CHAPTER I – INTRODUCTION AND DESIGN OF THE STUDY

1.1 Introduction:

Petroleum products are important in driving the economies of all countries in the world. Despite this, the prices of petroleum products have been going through fluctuations and instability affecting the efficiency of the economy in propelling growth. The importance of prices of oil products to the economy however, cannot be overemphasized. Increase in prices of oil products, especially diesel lead to general increase in prices of other essential commodities and service. Oil price volatility surpassed most other raw materials’ price volatility.

While announcing deregulation of diesel prices on October 18, 2014, Union Finance Minister Arun Jaitley said, “Henceforth, like petrol, the price of diesel would be linked to the market and therefore depending on whatever is the cost involved…… the consumers will have to pay.” Contrary to his remark the change in the market is not impacted in the final price of petrol and diesel in recent days. Although the rate of crude oil has been coming down, instead of passing on the benefits to consumers, the Central and State Governments have been playing tactics by way of raising taxes to augment revenue to cut fiscal deficits. Hence, there is no meaning in deregulating the prices of petrol and diesel. Instead, the Government might have fixed the prices then and there and could have met the under-recoveries of Oil Marketing Companies (OMCs). It is claimed that the taxes levied are more than the cost of petrol.
Central and State level taxes at present account for 60 per cent of the final price of petrol and 55 per cent of the final price of diesel in New Delhi. The Oil Minister Dharmendra Pradhan said that the high proportion of taxes on petrol and diesel could be reduced when oil prices rise again. He claimed this as a strategy. He said that the Government’s first step was to bring some benefit to the consumer, then to spend on welfare activities and third in the event of prices shooting up, do something to alleviate this.

Today 50 per cent of the profitability due to the slide in oil prices has been passed on to consumers. The remaining 50 per cent was kept with the Centre. Of that 50 per cent, 42 per cent is transferred to the States as per the 14th Finance Commission’s recommendations. High taxation on petrol and diesel is defended as a tool to protect people from a price shock when oil prices start to climb up again. It is claimed that there is no developed country that has transferred the benefit of sliding oil prices to the consumers in any real way. It is argued the consumers are made vulnerable by to low prices and then forced to feel the pinch when the prices go up, hinting at the Government’s logic to raise taxes on fuels while global prices fell.

1.2 Statement of the Problem:

A rise in fuel prices implies a rise in the cost of everything without any increase in salaries or income. In short, overall inflation will rise. The reasons for the fluctuation in the petrol prices are many, some of which are:
Variations in the price of crude oil

Strong global requirement

Limited production capacity

Political issues in oil producing countries

Increased taxation

Government Regulations

Geographical location

Increase in Demand

Competition

Supply-demand imbalances

India’s pricing policies on petrol and diesel in the past several years have systematically produced large losses for downstream marketing companies, significantly restricted their cash flows liquidity and placed a Himalayan financial burden on upstream companies. Government has dealt with mounting under-recoveries through issuance of ‘oil bonds’ to OMCs and through its efforts of petroleum product tax rationalization.

During 1976 – 2002, based on the recommendations of Expert Committees, the Government pursued cost-plus Administered Pricing Mechanism (APM) under which product prices were directly administered by India’s Central Government based on an opaque and complex ‘cost of operating capital plus’ formula. In September 1996 based on the recommendations of ‘Strategic Planning Group on Restructuring of Oil Industries (R Group) Report; the Government decided to abolish APM and replace cost-plus
retention pricing of petroleum products produced by domestic refineries by Import Parity Pricing (IPP). IPP was introduced in 1998 to calculate refinery gate prices. Complete dismantling of APM in April 2002 opened the door to OMCs to set retail prices based on an import parity pricing formula, under the supervision of a petroleum sector regulator. As a result retail prices of petroleum products fluctuate with the changes in the price of India’s crude basket. When the crude prices started increasing consistently from 2004, the Central Government attempted to restrict the power of OMCs to increase prices in order to protect Indian consumers. On June 15, 2006, based on the recommendations of the Rangarajan Committee, the Government changed the pricing of petrol and diesel to Trade Parity Pricing (TPP) basis. TPP consists of 80 per cent of IPP and 20 per cent of Export Parity price (EPP).

Despite these attempts to reform, In spite of rise in international oil prices between 2004 and 2008, the retail prices of petrol and diesel continued to be subsidized. During this period, the Government introduced various measures to lessen growing subsidy burden without raising petroleum product prices. In addition to on-budget subsidies and under-recoveries, required public sector upstream companies to provide discounts on sale of crude oil to the OMCs. Off-budget oil bonds were also issued to the OMCs to keep them solvent, masquerading the fiscal impact of subsidies.

Another measure undertaken to mitigate the impact of under-recoveries was the adjustment of federal excise and customs duties on petroleum products by the Central Government Customs duty on LPG and kerosene was abolished in 2005 and excise duty reduced to zero by 2008. Customs duty on imported petrol and diesel was brought down
from 20 per cent to 2.5 per cent on an *ad valorem* basis and excise was brought down to a flat rate of Rs.13.35 per litre. However, the structure of fiscal federalism in India (continued indirect taxation of petroleum products by States at differential rates) countered the effectiveness of this strategy.

This indirect taxation by the States at differential rates stand as a bottleneck even after deregulation of petrol price from June 2010 and complete deregulation of diesel from October 2014.

The price of Indian crude basket came down to $29.24 per barrel (Rs.1956.45; $ = Rs.66.91) on January 7, 2016. A barrel constitutes 159 litres (42 gallons), and the cost per litre of crude oil works out to Rs.12.30 per litre. This price is less than a litre of mineral water priced at Rs.15. Some of the reasons put forth for this downward trend in international oil prices are:

- The stock of crude oil in US shows 2 lakh barrels in excess.
- Shell Gas production from rock has increased.
- Need for oil has come down in US
- Business dull in China and Brazil; Hence less need for oil
- Economic sanction was removed on Iran. Hence it started extracting oil in full swing.
- Demand for oil at the world level has not increased in consonance with oil production

As a result price of oil has come down. The price of average crude oil prices is presented in Table 1.1.
### TABLE 1.1

**International Crude oil prices from 2009 to 2015**

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Crude oil prices $/bbl</th>
<th>% Growth in Average Crude Oil Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>69.76</td>
<td>- 16.53</td>
</tr>
<tr>
<td>2010-11</td>
<td>85.09</td>
<td>21.98</td>
</tr>
<tr>
<td>2011-12</td>
<td>111.89</td>
<td>31.5</td>
</tr>
<tr>
<td>2012-13</td>
<td>107.97</td>
<td>- 3.5</td>
</tr>
<tr>
<td>2013-14</td>
<td>105.52</td>
<td>- 2.27</td>
</tr>
<tr>
<td>2014-15</td>
<td>84.20</td>
<td>- 20.2</td>
</tr>
</tbody>
</table>

**Source:** Basic Statistics on Indian Petroleum and Natural Gas 2014-15

It is observed from Table 1.1 that except for an increase in the price of crude oil during 2010-2012, the price has come down.

It is felt that the drop rate of domestic petrol and diesel prices has not kept pace with global prices because the government has repeatedly hiked excise duty on petrol and diesel to increase its revenues. From December 1, 2015 to January 16, 2016, the global oil prices softened continuously and the price cut given to consumers during this period is presented in Table 1.2.
TABLE 1.2
Cut in Petrol and Diesel prices from December 2015 to January 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Cut in Petrol Price (Rs.)</th>
<th>Cut in Diesel Price (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.12.2015</td>
<td>0.58</td>
<td>0.25</td>
</tr>
<tr>
<td>16.12.2015</td>
<td>0.50</td>
<td>0.46</td>
</tr>
<tr>
<td>01.01.2016</td>
<td>0.63</td>
<td>1.06</td>
</tr>
<tr>
<td>16.01.2016</td>
<td>0.32</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Since March 2012, imported crude oil prices have crashed by 76 per cent; in contrast, petrol price has been cut by 18.9 per cent, diesel up by 10.1 per cent.

It is said that basic excise duty on petrol has gone up by Rs. 7.73 per litre in fiscal year 2015-16 while on diesel it has raised to Rs. 7.83 per litre. The government had in raised excise duty on petrol and diesel four times between November 2014 and January 2015 to lessen the reduction in retail rates, which followed falling international oil rates. If the government had not raised these duties, consumer price of petrol and diesel would have been lower by Rs.10.02 a litre and Rs.9.97 per litre, respectively.

Government raised the excise duty on December 17, 2015 by 30 paisa on petrol and on diesel by Rs.1.17 per litre. It raised excise duty on petrol on January 3, 2016 by 37 paisa and on diesel by Rs.2 per litre and mopped up nearly Rs.4400 crore.

A comparison of tax in November 2014 and January 2016 is presented in Table 1.3.
TABLE 1.3
Tax variations on Petrol and Diesel from November 2014 to January 2016

<table>
<thead>
<tr>
<th></th>
<th>Tax in November 2014</th>
<th>Tax in January 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excise Duty on Petrol</td>
<td>Rs 9.20 per Litre</td>
<td>Rs 20.48 per Litre</td>
</tr>
<tr>
<td>Excise Duty on Diesel</td>
<td>Rs 3.46 per Litre</td>
<td>Rs 15.83 per Litre</td>
</tr>
<tr>
<td>VAT on Basic Price on Petrol</td>
<td>20% on Basic Price</td>
<td>25% on Basic Price</td>
</tr>
<tr>
<td>VAT on Basic Price on Diesel</td>
<td>12.5% on Basic Price</td>
<td>16.6% on Diesel + 25p Cess</td>
</tr>
</tbody>
</table>

It is evident that excise duty on petrol increased more than two times during this period and nearly 4.5 times in the case of diesel. As a result, petrol costs Rs. 59.04 a litre in Delhi while diesel is priced at Rs. 44.18 a litre w.e.f. January 16, 2016.

After deregulation, it was felt that the prices will be on par with the movement of prices in the international crude oil. However, there are number of anomalies in the fixation of prices for petrol and diesel in India. Benefits are not passed on to the consumers when there is reduction in the international crude oil prices. But when it was increased there was an immediate increase. It is argued that the benefits should not be passed on to consumers every time when there is a decrease in international prices. Only a portion of such benefit should be shared with consumers. The balance should be kept to share when there is an increase in the prices. Then, why should the price be deregulated? Why doesn’t the Government fix the price then and there instead of giving the option to fix the price by OMCs? At a time when deregulation was intended to help PSUs to cut short their under-recoveries and enhance working capital, it is alleged that cartelization prevails in the fixation of prices. Expectation of uniform prices in petrol and diesel
throughout the country, has got frustrated due to fixation of indirect taxes at different rates by the State Government.

1.3 Scope of the Study:

This Study aims at understanding the trend in the prices of petrol and diesel during the study period. It aims to understand the pattern of taxation on petrol and diesel and the revenue to the exchequer. It aims to analyse the views of the respondents about the existing pricing policies of petrol and diesel in India and to analyse the problems faced by the owners of petrol bunks.

1.4 Objectives of the Study:

The following are the objectives of the present study:

1. To find out the causes of deregulation of petrol and diesel prices in India and the resultant increase or decrease in the prices
2. To understand the fluctuation in the prices of petrol and diesel in India for the past few years and in the oil rich nations in the world
3. To ascertain the tax revenue to the exchequer from petrol and diesel over the years
4. To identify the problems encountered by the petrol bunk owners in the supply chain of petrol and diesel
5. To seek and analyse the views about the pricing policy of petrol and diesel and
6. To make suitable suggestions on the basis of the findings of the study.
1.5 Operational Definition of Concepts:

1.5.1 Import Parity Pricing:

Import Parity Pricing means the price that the actual importer would pay for the product in case he would have actually imported the same at the respective ports in India. IPP is the sum of

a) FOB price of product at Arab Gulf

b) Ocean freight from Arab Gulf to respective Indian ports

c) Customs Duty at applicable rates

d) Insurance charges

e) Ocean loss, LC charges, Port dues and wharfage and

f) Landed cost at port

1.5.2 Refinery Gate Pricing:

Refinery gate price is the price at which the refineries sell products to the marketing companies and retail selling price on which oil marketing companies sell petroleum product to the consumers.

1.5.3 Trade Parity Price:

Trade Parity Price consists of 80 per cent of IPP and 20 per cent of Export Parity price (EPP).
1.5.4 Export Parity Price:

Export Parity Price comprises of FOB price of the product plus Advance license benefit as per Foreign Trade Policy.

1.5.5 Upstream companies:

Upstream companies involve in exploration and production activities. The activities includes searching for potential underground or underwater crude oil and natural gas fields, drilling exploratory wells and subsequently drilling and operating the wells that recover and bring the crude oil and raw natural gas to the surface.

1.5.6 Downstream companies:

Downstream companies involve in the refining of petroleum crude oil and the processing and purifying of raw natural gas as well as the marketing and distribution of products derived from crude oil and natural gas. The downstream sector reaches consumers through products such as petrol, kerosene, jet fuel, diesel oil, heating oil, fuel oils, lubricants, waxes, asphalt, natural gas and LPG as well as hundreds of petrochemicals.

1.5.7 Under-recoveries:

Under-recoveries is the difference between the price at which OMCs purchase petroleum products at the refinery gate and their retail selling price after accounting for a fiscal subsidy provided by the Government Prices at the refinery gate are determined on a
‘trade parity’ basis which is a weighted average of import and export parity prices, with
the percentages of imports and exports comprising the weights. It is the notional loss that
oil companies incur due to the difference between the subsidised price at which the oil
marketing companies sell products such as diesel, LPG and kerosene and the price at
which they should have received for meeting their cost of production. In other words, it is
the difference between the required prices based on TPP / IPP and actual selling price
realised (excluding taxes and dealer commission).

1.6 Pilot Study:

A pilot study was conducted with a sample of 30 respondents and pretest was
conducted to test the veracity of the study.

1.7 Area of Study:

This Study covers the whole Madurai District consisting of 13 blocks (Madurai
East, Madurai West, Tirupparangunram, Tirumangalam, Kalligudi, Melur, Alanganallur,
T. Kallupatti, Vadipatti, Chellampatti, Usilampatti, Sedapatti and Kottampatti), situated
in seven Taluks such as Madurai North, Madurai South, Melur, Peraiyur, Tirumangalam,
Usilampatti and Vadipatti.

1.8 Sampling:

Census method of Sampling is used for collecting data for the purpose of this
study. In the study area (Madurai District), a total of 120 petrol bunks are located at
various places. Of them 73 bunks are in Madurai city and the rest 47 are in other places
of Madurai District. Of the 120 bunks in Madurai District, 62 bunks are Indian Oil Corporation Ltd. (IOCL) bunks, 33 are Hindustan Petroleum Corporation Ltd. (HP) bunks and 25 are Bharat Petroleum Corporation Ltd. (BP) bunks. All the owners of 120 petrol bunks were interviewed to understand their views on pricing policies of petrol and diesel and to understand their problems in owning the petrol bunks.

1.9 Framework of Analysis:

The collected primary data were processed with the help of appropriate statistical tools. The selection of statistical tools rests on the nature of scale of data and objectives of the study focused. The details of statistical tools and their usage in this study are summarized below.

1.9.1 Exploratory Factor Analysis

Exploratory Factor Analysis identifies common dimensions of factors from the observed variables that link together the seemingly unrelated variables and provides insight into the underlying structure of the data. Varimax rotation is one of the most popular methods used in the study to simplify the factor structure by maximizing the variance of a column of the pattern matrix. The common factors themselves are expressed as linear combinations of the observed variables (Nalini, 2006).

Factor Model

\[
\text{Factor Score} = W_{11}X_1 + W_{12}X_2 + \ldots + W_{ik}X_k
\]

Whereas

F_i = Estimate of the i^{th} factor

W_i = Weight of factor score co-efficient

X_i = Variables included

K = Number of Variables included

In the study, factor analysis has been applied to narrate the important views on pricing policies and important problems encountered by petrol bunk owners.

**1.9.2 Confirmatory Factor Analysis (CFA)**

The Confirmatory Factor Analysis has been applied to examine the reliability and validity of the variables in each factor. The convergent validity of the factor was assessed by three measures: Item Reliability, Construct (Composite) Reliability and Average Variance Extracted (AVE) (Fornell and Larcker, 1981). Item Validity was evaluated by the size of the standardized factor loading of the variables on their corresponding factors. The loading should be at least 0.60 and ideally at 0.7 or above (Chin, 1998). Composite Reliability was assessed on the basis of internal consistency. It is similar to Cronbach’s Alpha. The minimum acceptable level of

---


composite reliability is 0.5 (Gerbing and Anderson, 1988)\(^4\). The convergent validity was assessed with the help of AVE which is at least 0.50 (Fornell and Larcker, 1981)\(^5\).

In the present study, the CFA has been used to analyse the validity and reliability of variables included in each important view on pricing policy and each important problem encountered by the owners of the petrol bunk.

**1.9.3 T–Test**

In the present study, ‘t’ statistics applied to test the significance of standardized to factors loading in particular factor at the confirmatory factor analysis.

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1) \sigma_1^2 + (n_2 - 1) \sigma_2^2}{n_1 + n_2 - 2}} + \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}
\]

With degree of freedom = \((n_1+n_2-2)\)

Whereas

\[t\] – t-statistics
\[\bar{X}_1\] – Mean of the first sample
\[\bar{X}_2\] – Mean of the second sample
\[\sigma_1^2\] – Variance in the first sample
\[\sigma_2^2\] – Variance in the second sample
\[n_1\] – Number of samples in first groups

---


\( n_2 \) – Number of samples in second groups

In the present study, an analysis was made to find whether there was any significant difference among the dealers in IOCL and HP, IOCL and BP and HP and BP regarding their views on pricing policies and their view on important problem (of what) in the business.

1.9.4 One way Analysis of Variance (ANOVA)

The One Way Analysis of Variance is applied when the criterion variable is in interval scale and the number of group of samples included for the study is more than two. The ‘F’ statistics are calculated by

\[
F = \frac{\text{Trss/df}}{\text{Ess/df}} = \frac{\text{Greater variance}}{\text{Small variance}} 
\]

Compared with the F (K-1; N-k) degree of freedom

Whereas

- \( F \) – ‘F’ statistics
- \( N \) – Number of sample size
- \( K \) – Number of groups included

\( \text{Trss/df} \) – Variance between groups and

\( \text{Ess/df} \) – Variance within groups.

The one way ANOVA has been administered to examine the association between the profile of customers and their view on pricing policy and the problems faced by the owners of petrol bunk.

1.9.5 Two Group Discriminate Analysis:

The two discriminate analysis is used where the dependent variables are in a nominal scale and the independent variables are in an internal scale (Malhotra,
In the present study, a two group discriminate model was followed to identify the discriminate service quality factors among the customers in the private and the public sector banks.

The unstandardised canonical discriminate function was estimated as follows:

\[ Z = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n \]

Whereas Z - Total Discriminate Score

\( X_1, X_2, \ldots, X_n \) - Discriminate variables

\( b_1, b_2, \ldots, b_n \) - Canonical Discriminate coefficients

a - Intercept

The Wilk’s Lambda was calculated as a multi – variant measure of group difference over discriminating variables. The relative discriminating power of the variables was calculated by the formula.

\[ I_j = K_j(\bar{X}_{j1} - \bar{X}_{jn}) \]

Whereas \( I_j \) - The important value of the \( j^{th} \) variable

\( K_j \) - Unstandardized discriminate coefficient for the \( j^{th} \) variable

\( \bar{X}_{jk} \) - Mean of the \( j^{th} \) variable for \( k^{th} \) group

---

The relative importance of a variable $R_j$ is given by

$$R_j = \frac{I_j}{\sum_{i=1}^{n} I_j}$$

In the present study, the two group discriminate analysis was used to identify the discriminate important view on pricing policy, and important problems due to what faced by dealers in IOCL and HP, IOCL and BP, and HP and BP.

1.9.6. Cronbach’s Alpha:

Cronbach’s Alpha is a coefficient of internal consistency, that is, how closely related a set of items are as a group. A "high" value of alpha is often used (along with substantive arguments and possibly other statistical measures) as evidence that the items measure an underlying (or latent) construct. It is commonly used as an estimate of the reliability of a psychometric test for a sample of examinees. It was first named Alpha by Lee Cronbach in 1951, as he had intended to continue with further coefficients. Technically, Cronbach's Alpha is not a statistical test - it is a coefficient of reliability (or consistency).

Cronbach's Alpha has a theoretical relation with factor analysis. As shown by Zinbarg, Revelle, Yovel and Li, Alpha may be expressed as a function of the parameters of the hierarchical factor analysis model which allows for a general factor that is common to all of the items of a measure in addition to group factors that are common to some but not all of the items of a measure. Alpha may be seen to be quite complexly determined.
from this perspective. (Zinbarg R Revelle W Yovel I Li W (2005). "Cronbach’s, Revelle’s, and McDonald’s: Their relations with each other and two alternative conceptualizations of reliability". Psychometrika 70: 123–133)

The formula for the standardized Cronbach's Alpha is:

\[ \alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}} \]

Here N is equal to the number of items, c-bar is the average inter-item covariance among the items and v-bar equals the average variance.

The overall reliability of variables in six important attributes about owner’s view on the pricing policies of petrol and diesel and eight important attributes relating to the problems encountered by the owners in the petrol bunk have been estimated by the Cronbach Alpha in this study.

1.10 Period of the Study:

This Study covers a period of 15 years from 2001 to 2015.

1.11 Limitations of the Study:

This Study has the following limitations.

Suitable alternatives to the existing pricing policies of petrol and diesel were not sought from the respondents (owners of the petrol bunks). Hence the views of the owners relating to the consequences of the existing system of pricing policy of petrol and diesel such as customer’s consequences, owner’s consequences, oil company’s consequences, Government consequences, Economic consequences and price consequences only are analysed.
This Study does not seek to suggest solutions to the problems faced by the petrol bunk owners. This Study aims only at analyzing the present problems encountered by the petrol bunk owners.

1.12 Chapter Scheme:

This Study has been coordinated into seven chapters.

The first chapter is an introductory one. The methodology followed in the research work is explained in the first chapter.

Second chapter is devoted for the review of literature.

In the third chapter, deregulation of petrol and diesel prices in India and the circumstances that warranted such deregulation is explained. The tax revenue to the Government exchequer from the sale of petrol and diesel over the years is also elaborated.

In the fourth chapter, the trend in the prices of petrol and diesel in India over the years and the oil rich nations in the world is discussed.

In the fifth chapter petrol bunk owners’ views on the pricing policy of petrol and diesel are analysed.

In the sixth chapter, the views of the petrol bunk owners relating to the problems encountered by the owners of petrol bunks are examined.

In the seventh and the last chapter, the findings of the study and suggestions are presented.