089.0	68935.0	377.0	2171.0	115813.0	0.0

(source: NOC, 2019)

#### **4.19 Price strategy.**

Nepal oil corporation is governed by government of Nepal thus its all the price strategy is determined by ministry of Nepal. Government of Nepal decide the price as per rates they paid to Indian oil corporation and tariff they paid to boarder. In every 15 days' price will be reviews according to the fluctuation on price on international market of oil and gas, (Nepal oil corporation limited , 2019) . Nepal oil corporation doesn't have any authority of its pricing strategy. Therefore, what ministry of Nepal fixed the price in general NOC has to follow it however in some cases they have right to changes the price in terms of high cost on transportation and other political issues within the India and Nepal. Petroleum pricing are quite sensitive in Nepali market due to the unstable political condition. No matter which party on the board they increase the price. People has to face the hike price without any awareness.

#### **4.20 Retail price of petroleum product**

The table below represent the retail price of oil and gas in Nepal at current year. The price fluctuation within the nine months' period of time since January to September 2019. As per government regulation the price of petroleum product reviewed in every 15 days. The price of LP gas was constant at \$ 12.1894 per liter from January to august, on September price was dropped down by \$0.2177. The price of AFT(DP) is constant through the time which was \$0.82278. Fuel AFT(DF) price was decrease by \$0.2177 in February and stay constant at \$ 9.14205 until the September. Price of coarsens was slightly fluctuate through the 9 month's period the highest price was on end of the May and beginning of June which was \$ 0.85761, looking at the trend of fluctuation of price on Petrol and Diesel was not to much surprisingly but beginning of the September was the lowest price of petrol and diesel, (Nepal oil corporation limited , 2019).

In general, increasing and decreasing trends of price of all petroleum product depends on the price of Indian oil corporation and the political environment of Nepal. In some cases, festive time is also the time of price hike of most of the commodities in Nepal market.

Table: 5 Retail Price of NOC products

(Price are in NRS per liter and per cylinder)

Effective Date	Effective Time	Petrol	Diesel	Kerosene	LPG	ATF (DP)	ATF (DF)
2019.09.10 (2076.05.24)	12:00 hrs	107.00	95.00	95.00	1375	94.50	1050.00
2019.08.07 (2076.04.22)	24:00 hrs	109.00	97.00	97.00	1400	94.50	1050.00
2019.06.17 (2076.03.02)	24:00 hrs	108.00	96.50	96.50	1400	94.50	1050.00
2019.06.06 (2076.2.23)	24:00 hrs	110.00	98.50	98.50	1400	94.50	1050.00
2019.05.30 (2076.2.16)	24:00 hrs	111.00	98.50	98.50	1400	94.50	1050.00
2019.05.18 (2076.2.04)	24:00 hrs	109.50	97	97	1400	94.50	1050.00
2019.05.03 (2076.1.20)	24:00 hrs	111.50	98.00	98.00	1400	94.50	1050.00
2019.04.24 (2076.1.11)	24:00 hrs	110.00	97.00	97.00	1400	94.50	1050.00
2019.02.02 (2075.10.19)	24:00 hrs	110.00	97.00	97.00	1400	94.50	1125.00
2019.01.10 (2075.9.26)	24:00 hrs	108.00	95.00	95.00	1400	94.50	1125.00

(Source: NOC , 2019)

Table:6 Retail Price of NOC Product (Price are in USD per liter)

Effective dates	Petrol	Diesel	Kerosene	LPG	ATF(DP)	ATF(DF)
2019.09.10	0.93162	0.82714	0.82714	11.9717	0.82278	9.14205
2019.08.07	0.94903	0.84455	0.84455	12.1894	0.82278	9.14205
2019.06.17	0.94033	0.84020	0.84020	12.1894	0.82278	9.14205
2019.06.06	0.95774	0.85761	0.85761	12.1894	0.82278	9.14205
2019.05.30	0.96645	0.85761	0.85761	12.1894	0.82278	9.14205
2019.05.18	0.94903	0.84455	0.84455	12.1894	0.82278	9.14205
2019.05.03	0.97080	0.85326	0.85326	12.1894	0.82278	9.14205
2019.04.24	0.95774	0.84455	0.84455	12.1894	0.82278	9.14205
2019.02.02	0.95774	0.84455	0.84455	12.1894	0.82278	9.79509
2019.01.10	0.94033	0.82714	0.82714	12.1894	0.82278	9.79509

(Converting Rate – NRS 1= \$0.0094)

( Source: NOC,2019)

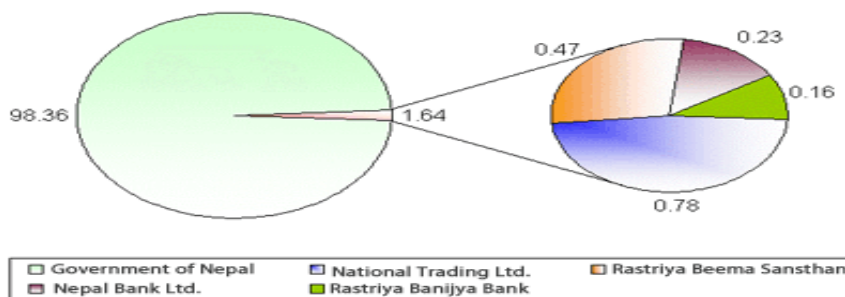
#### 4.21 Shareholders of Nepal oil corporation

Shareholders are who owns the company share and affected by company financial situation. Shareholders are those who directly influences by company decision making process. The peoples who bought company share have right to contribute to the decision making process at corporate level. Shareholder's co-owners of the companies. They are also affected by the company gain and loss. Shareholders have right to vote to choose the directors at board election. When a shareholder holds more that 50.1 percent of shares then they have right to everything equally as owners right, (Holmberg, 2018) . Those share holders who owns more than 50% of shares have right to ask for the office and interfere day to day decision making process.

Nepal oil corporation has four shareholders who owns very few amount of shares. Thus they are not authorized to interfere any decision making process of NOC. NOC has sold only 1.64% shares to its shareholders, (Nepal oil corporation limited , 2019).

The pic chart below represents the share shareholders of Nepal oil corporation. Government of Nepal owns majority of shares which is 98.36 percent of share, remaining 1.64 percent of shares are distributed to Four other share holders. Holding 98.36 percent of shares government of Nepal take control of all the strategy of Nepal oil corporation, (Nepal oil corporation limited , 2019)

Figure:10 shareholders of NOC



(Source: NOC , 2019)

#### 4.22 Boarders selling price difference

The table below represent the difference price of some petroleum product at the boarder of Nepal and India.

Table:7 Boarder's Selling Prices

Effective Date	Nepal Border		Raxaul				Difference	
	NRS/Ltr		IRS/Ltr		NRS/Ltr		NRS/Ltr	
	MS	HSD	MS	HSD	MS	HSD	MS	HSD
2018-10-07	112.5	99.5	85.715	76.918	136.28	122.29	23.78	22.79
2018-10-18	112.5	99.5	86.65	78.975	138.64	126.36	26.14	26.86
2018-10-30	112.5	99.5	83.42	77.02	133.472	123.232	20.972	23.732
2019-01-03	106.5	93.5	74.69	68.08	119.5	108.93	13.0	15.43
2019-02-03	108.5	95.5	74.73	69.34	119.57	110.94	11.07	15.44
2019-04-16	108.5	95.5	77.16	69.74	123.46	111.59	14.96	16.09

(Source: NOC 2019)

#### 4.23 PESTLE Analysis

Figure: 11 PESTEL analysis



(Source: Own Calculation)

Pestle analysis is framework to analyse the macro environmental factors of an organisation which affects directly and indirectly to the operation of organisations. Pestle analysis is a tool that helps to analyses and monitor the affecting factors (Political, economical, social, technological, environmental and legal) which will create harmful situation on the performance of organisation. Pestle Analysis help to understand the external environmental factor on which firms operates, to understand internal and external environment in the competitive market most of the firm used Pestle and Swot analysis at the same time. It is core to see the clear picture of organisations internal and external environment through various analysis tool to framework the strategy for the decision making process to achieve the dimension of the firm.

#### **4.23.1 Political**

The political factor indicates how the changes in government policy and regulation will affects the operations of organisation. NOC, government owned company a simple change on the government regulation directly affect its operation. Political condition in Nepal is unstable since decade the impact of unsettled political condition has given difficult situation for NOC regarding pricing, imports, tax and distribution. The influencing factors that can be created by government regulations are political instability, corruptions, foreign trade, tax policy, labour law, environment policy, education system and infrastructure of Nepal. It is known that the government of Nepal ruled by political parties. The rules and regulation for NOC changes in very short time period due to the changes in parties who on the government.

Nepal oil Corporation has been one of the corruption sources for Nepalese political parties. Every year or in 2 years there will new party in the government since NOC is government owned company it has been misused by different party member for there own shake. Fixing price and the fulfilling demand of market has been challenge for NOC created by political issued. The relationship with the Indian oil corporation depends on political condition, in 2015 India block the border to import any commodities from India which was inhuman activity done by India due to issued happened with the government of Nepal. Nepal oil corporation has been huge influence by political condition which will not be solved until the political situation will be smooth.

#### **4.23.2 Economical**

In general, the economic environment represents the economic growth, inflation rate, disposable income, interest rate and unemployment rates of a nation which influences the performance of a company. In the context of Nepal, Nepal's economic growth is not really impressive, Nepal lies on one of the lowest economic growth nations in the world. The fluctuation in the economic growth rate shows Nepal has its highest GDP growth rate in 2016 which was 8.2% and the lowest in its history was in 2015 which was 0.6% due to the life-changing earthquake (Yuba raj Khatriwada, 2018). The inflation rate of Nepal in 2018 was 6.0% which means the government is trying to decrease the prices of commodities at an affordable price for the consumers. The government of Nepal has been trying to reduce the unemployment rate, the current unemployment rate has decreased by 2% in 2018 compared with 2017 data, (Kathmandu post 2019).

All the economic factors that influence the consumer buying behaviour. Higher income leads to higher expenditure. If the government of Nepal practices to control all the above economic factors, the consumer spending on petroleum products will be higher, the result will be beneficial for NOC.

#### **4.23.3 Social**

Basically, understanding society's culture and the way of doing things can contribute a lot more to business performance. The social aspect includes growing population, culture, religion, education, career-oriented population, people's life style and travel and mobility. Nepal is rich in its norms and values, various religions are socializing without any conflicts which are positive signs for business. Marketing plays a huge impact on changing people's mind to buy the product. Advertising in a very attractive way to give some meaningful message to the society that changes people's perception of the product. Numerous festivals have given NOC an opportunity to target its business peak seasons and operate business accordingly. NOC has an opportunity to attract educated people providing employment opportunities in its hub cities that help to improve people's life standards.



As Nepal's economy is based on agriculture 70% Nepalese are engage in agriculture activities. The rural areas peoples cooked food on fuel wood, the unavailability of petroleum product force them to use fuel wood for cooking purpose. Making available product understanding people need will lead NOC in trust and liable company of nations. At this time most of the inhabitants owns at least one travelling vehicles mainly motor bike and car that are operates by fuel. The education volunteers course can be oriented in the needy place to spread the information about the pollution caused by fuel wood, the health issue that can be happened by the smokes of fuel wood and saving time and many more things related to day to day activities.

#### **4.23.4 Technological**

Technology has been vital for any types of organisation, NOC should not consider only on how to import product, it should consider how quick and safely products can distribute to the market. NOC can focus on investment on development and research to provide better quality product and cheaper cost. Since the huge numbers of hydropower projects are under construction people's might switch their energy source to the electricity, nations own production easily available and price will be cheaper thus hydropower could be significant threat for Nepal oil corporation. Peoples Consciousness toward environmental pollution can push performance of NOC in the downturn. As a government owned monopoly firm Nepal oil corporation can simply invest more in technology to fulfil the demand of the market.

#### **4.23.5 Environmental**

Environment where people spend their whole life. Every people and organisation has their own norms of protecting the environment. The pollution on the environment can cause various disease Nepal has its own law to protect its environment. wastage and the carbon emission on the environment can create serious issue, investing on environmental programmes and making changes in the society could bring positive impact towards NOC image.

Contribution toward recycling, geological product, support to renewable energy and spread information about well use of energy sources to protect environment and wastage at same time can be beneficial for NOC and Nepal too for long run.

#### **4.23.6 Legal**

Nepal fuel and taxation law (1997) affects the pricing strategy of NOC. Carbon emission and environmental pollution laws are considerable for Nepal Oil Corporation. The current Labour act (2017) of Nepal has been passed to give the rights, interest, facilities and safety of employees in various sectors. NOC should consider all those regulations to operate without any kind of intervention such as strikes for increments of wages, labour rights and fair treatment. The environmental act (1997) to protect and maintain clean environments as far as human created pollution to protect forest, water and wild animals with the consideration of sustainable development could be achieved by a clean environment. All these rules and regulations should be accounted for by NOC to provide quality products at reasonable prices. These factors influence the import and pricing strategy of petroleum products.

#### **4.24 Opportunities and threats**

SWOT analysis is one of the significant tools to identify the position of an organisation. It also helps to figure out the gap between their current and desired position. Recognising the opportunity within the environment, creates an opportunity for expansion of business and value-added position of an organisation whereas threats can simply ruin the business operations. Opportunity simply means the environment is being favourable for firms. External opportunities and threats indicate to social, economic, political, cultural, demographic, geographic, legal, governmental, technological and competitive trends and events can be remarkably beneficial or damaging in the uncertain future, (Uluslararası Sosyal Araştırmalar Dergisi, 2017).

Threat refers to a harmful situation that creates a difficult situation to achieve organisational goals. Threats can be experienced outside of a firm by changes in the situation, new entrants, innovation in information systems, unstable political situations. Due to threats, effective and efficient conditions of firm operations can be ruined by changes in the environment. Management should have a strategy to deal with such threats which could be harmful to the firm.

Basically, strengths and opportunities are positive factors for organisations, it helps industry to improve and gain maximum profit at the same time. Weaknesses and threats are dangerous to

achieve goal of organisation and it can damage business operation. Corporate level should use those strength aspects to deal with threats and grab the opportunity to turn weakness into strength.

#### **4.24.1 Opportunities:**

In general, monopoly refer huge market for the monopoly firm. Nepal oil corporation has to cover whole Nepalese market, which indicate it has mass market to expand it business. Utilizing its resources Nepal oil corporation can fill the gap between demand and the supply. Future is uncertain huge demand government might seek for other supply sources. The current market is a huge opportunity for Nepal oil corporation to come up with weakness to turn in to strength. Nepal oil corporation has efficient resources to invest on innovation and expansion projects. Due to the geographical condition transportation system are unmanaged in various cities. These cities are the opportunities expansion for Nepal oil corporation.

#### **4.24.2 Threats:**

Negative perception among Nepalese inhabitant is one of the major threat of Nepal oil corporation for future. Unsatisfied customer complains and lack of petroleum product in varies places has given some hint to the government to think better solution that might introduce new low for new entrance of substitute product in near future. The quality of the product is another aspect of threats, for the low quality product people are force to pay high price. Losing customers trust will be harmful for future market. Dependency with the Indian oil corporation and political issues are another major factor of being unable to full fill the demand. Some private companies are more concern about these issue. In near future if government sell its majority of shares to another company Nepal oil corporation will loose its position and its monopoly market power.

#### **4.25 Dependency**

Energy is one of the basis need of human life and a valuable factors of developments of a nation. Nepal is one of the under developed county of south Asia. Nepal has zero amount of oil production. First reason behind zero production of petroleum products is geographic location of

Nepal. Second reason, lack of resources to invest on research on petroleum industry. Unstable political condition, lack of financial resources and lack of expert human resources are main cause of being 100% dependency on importing petroleum product from foreign market. All the demand and supply will be depending on imports amounts of oil and gas. Thus Nepalese people has to buy expensive petroleum product for their daily lives. Comparing to the past import amount of petroleum product and current has increased 4% annually, Dependency on import has made Nepal as vulnerable and push Nepal economy to the downturn (poudel ram hari, 2017). Due to the 100 percent dependency, demand remains always higher than supply of petroleum product. India and the china are the closest foreign country for importing oil and gas. Petroleum products are one of the major commodity that help to increase GDP of a country. In Nepal context, Nepal has to pay huge amount of money to import petroleum product to Indian oil corporation. Due to the increasing price of petroleum products creates uncertainty on economic and financial environment leads negative impact on investors which defeat economic growth of Nepal.

According to the geographical situation of Nepal, Nepal is land locked by two countries thus all the imports relays on road way. India has been historic supplier of most of the commodity product of Nepal. About 200,000 kilo liters of petroleum product are imported by India every month, (Dhemendra Pradhan 2017). The one and only importing way is via road and the circumstance of border held delays on supply cause acute shortage of petroleum product in Nepal. The risk of supplying to the storage is also considerable factor. All imports are done by truck via road way, due to the old truck and leakage, conflicts within the country and with Indian because of political parties has created shortage and difficulties to supply on time.

Dependency on petroleum product has pushed Nepal GDP to downturn. Most of the commodity are imported from India. Nepal is one of the huge market for India, thus Indian economy is in the higher rand in the world where as Nepal economy is always downturn. Therefore, Nepal couldn't improve its economic growth.

#### **4.26 Economic indicators of Nepal oil corporation**

In general, to understand the business position, stability and growth of organisation, economic indicators are major factors. Economic indicators are those which help to identify the condition

of company whether company is profitable or on losses. Nepal oil corporation owned by government has some challenges to face while on operation. These economic indicators help to identify how NOC is operating.

#### **4.26.1 Profitability**

The table below represents the Profit and loss account of Nepal oil corporation 2017-18. Total profit of 2017-18 is \$192679 which indicate NOC is operating in huge profit margin. Before 2006 the dealer of petroleum product at boarder of Nepal had work on 3% of dealerships on per litre basis but since they lower the tax and vat system and increase the profit margin NOC profit has been increase, (Milan Mani Sharma, 2007)

#### **4.26.2 Employment opportunities**

Nepal's labour market has very less employment opportunity due to the agriculture basis economy. Most of the inhabitancies of Nepal has their own land they grew crops, hobs and other commodity they need for their daily lives. Basically, rural areas incomes sources are agriculture. Cities and the business hub places has some amount of job opportunities.

Nepal oil corporation has employed more than 600 employees who are direct employees of Nepal oil corporation, (Nepal oil corporation limited , 2019). Its some private distributors are in the main cities has also given opportunities of employment. In General, Nepal oil corporation has help directly and indirectly to the Nepalese economy by creating opportunities of employment. It has help in some level to reduce unemployment rate and poverty in the nation.

#### **4.26.3 Contribution to the GDP**

Nepal is an agriculture base economy. Due to lack of resources Nepal is still facing difficulties to improve in agriculture system. In the world there are countless country which main economy is based on agriculture and proved the world by improving economy by adopting advance technology in agriculture. In the context of Nepal GDP is pushing down every year, political instability and most of the commodities need to import by foreign country. Nepal is using its all financial resources to import and it has very less export rates.

Nepal oil corporation has huge influence in the Nepalese GDP. NOC contribute about 20% on as its pays 13% of VAT on petroleum product. Oil industry plays vital role in growth of economy. Government is trying to reduce cost of petroleum product so that it helps to invest on other sector for economic growth. Nepal import almost 70% of commodity from India out of 70%, 20% is petroleum product. Tariff and tax one factors that improve GDP of a country. Creating employment opportunity also another factor that contribute in GDP of Nepal.

#### **4.27 Future plan**

Nepal and India is working together to continue historic relationship of trade, religious and neighbourhood. Due to geographic location Nepal couldn't make much trade with China therefore Nepal has strong relationship with India. Since India is solo exporter of petroleum product, it wants smooth export system and minimise risk to transport to the closest storage location. Leakage while unloading and uploading, quality control and transportation to the destination is main risk factors that need to face NOC. To avoid all risk factors and minimize transportation and storage cost NOC and IOC are working under the project on pipeline from Motihari-Amlekhgunj in india to Nepal

Recently Prime ministers of Nepal and India has initiated the first south Asian across country pipeline to supply oil and gas without any disturbance. Total 69 kilometers of pipeline which supply mainly diesel fuel, Kerosene and gasoline over to the border of Nepal, (china daily , 2019). This project is first cross country pipeline project if South Asia which is finished in very short time period. Two million metric tons of pure petroleum product will be available for Nepal via this pipeline at affordable rate.

The objective of pipeline project was not only supply petroleum product, to reduce pollution, minimize cost of petroleum product, time save and lessen traffic specially at boarder of India and Nepal. From this project both nation will be beneficial by huge supply of petroleum product.

## 5.0 RESULT AND ANALYSIS

### 5.1 Ration analysis

Ratio analysis compare the items of financial statements of a firms. Ratio analysis is used to apprise the amount of problem with an items of operation of firms such as firm's liquidity, profitability and efficiency of operation. Ratio analysis a primary source of information about company and its financial situation. Ratio analysis is useful to understand the financial trend of an organization in two ways,

Trend line ratio analysis give the information of financial position of an organization for long period of time, this is useful to identify financial difficulties. Trend line is very helpful to analysis an organization past history of financial situation and where the company will be in future. On the other hand, ratio analysis is useful to compare with similar kind of industry which has similar types of fixed assets and capital structure there the result of ratio should be similar. Therefore, it is very important to understand the value of ratio analysis and used it by its fundamental approaches.

#### 5.1.1 Revenue Growth

Table. 9 Revenue data's and Growth rate

Year	Current Revenue	Last Y. Revenue	Revenue Growth
2016/17	152578909118	97275493723.84	0.56
2015/16	97275493723.84	138994577952.55	-0.3
2014/15	138994577952.55	134614395492	0.033
2013/14	134614395492	113443691031	0.19

(Source: NOC 2017)

$$\text{Revenue Growth} = \frac{\text{current revenue} - \text{last year revenue}}{\text{last year revenue}}$$

Figure no.12 Revenue growth



(Sources: own calculation)

**Interpretation:**

Revenue growth indicates how a company is being able to achieve its goal by increasing sales and earning rate in a certain period of time. Looking at the trend of revenue growth at graph above Nepal Oil corporation was not being able to do very impressive sales until year 2015/16, In 2015/16 Nepal was going through economic recession due to the boarder close by India. But within a year period of time NOC did very great level of sales and reach from -0.3 to 0.56 %. compare to these four years of revenue growth 2016/17 was the highest (0.56).

**5.1.2. Liquidity Ratio**

Table. 10 Current assets, current liabilities, total assets and total debt

year	Current Assets	Current Liabilities	Current ratio	Total debt	Total Assets	Debt to Assets



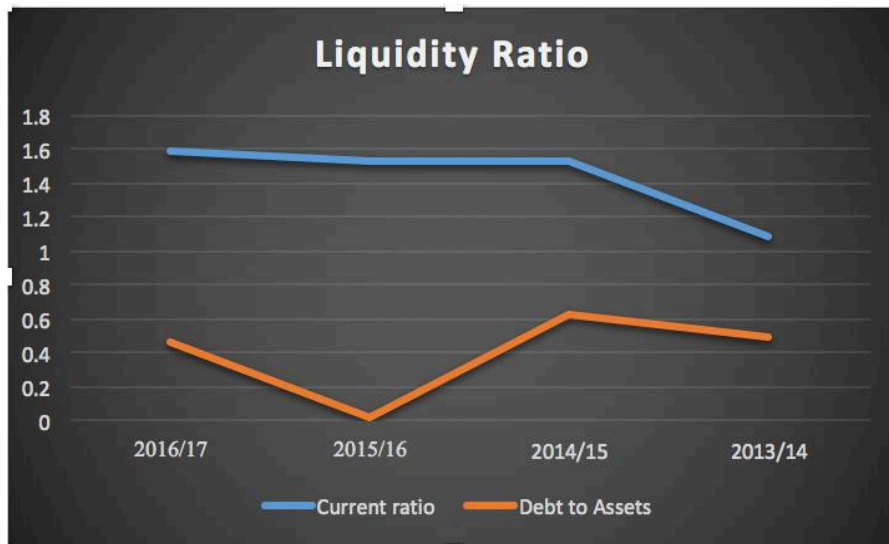
2016/17	24823198095	15670359463	1.58	41423270220	88759182770	0.47
2015/16	13086139199.39	8544881687.25	1.53	276558730	12970278460	0.02
2014/15	12296789391	8014873003	1.53	8544881687.25	13753573704	0.62
2013/14	8170287885.69	7502270219.69	1.08	15670359463.47	31089520870.28	0.50

(Source: NOC 2017)

a. Current ration =  $\frac{\text{current assets}}{\text{current liability}}$

b. Debt to Assets =  $\frac{\text{total Debt}}{\text{Total Assets}}$

Figure.13 Liquidity Ratio



(Source: Own Calculation)

Interpretation:

Liquidity is one of the most crucial part of any business, liquidity ration represents the ability of firm to pay off the short term or due in one-year time debt without increasing additional capital. From the above table increasing trend of current ratio says that NOC has sufficient fund to pay off its short term obligation. Within the 4years period the current ration increased by 0.5% which is positive liquidity ability of NOC. In 2015/16 the DTA of NOC was 0.02 or 2% which means the company already leverage its assets to generate higher business, therefore NOC debt is higher than its assets in a single year NOC had significant improvement which lead its DOT 0.02 to 0.47% that proves NOC was improving its financial stability and being able to pay its loans.

### 5.1.3. Profitability Ratio

Table. 11 revenues, gross profit and net profit and margins

Year	Revenue	Gross Profit	Gross Profit Margin	Net profit	Net Profit Margin
2016/17	152578909118	1390563959	9.13	9452489286.67	6.2
2015/16	97275493723.84	17307542611.18	26.6	19359052265	19.89
2014/15	138994577952.55	23307585601	16.8	15042137836.73	10.8
2013/14	134614395492	(4319901119.78)	-3.21	(8300623024.13)	-6.21

(Source: NOC 2017)

$$2.1 \text{ Gross Profit Margin} = \frac{\text{revenue} - \text{cost of goods sold}}{\text{revenue}} * 100$$

$$2.2 \text{ Net Profit Margin} = \frac{\text{Net Profit}}{\text{Revenue}} * 100$$

Figure. 14 Profitability Ratio



(Source: Own Calculation)

#### Interpretation:

Profitability is the main objective of any business, profitability is the only part of business that help to sustain the business activities in the long run. Profitability deals with all the incomes and expenses of firm, it gives clear picture how a company making profit and what are the activities on the expenses are happening. the table above represent the Gross Profit Margin and Net Profit Margin of NOC years 2013/14 to 2016/17, the fluctuation on profit margin shows the unstable financial condition of NOC. In 2013/14 NOC was under losses its net profit margin was -6.21% but after 2013/14 it started to increase its profit margin and achieve huge difference on profit and reach to the almost 20% net profit margin which is great achievement.

## 5.2 Regression Analysis

### 5.2.1. Effect on GDP

#### Nepal's Real GDP, Import and Consumption from NOC (\$Million) (2004-2018)

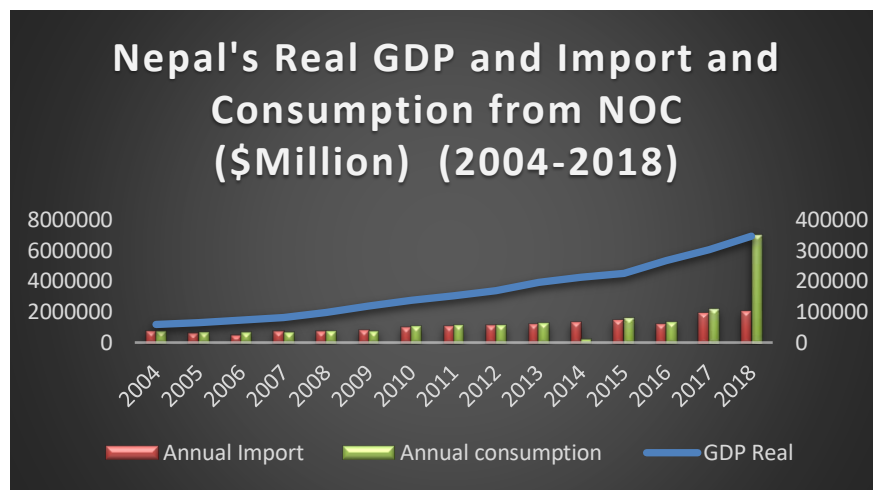
Table: 12 Nepal's GDP and Annual Imports and Consumption from NOC  
Nepal's GDP and Annual Imports and Consumption in NOC (2004-  
2018)

year	GDP Real	Annual Import	Annual consumption
2004	58941.2	761428	736715
2005	65408.4	625209	669351
2006	72782.7	466844	658884
2007	81565.8	746446	628786
2008	98827.2	725623	772264
2009	119277.4	827244	726982
2010	136695.4	982698	1057197
2011	152734.4	1057592	1154506
2012	169501.1	1093340	1141724
2013	196454	1199290	1288676
2014	213020	1315858	251451
2015	225316.31	1470325	1602174
2016	267449.28	1226341	1330277
2017	303103.36	1945652	2196066
2018	346431.91	2007358	7032590

(Source: NOC 2019, MOFA 2019)

Base on the collected 15 year's secondary data, GDP, annual import and annual consumption since 2004 to 2018. we are calculating how the growth of import and consumption of petroleum product has changes on GDP Growth Rate.

Figure: 15 Nepal's GDP and Annual Imports and Consumption from NOC



(Source: Own Calculation)

### 5.2.2. Calculation of effect on GDP by Annual consumption and import

Table :13 Model summary

#### Model Summary

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.955 <sup>a</sup>	.913	.898	28743.42885

a. Predictors: (Constant), Annual Consumption, Annual Imports

(Source: Own Calculation)

Table: 14 ANOVA

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1	1035080958 28.318	2	5175404791 4.159	62.642	.000 <sup>b</sup>
	9914216423. 576	12	826184701.9 65		
	1134223122 51.894	14			
	Total				

a. Dependent Variable: Real GDP

b. Predictors: (Constant), Annual Consumption, Annual Imports

(Source: Own Calculation)

Table :15 Coefficients

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF

1	(Constant)	-39566.583	22341.019		-1.771	.102		
	Annual Imports	.186	.025	.933	7.589	.000	.482	2.074
	Annual Consumption	.002	.007	.031	.252	.805	.482	2.074

a. Dependent Variable: Real GDP

(Sources: Own Calculation)

Table :16-Collinearity Diagnostics

Collinearity Diagnostics<sup>a</sup>

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant )	Annual Imports	Annual Consumption
1	1	2.617	1.000	.01	.01	.03
1	2	.342	2.766	.11	.00	.49
	3	.040	8.049	.87	.99	.48

a. Dependent Variable: Real GDP

(Sources: Own Calculation)

Table- 2, 3, 4 and 5 are depicting the statistical analysis of the data collected from NOC official website. Secondary data was collected for the period of 15 years; hence the sample size is 15. In order to analyze the impact, linear regression was performed on the data. Selected parameters for the study were Annual imports and Consumption of NOC (independent variables) and GDP (dependent variable). The same was conducted with the help of SPSS software and graphs were plotted with the help of MS-excel.

**Interpretation:** It was observed that there is a strong correlation between GDP with Imports and Consumption of NOC both. However, the significance value was found to be less than 0.05, which means null hypothesis is rejected, and alternative hypothesis is hence accepted.

This inferred that there is a significant impact of imports and consumption of NOC's on the country's GDP. To test the collinearity, tolerance value was analyzed and found to be slightly more than .40, which means it has an observable amount of impact of NOCs imports on overall GDP of country.

## **6.0 Recommendation**

### **6.1 Energy in Nepal**

Nepal has not been success yet to drill oil and gas. Deficient economic and lack of refiner, production and financial resources held it to be dependent nation. Biomass, firewood, animals dung and wastage from agriculture are main energy sources of domestic energy sources of nepal, oil and gas has to import from foreign market. Mainly rural area surviving with biomass energy sources due to poor economic condition. The large number of share of energy goes to cities and residential areas for the transportation and energy. In comparing with the 20 years back history and today's consumption rate grown from 106ktoe to 665ktoe in the industry sector where as transportation sector rose from 111ktoe to 858ktoe which indicate drastic increment of consumption of energy.

Nepal imports energy sources mainly oil, gas, electricity from Indian oil corporation, looking back at 1999 import rates of energy was 5.5% at current year reached 19%, decreasing amount of local biomass energy push to import rate to higher level. Annual demand of energy sources specially motor spirit, high-speed diesel, superior kerosene oil, air turbine and petroleum gas growing on average by 10%. The consumption of energy was 11% in 2014 and this percentage is to projected to reach 12% at the year 2035, (Asian Development bank, 2017).

### **6.2 Future Opportunity for Energy**

Looking at the scenario of Nepal petroleum market and the capacity of NOC to fulfil the demand of the petroleum product, Government of Nepal should open an opportunity for the new entrance. The current data shows the 40% of Nepalese are still using fuel wood and biogas as the sources of cooking and light thus if some private company allowed to inter in the market the scarcity of petroleum product will be diminished.



### **6.2.1 Hydropower**

Nepal, a landlocked and least developed country going through various difficulties and challenges on the race of development. Nepal is naturally blessed by three rivers which are Koshi river, Gandaki river and Karnali river are major water sources, and its small parts have been spread throughout the country as falls. With these water Nepal can afford to generate 90,000MW hydro power. Nepal is one of the poorest countries in the world, per capita GDP \$ 1034.118 July 2019 (CEIC, 2019).

Nepal has a huge amount of hydropower potentials which is one of the core points of economic growth. About 90,000MW of power can be exploitable from the available water resources. In July 2013 an 846MW hydropower installation project was accomplished. Nepal can generate average solar radiation 3.6 to 6.2 kWh/m<sup>2</sup> per day and total sunny days in a year is 300. Therefore, Nepal has potential of generation of solar energy at least 2100MW, (Nepal environmental and scientific services (p)ltd, 2014). Generation and operation of solar system is quite easy thus it can be one of the best options in many places.

In Nepal, despite having huge hydro power capacity, only 60% of households have access to grid connected power. Remaining 40% are still forced to use kerosene and fuel wood for lighting and cooking purposes, (Bharat Raj Poudel, n.d.). Utilization rate of natural resources in Nepal is at a minimum level, from total energy demand Nepal can fulfill only 1% by hydro power. Government of Nepal is trying to attract investment to spend on energy projects to private companies to make sufficient energy and to end load shedding.

Table below shows major hydropower which are in operation and their capacity in MW. Hydropower are classified in three different categories, a) large hydropower capacity which generate more than 10MW, b) small hydropower that produce 1 to 10 MW and c) micro hydropower that generate less than 1 MW. At present more than 12 hydropower projects are working in progress, some of them are already completed and some are under construction, (Firoz Alam, 2017)

Table:8 Hydropower Locations and capacity

	Name	Installed Capacity	River	Established	Head	Cost US \$
		MW		Year		m
1	Kaligandaki A	144.0	Gandaki	2002	115	355
2	Middle Marsyangdi	70.0	Marsyangdi	2008	108	257
3	Marsyangdi	69.0	Marsyangdi	1989	91	222
4	Kulekhani I	60.0	Kulekhani	1982	550	118
5	Kulekhani II	32.0	Kulekhani	1986	284	
6	Trisuli	24.0	Trisuli	1967	54	-
7	Gandaki	15.0	Gandaki	-	130	-
8	Modi khola	14.8	Modi Khola	2000	67	30
9	Devighat	15.0	Trisuli	1984	40	8.5
10	Sunkoshi	10.0	Sunkoshi	1972	31	2
11	Puwa Khola	6.2	Puwa Khola	1999	304	16
<b>Total</b>		<b>460.0</b>				

(Firoz Alam, 2017)

## 6.2.2 Bio Gas

Government of Nepal and Netherland work together in 1992 to promote biogas in Nepal. The programmes “biogas support programme” was introduced by Netherlands development organisation called SNV, Aim of SNV was to promote Biogas as a substitute product of firewood, animals dung, kerosene and agriculture residues which are used to cooking and lighting mainly in rural area of Nepal. Due to the high demand of all these local energy sources caused deforestation and pollution in the environment.

Biogas was introducing in Nepal as an experimental project. Within three phase biogas support programme was Successful. Biogas is mixtures of 50 to 60 % of methane, 40 to 50 % of carbon – dioxide and other gases. The capacity of system relays on its sizes, such as 4,6,8,10 m<sup>3</sup> used of buffalo and cow dung and mixtures of water. For 6m<sup>3</sup> size needed 36kg of dung and same amount of water to burn 3.5 hours (sundar bajagai, 2005).

Nepal farming system based on livestock. As an agricultural nation generally all the house hold has at least one cow or buffalo. Considering that the SNV installed 111395 bio gas system through the Nepal, (sundar bajagai, 2005). Client satisfaction and increasing number of biogas

system indicates that biogas support project was successful to changes in peoples social, economical and financial condition of Nepal.

At minimum cost and homemade biogas has given significant benefit in Nepalese life and economy by reducing import of energy from foreign country, such as time save, personal safety, reduce pollution, save the environment and opportunity of employment. The financial analysis which is based on Biogas system built in Hill and Terai was invested \$312 and \$289 respectively, (sundar bajagai, 2005). In fact, biogas system is beneficial for nations economic growth by reducing expenditures such as imports, tax at boarder, transportation cost.

### **6.2.3 Solar**

Nepal is in highest altitude on earth. To understand solar energy and its utilization Solar energy the department of solar study regarding solar radiation and weather condition. The total number of possible Solar radiation is core for designing frame work for prediction of performance of technology used in solar generation. According to the research higher the altitude higher possibility of generating solar through clear sky. This indicate Nepal has huge potential in solar project but unavailability of long term and continues data and research resources Nepal is facing energy crisis.

To generate solar its location should be appropriate in terms of wind and sun, the site which has cover altitude 72m to 2850m. Geographically Nepal is blessed for solar radiation. Few projects are already working on few locations such as, Biratnagar, Pokhara , Kathmandu and Lukla,(Khem Poudel 2012). All these sites have its own key features, for example altitude, sun, warm and quality of air, which factors can be dimension for solar radiator. one of the largest renewable energy in the world. Technologies of Solar energy could help to access energy in rural area for long term. The expansion of solar market has made dramatic increment for grid-connected distributed PV system and solar hot water. Lack of enough other energy sources resources solar energy market is in hike at current situation, cost of solar energy technologies decline rate also key point of becoming attractive.

## **7.0 Conclusion**

The main purpose of this thesis was to analyze the Nepali petroleum industry and the impact of the government created monopoly market of oil industry in the Nepalese economy. The first part of this project is to understand of the actual meaning of monopoly market from few economist view, how monopoly market arises and the factors that creates monopoly condition, types of monopoly and its positive or negative effect in the market and in the whole economy. A country which has monopoly market on a specific product or services how their strategies works in production, pricing, distribution and quality, when a country fully dependent on imports of certain product from foreign country what are the circumstances that has to face on import process.

The unavailability of oil and gas due to the political instability within the country and political relation between domestic and foreign countries. The history of crude oil of worldwide, consumption, price, production of oil worldwide, the global market of crude oil and the difficulties that's has to face being dependent. A critical analysis of external market to analyses the crucial factors that can raise huge impact on operation, the future possibility of market extension to grab the opportunities and deal with the threat that can hamper the monopolistic power in long run.

The second chapter is about statistical analysis of the of secondary data collected from NOC website of NOC to investigate how a monopolistic industry can affect a whole nation GDP. Factors influencing the oil import and oil consumption are the monetary policies and its usage on yearly basis. All these factors can determine the price of oil, which can reflect the growth of GDP in Nepal. The Linear Regression model represents an influence over the Nepal oil import and consumption impact on GDP, the GDP of Nepal depends not only on the consumption and import of crude oil, also depends on agriculture and other commodities trades but having zero percent of production of oil is one of the major factor of not getting improvement on GDP level. The analysis involves data of annual growth of different oils consumption and import by different countries.

To analyze the growth and profitability of NOC, ratio analysis has been conducted which has given very clear picture of financial situation of NOC. 2015/16 was the worst year for NOC because of economic recession and life changing earthquake, its net profit was negative. To analyze the Impact of import and consumption of oil, 15 year's data of NOC as Independent Variables and GDP as dependent variable which shows the strong correlation of Import and consumption with GDP of Nepal, high amount import of oil like petrol and diesel approximate overlap on GDP values because of consumption likewise petrol whose import value did not change since past 10 years. Revenues of the state budget and the volume of financial flow from foreign countries directly depends on the fuel, energy and extractive industries of the economy.

One of the major factor that is pushing back Nepal Economy is spending all the resources on importing rather than research and development project. If Nepal is able to identify its resources and invest on it, Nepal has huge potential capacity to produce all the necessary commodities itself. Nepal is gifted to all the natural resources to produce energy such as Solar, Bio gas, Wind energy and hydropower, unfortunately lack of the resources (Capital and Human) the nation is not being successful to produce on its own. Looking at the scenario of world, electricity is the most useable energy source. Nepal is rich on water resources thus investing on Hydropower can create significant changes on GDP by investing on development of nation itself by forming job opportunities and motivate to invest on such project to maximum use of human resources. TO improve GDP by adopting electricity energy sources for public transport such as Tram rather than buses, cooking purpose and many more. Although having enormous potential on electricity sources people of Nepal are still using Gas and Oil which are imported from foreign countries due to the high price of electricity.

At last, Nepal is highly dependent on importing crude oil mainly from India, this dependency is harmful for the Nepal economy and government of Nepal. There are so many alternatives in the world energy market and also Nepal can follow the trend of energy resources. Some recommendation has been analyzed on this work which will definitely help to end the dependency culture of NOC and to improve economy of Nepal by not spending huge amount of capital to import crude oil. Government of Nepal should invest on research on alternatives energy resources to fulfill the increasing demand of energy through out nation.

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