

**“Analysing Factors Prompting Consumer’s Buying Behaviour Towards CNG Engine Oils-A  
Study in Delhi”**

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**ABSTRACT:**

The present study provides detailed overview among the various factors that affect the buying behaviour of CNG engine oils among CNG car owners. The research paper is segregated into four phases of which the first phase includes the data collection through secondary sources. In this phase secondary data was collected related to lubricant industry. The second phase will consists of exploratory research in which information related to lubricants especially Gas Engine Oils was collected by discussion with Retail Sales executives, Servo Stockist Automotive and petrol pump owners of IOCL. The customer’s choice criteria were known by interviewing some of CNG car owners through unstructured survey. The third phase was about descriptive research which includes structured questionnaire in which data was collected on different factors affecting buying behaviour of CNG car owners. The fourth phase was data compilation in which collected data was analysed, compiled and shaped into findings of the research.

**KEY WORDS:** buying behaviour, lubricant, automotive, compilation, exploratory

**1. INTRODUCTION:**

**Background of the study:**

IOCL is currently India's largest company by sales. It is also the 20<sup>th</sup> largest petroleum company in the world. It has a large product portfolio in which lubricants constitute a distinct product line. Lubricants can be broadly categorized as automotive and industrial. Indian oil lubricants and greases are sold under an umbrella brand named as "Servo". Servo is a market leader in lubricant business (Automotive and Industrial both) and has 55 per cent of the market share and therefore enjoys market leader position. But in case of automotive lubricant segment, Servo has 18-20 per cent market share and hence it is a market challenger. Castrol, with a market share of 26 per cent, is the market leader in this segment. Here lies the problem for the company's management to increase the market share and hence the sales of Servo lubricants in the market.

The automotive lubricants can be divided into different types mainly engine oils, gear oil, brake oil, coolant, transmission oil, grease etc. Among these six types of lubricants, engine oils can be further classified as: passenger car engine oil, diesel car engine oil, boat engine oil, tractor engine oil, four stroke 2/3 wheeler oil, two stroke 2/3 wheeler oil and gas engine oil. Now among all the mentioned gas engine oils, only 'Servo Gas engine oil' is suitable for light vehicles like CNG cars. So, the problem was to identify the ways to increase the sales of 'Servo gas engine oil' among CNG cars and for this a research was required to find out the buying behaviour of CNG car owners towards engine oil for their cars.

**Management Decision Problem:** How to increase purchase of Servo gas engine oil among consumers having CNG cars in Delhi (Dwarka Region)?

**Marketing Research Problem:** The problem was to analyse the factors responsible for non-preference of Servo Gas engine oil by CNG car owners so as to find out the reasons for its poor performance in terms of sales. For this, it was required to find out the factors which affect the buying behaviour of gas engine oils among CNG car owners. These factors can suggest the ways in which sale of servo gas engine oil be increased among the customers. So, the market research problem is

"To study the various factors affecting buying behaviour of CNG engine oils among CNG car owners and suggest recommendations to increase the sales of Servo gas engine oil".

## **2. RESEARCH METHODOLOGY:**

### **2.1 Objectives of the study:**

- To understand the Indian lubricant Industry through secondary research.
- To find out various factors affecting purchase of engine oil among CNG car owners through exploratory research.

- To find out the importance and relationship among these factors through a survey of CNG car owners using questionnaire method.
- To suggest recommendations to increase the sales of Servo Gas engine oil by analysing the survey data obtained.

## **2.2 Research Questions with Hypothesis:**

- 1) A) Is there any relationship between income group and choice of engine oil?  
H1: there is no significant relationship between income and choice of engine oil.  
H2: Higher income consumers purchase highly priced engine oil.  
B) What is the relationship between educational background of customer and purchase decision of engine oil?  
H1: there is no relationship between educational background of customers and purchase decision of engine oil.  
H2: Purchase choice depends on the educational background of customer.
- 2) H1: Customers prefer buying from petrol pumps.  
H2: Customers prefer buying from service stations.  
H3: Customers prefer buying from bazaar shops.
- 3) H1: There is no relationship between dealer's suggestion and choice of engine oil.  
H2: Customers purchase on the basis of dealer's suggestion.
- 4) H1: There is no relationship between advertisements and engine oil brand choice.  
H2: Advertisements are important for a particular brand purchase.
- 5) A) How quality of engine oil is perceived the most?  
H1: It is perceived through dealer's suggestion.  
H2: It is perceived through friend's suggestion.  
H3: It is perceived through presence of standard specifications on the package.  
H4: It is perceived through OEM specification for the oil.  
  
B) Are promotional offers related to purchase choice of engine oil?  
H1: There is no relationship between promotional offers and brand choice.  
H2: Customers prefer buying engine oil with a promotional offer.  
  
C) Which promotional offers are mostly preferred?

H1: Price discounts are most preferred offer.

H2: Extra quantity is most preferred offer.

H3: Free gifts are most preferred offer.

H4: Credit points are most preferred offer.

D) What is the relationship between price and purchase of engine oil?

H1: Price is not important for purchase choice of engine oil.

H2: Customers prefer cheaper engine oils.

**2.3 Type of Research Design:** Descriptive and exploratory research has been used in the study. Initially exploratory research has been used to study the Indian petroleum industry and Indian lubricant industry. After that different parameters of customer buying behaviour for engine oil purchase were identified. Following choice criteria has been identified for purchase of an engine oil.

- Price of engine oil
- Quality of engine oil
- Advertisement of engine oil
- Promotional offers along with engine oil
- Popularity or word-of-mouth
- Dealer's suggestion

After identifying all the parameters through exploratory research, next step is to find relationship between these parameters and engine oil purchase decision and for this descriptive research has been implied.

**2.4 Time period for the study:** October, 2019 to February, 2020

**2.5 Data Collection:** Both primary and secondary data has been used to find the results of study.

**2.6 Sampling Techniques:** the respondents were selected from IGL stations in Dwarka region because most of the CNG car owners can be approached at IGL stations in the same time period. Hence, judgemental sampling technique was used to select the sample of 300 respondents.

### **3. DATA ANALYSIS AND INTERPRETATION:**

The data has been collected through questionnaire using personal interview method. This data has fed into SPSS to find out various statistics and relationships among variables. The sample size taken is 300.

Following are the observations and findings obtained through the questionnaire.

## **1) Awareness about engine oil used in the car**

All the CNG car owners surveyed were unknown about the engine oil used in their car. CNG car owners are entirely dependent on the service station for the purchase of the engine oil. The reason behind this was the convenience.

Outside India, car owners are categorized into two types:

1. Do-it-for-me customers
2. Do-it-yourself customers

Most of the customers lie in first category, which are totally dependent on service stations for engine oil maintenance in the cars.

The second category which is small in size includes those customers who adore their cars and maintain their car on their own. They purchase engine oil on the basis of different parameters and get the engine oil changed on their own. Such customers can be a target segment for the lubricant companies for promoting their product.

In India, we can also find such customers and position the product according to the untapped segment need.

The questionnaire includes different parameters on the basis of which engine oil can be purchased. CNG cars owners were required to mention the ratings for engine oil on the basis of their own perception and knowledge about engine oil. They were asked to give the ratings as if they purchase the engine oil on their own. Accordingly different parameters were analyzed.

## **2) Importance of price of engine oil**

Price of engine oil is a moderately important factor for the largest population. From the data obtained, 53 % of the respondents mentioned price as moderately important factor for purchasing engine oil while only 29 % considered it an important factor.

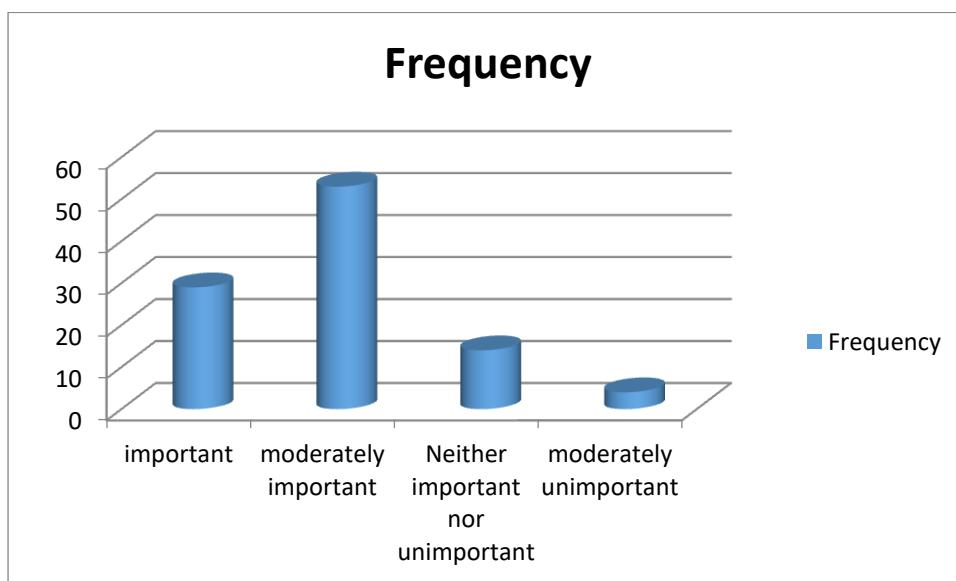
**Price of oil**

		Frequency	Percent	Valid percent	cumulative Percent
valid	important	29	29	29	29

moderately important	53	53	53	82
Neither important nor unimportant				
unimportant	14	14	14	96
moderately unimportant	4	4	4	100
Total	100	100	100	

**Table 3.1**

### Price of oil



**Figure 3.1**

### 3) Importance of Quality of engine oil

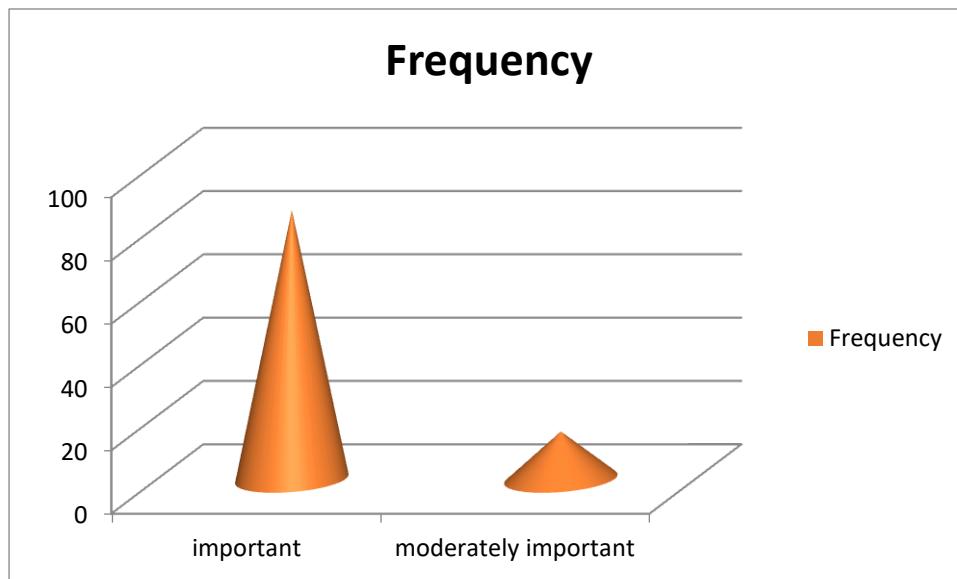
Quality of engine oil is an important factor considered during the purchase of engine oil. 85% of the respondents considered it is an important factor while 15% found it a moderately important factor.

### Quality of oil

		Frequency	Percent	Valid percent	cumulative Percent
valid	important	85	85	85	85
	moderately important	15	15	15	100
	Total	100	100	100	

**Table 3.2**

### **Quality of oil**



**Figure 3.2**

#### **4) Importance of advertisement of engine oil**

Advertisement of engine oil is responsible for its recognition and awareness among different brands. But for the respondent, advertisement (TV, Radio, Printed-ads etc.) is neither an important nor an unimportant factor for choosing a particular brand of engine oil. Only 32 % found it moderately important factor while 45 % considered it a neutral factor.

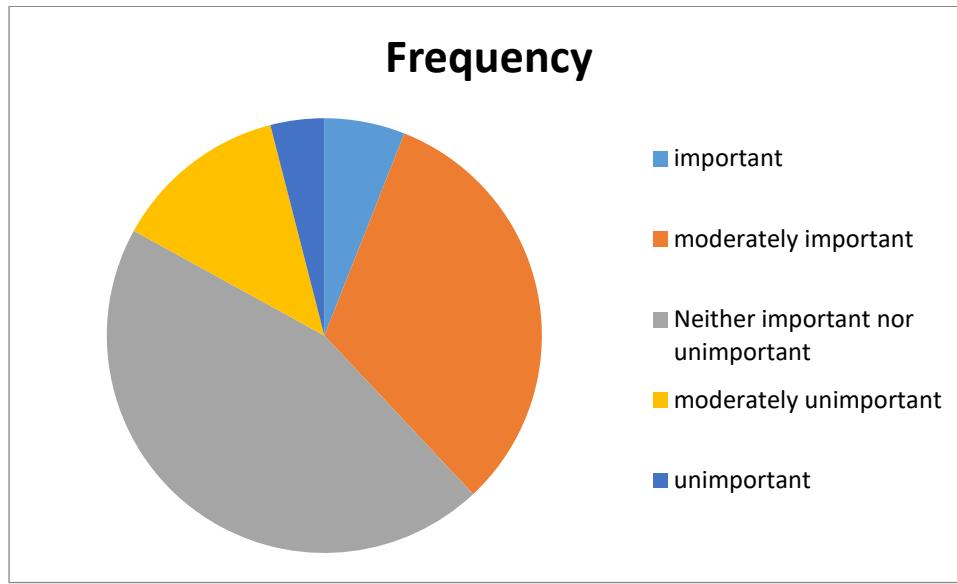
**Table 3.3**

#### **Advertisement**

		Frequency	Percent	Valid percent	cumulative Percent
valid	important	6	6	6	6
	moderately				
	important	32	32	32	38
	Neither important				
	nor unimportant	45	45	45	83
	moderately				
	unimportant	13	13	13	96

unimportant	4	4	4	100
Total	100	100	100	

## Advertisement



**Figure 3.3**

### 5) Importance of Promotional offers with an engine oil

Promotional offer with engine oil is another important factor for increasing its sale. From the data obtained, 54 % of the respondent considered it a moderately important factor for choosing an engine oil brand while 38 % considered it a neutral factor. So, in all, promotional offer can be considered as an option to increase sales of an engine oil.

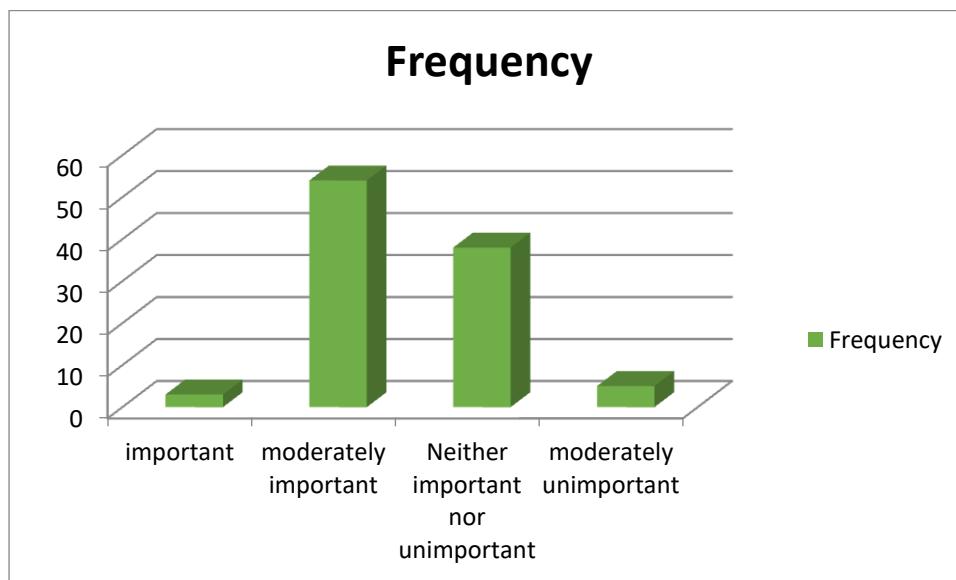
#### Promotional offer

		Frequency	Percent	Valid percent	cumulative Percent
valid	important	3	3	3	3
	moderately				
	important	54	54	54	57
	Neither important				
	nor unimportant	38	38	38	95

moderately unimportant	5	5	5	100
Total	100	100	100	

**Table 3.4**

#### Promotional offer



**Figure 3.4**

#### 6) Importance of drain period of engine oil

Drain period refers to the duration before going in for a charge of oil in cars and other vehicles. The introduction of lubricants made of synthetic base oils has increased drain periods. The results have been dramatic. One estimate is that where a customer was earlier changing his oil after 9000 km, he now does so after 14000 km. This is close to 50 percent increase in drain period. According to the respondent, drain period is an important factor. All the 100 respondents considered it an important factor for engine oil.

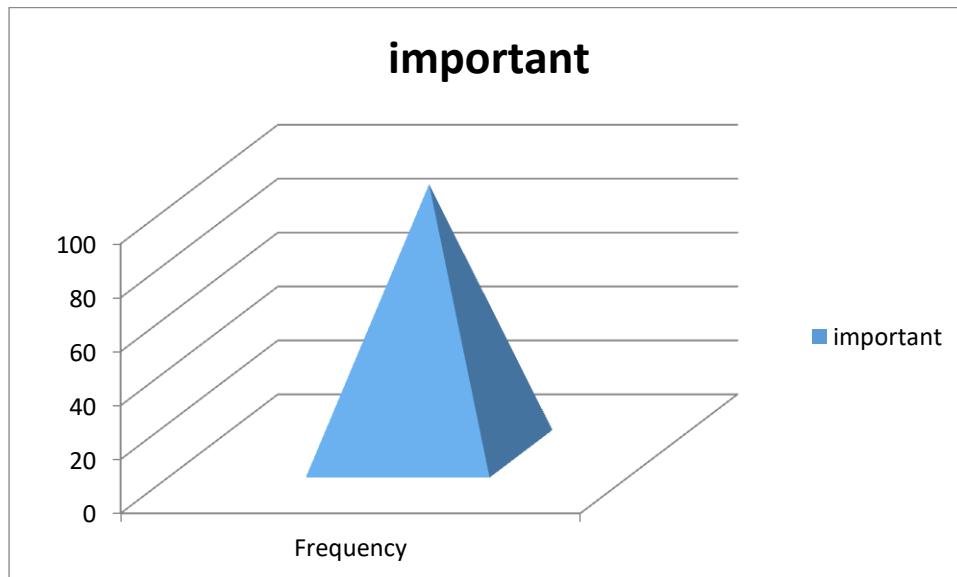
**Table 3.5**

#### Drain period

	Frequency	Percent	Valid percent	cumulative Percent

valid	important	100	100	100	100
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### Drain period



**Figure 3.5**

### 7) Importance of dealer's suggestion in purchase of engine oil

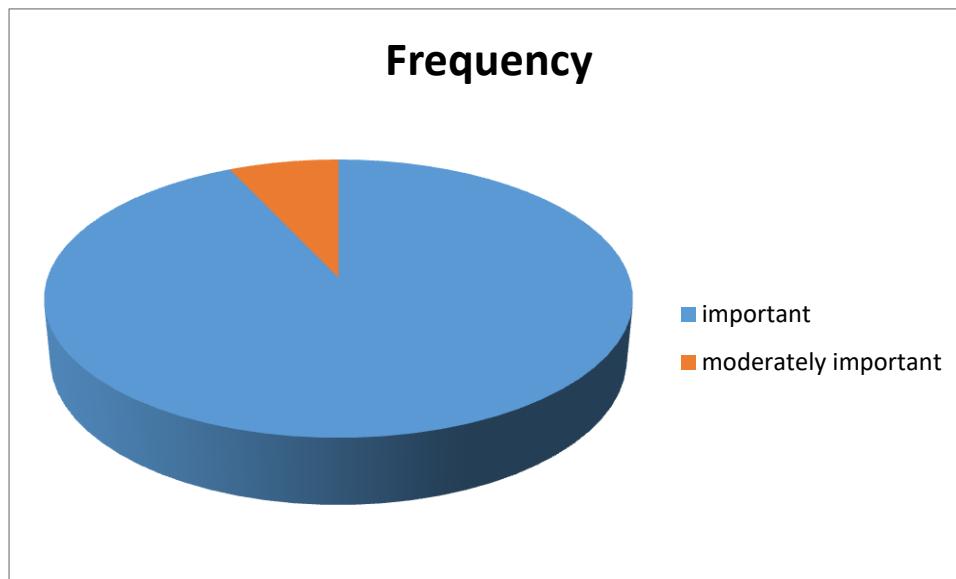
Suggestion of a dealer is another factor which can be taken in to account while making a purchase decision for engine oil. Service centre dealer's suggestion is again an important factor for purchasing engine oil according to the respondents surveyed. 93% respondents gave it rating 1, or considered it an import ant factor.

**Table 3.6**

#### Dealer's suggestion

		Frequency	Percent	Valid percent	cumulative Percent
valid	important	93	93	93	93
	moderately important	7	7	7	100
	Total	100	100	100	

#### Dealer's suggestion



**Figure 3.6**

#### **8) Perception of customer's towards Servo engine oil parameters**

This part of the survey was required to find the respondent's perception towards different parameters of Servo brand for Servo engine oil. It can help to know the positioning of servo engine oil in terms of these parameters in the mind of target customers. Three factors were considered for this purpose and their importance has been described as below:

##### **A) Servo engine oil price:**

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
High	3	3	3	3
Moderately high	61	61	61	64
Neither high nor low	34	34	34	98
Moderately low	2	2	2	100
Total	100	100	100	

Table: 3.7

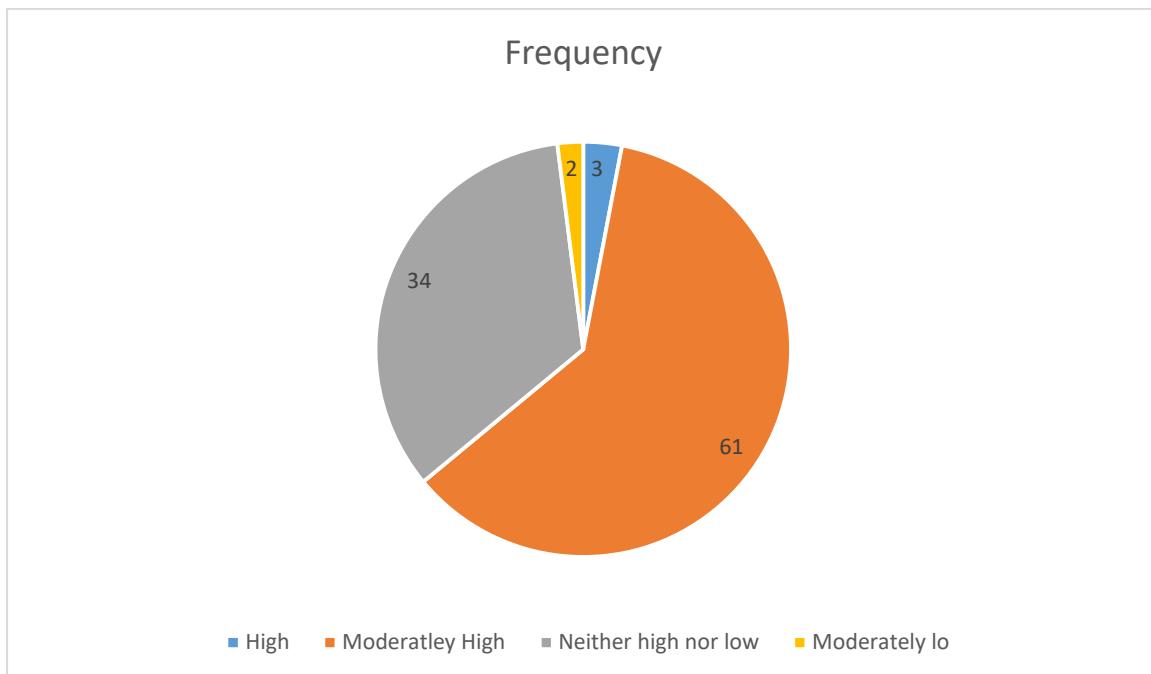


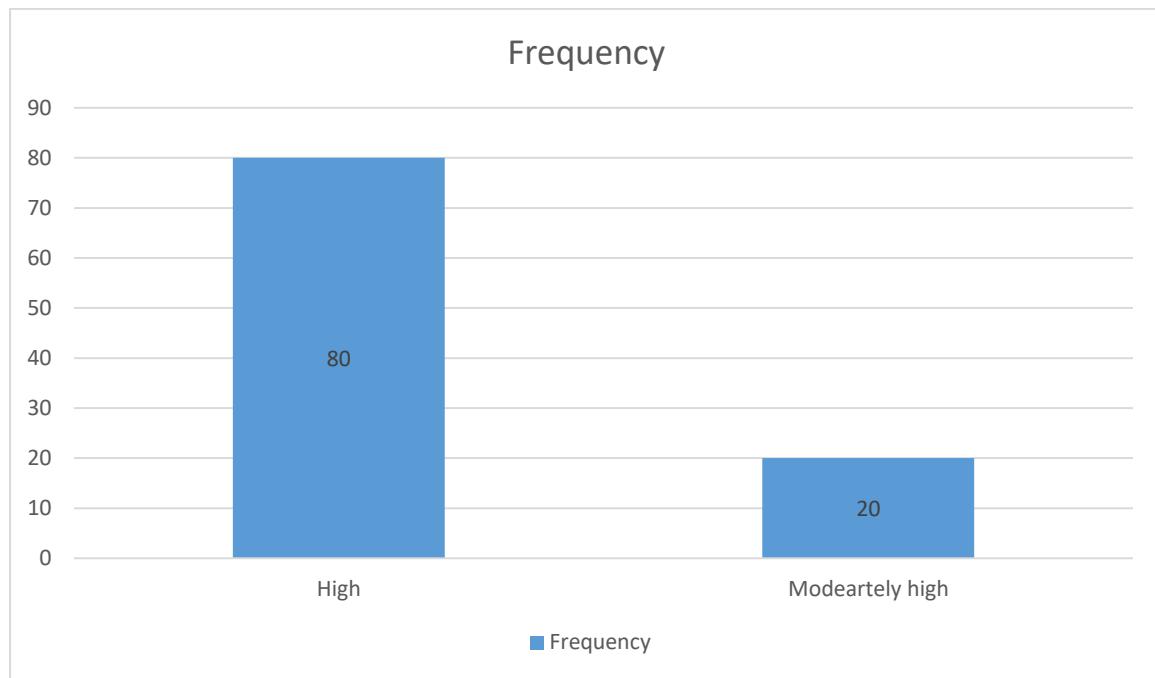
Figure: 3.7

It has been viewed from the analytical table and pie diagram that 61 per cent of the CNG car owners respondents consider servo engine oil price as moderately high while 34 per cent perceive it as neither high nor low. So, it can be said that servo is not as high priced engine oil for CNG car owners.

B) Servo Quality:

Valid	Frequency	Percent	Valid Per cent	Cumulative Percent
High	80	80	80	80
Moderately High	20	20	20	100
Total	100	100	100	

Table :3.8



Figure"3.8

The data has been based on TV advertisements of servo as remained to the respondents at the time of filling of questionnaire. 63 per cent rated servo advertisements as of moderately high quality while 28 per cent rated neither high nor low.

#### **9) Best Promotional Offer Choice:**

Valid	Frequency	Percent	Valid Per cent	Cumulative Per cent
Price discount	26	26	26	26
Extra Quantity	48	48	48	74
Free Gifts	19	19	19	93
Credit points	7	7	7	100
Total	100	100	100	

Table: 3.9

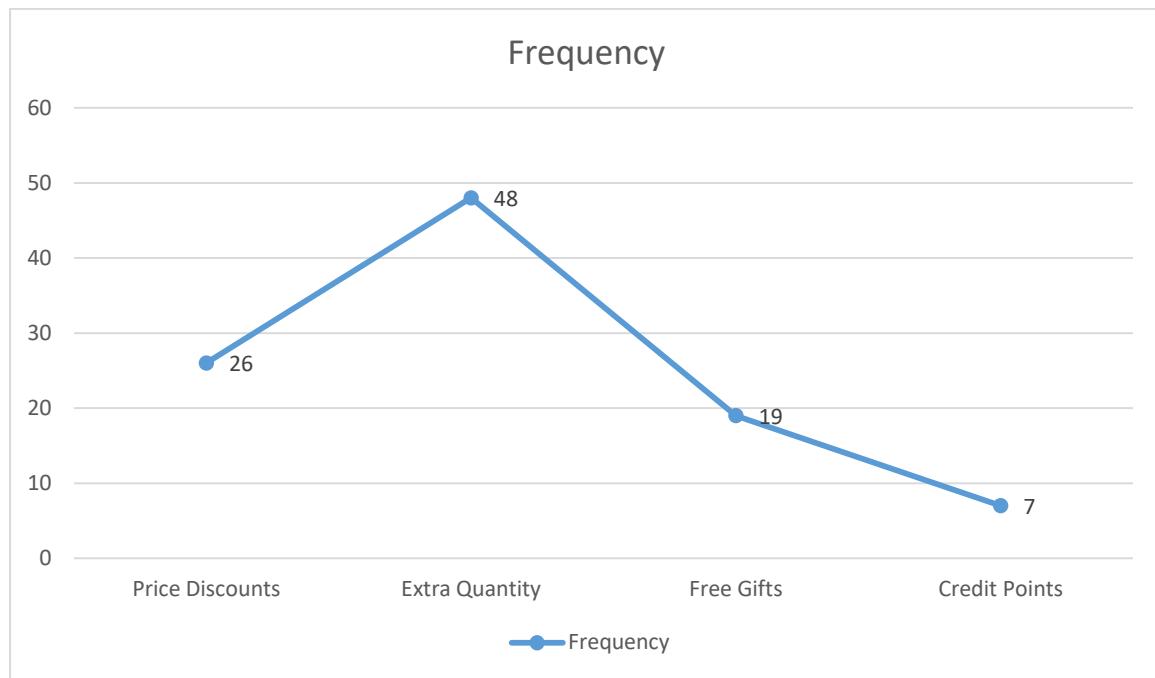


Figure: 3.9

The analytical table and line chart shows that respondents have given first rank to extra quantity offer (48 per cent) while second preferred offer being price discount (26 per cent). So, for CNG car owners segment, extra quantity offer along with engine oil pack can be a nice option to increase sales of engine oils.

10) Knowledge about performance difference between gas engine oil and petrol engine oil:

Valid	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Yes	39	39	39	39
No	61	61	61	100
Total	100	100	100	

Figure:3.10

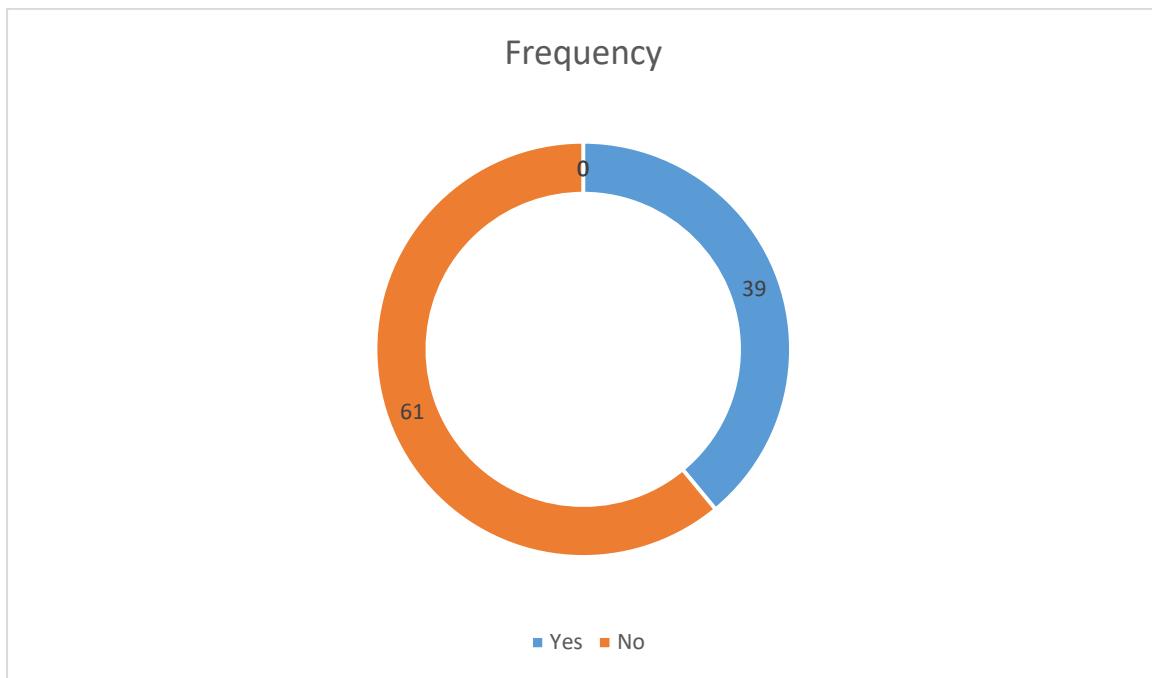


Figure:3.10

According to the survey, 39 per cent of the respondents are aware of the difference while 61 per cent are not aware at all.

#### 4. HYPOTHESIS TESTING:

	Levine's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of Difference	
	F	Sig	t	df	Sig(2 tailed)	Mean Difference	Standard Error	Lowe	Upper
Price of oil – Equal Variances assumed	.004	.950	.223	86	.824	.04063	.18246	-.32209	.40336
Equal Variances not assumed			.231	47.734	.818	.04063	.17593	-.31314	.39441

Table: 3.11

The independent sample t-test for the relationship between annual income and price parameter for choice of engine oil give significant value as  $0.824 > 0.05$  at 95 per cent confidence level which means that there is no significant relationship at 95 per cent confidence level and null hypothesis is accepted with evidence.

- 2) as all the respondents surveyed were entirely dependent on service centres for lubricant change, thus there is no significant relationship between their educational background and their purchase decision. So, null hypothesis is accepted with evidence.
- 3) As per the survey, CNG car owners buy engine oils from service stations hence H2 is also accepted.
- 4) Dealer's suggestion is an important factor for engine oil purchase. As per the customer's survey, 97 per cent of the respondents give the ration of 1 on the importance parameters which means that null hypothesis is rejected and H2 is accepted.
- 5) According to the data obtained, quality of engine oil is perceived maximum via dealers' suggestion (49 per cent) followed by OEM's specification (26 per cent), friend's suggestion (12 per cent) and standard specifications (13 per cent). So, the quality of engine oil is perceived the most through dealer's suggestion and thus, H1 is accepted.
- 6) Extra quantity is the most preferred promotional offer for an engine oil purchase and according to the survey, 48 per cent of the respondents favoured this option so, H2 is accepted.

## **5. FACTS AND FINDINGS/ RECOMMENDATIONS:**

### **(1) Important factors for an engine oil selection:**

<b>S.No.</b>	<b>Parameter</b>	<b>Importance</b>	<b>Percentage of Respondents</b>
1.	Price of engine oil	Moderately important	53
2.	Quality of engine oil	Important	85
3.	Advertisement of engine oil	Neither important nor unimportant	45
4.	Promotional offers along with engine oil	Moderately important	54
5.	Drain period	Important	100
6.	Dealer's suggestion	Important	93

Table:3.12

The above table depicts that drain period and dealer's suggestion are the two most important parameters for selection of engine oil.

**(2) Perception of customer's towards Servo engine oil parameters:**

S. No.	Parameters	Rating	Percentage of Respondents
1.	Servo engine oil price	Moderately high	61
2.	Servo engine oil quality	High	80
3.	Servo advertisement's quality	Moderately high	63

**Table: 3.13**

The analytical table indicates that Servo engine oil is a high quality engine oil with moderately high price. Also, its advertisement's quality is moderately high and can be improvised.

**(3) Best promotional offer with engine oil:** one factor which affects the sale of engine oil is promotional schemes with it which are price discount, extra quantity, free gifts, credit points etc. it has been noticed from the study that CNG car owners like "Extra Quantity" offer the most. "Price Discounts" is the second preferred option where as "Credit points" is the least preferred option.

**(4) Knowledge about performance difference between Gas engine oil and petrol engine oil:**

One of the key difference between a gas engine and petrol engine is that natural gas engines have a specific limit on phosphorous to protect the catalyst. Phosphorous is a part of anti-wear additive package in engine oils. Another difference is that oxidation is less of a concern than in diesels while nitration is a greater concern, so oils for these engines are formulated with some different types of additives to protect against nitration vs. oxidation. According to survey it was found that many customers were unaware of the difference between the engine oil requirements for gas engine and petrol engine. 39 per cent of the respondents were aware of the difference while 61 per cent not.

**(5) Determinants of quality of an engine oil:** Quality of an engine oil can be perceived in different ways:

- Standard specifications on the label e.g. API, ACEA
- Dealer's suggestion
- Original manufacturer's specification
- Friend's suggestion

The quality of engine oil is perceived maximum through dealer's suggestion which means that CNG car owners give maximum importance to it. Next important determinant is OEM's specification. Customers consider engine oils specific for a particular car model as of higher quality. Here, engine oils specific for a particular car model works well. At last is the importance of standard specifications on the label. Customers know less about these specifications and need is to increase the awareness about these standards to avoid the usage of spurious oils.

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