

HIGH-PERFORMANCE PETROL-A Consumer Behaviour Study

Dr. Preeti Rajpal Singh

Associate Professor

S. S. College of Business Studies, University of Delhi, Delhi, INDIA.

ABSTRACT

In the year 2002, the Indian market saw not one but four brands of high-performance petrol -- Speed, XtraPower, Premium and Josh. Prior to this, petrol was largely a commodity business under the administered price mechanism with no concept of branding and all oil public sector undertakings were selling uniform products- “petrol” and “Diesel”. All these new brands promised enhanced overall engine performance, maximum power and acceleration, reduced emission, no engine knocking, improved mileage and reduced maintenance costs. They are also retailing at near identical prices—with a variation of only a few paise per litre. This paper is based on primary research aimed to study awareness of high-performance petrol, benefits sought by users, trial purchase and adoption rate, brand recall, brand image, brand association with manufacturer/supplier and the degree of consumer satisfaction.

Key Words: high-performance petrol, high performance fuel, trial and adoption, brand recall, brand image.

INTRODUCTION

In India, petroleum was discovered in Digboi, Assam towards the end of the 19th century. The industry was initially open for international players and global oil majors namely Caltex, Esso and Burmah Shell. However, after the oil crisis of the 1970s, the government nationalized the Indian divisions of the international oil companies and the industry became one of the most strictly regulated industries in the country. Under the administered price mechanism (APM), the concept of high-performance fuel was non-existent except for selling higher octane petrol. All oil public sector undertakings were selling uniform products- “petrol” and “Diesel”.

BPCL was formed in the 1970s by the Indian government as a part of its nationalization drive for oil companies. Over a period of time, the government stake in the company was diluted from 100% to 66%. Indian Refineries and the Indian Oil Company were set up in 1958 and 1959 respectively with the objective of acquiring competence in oil refining and marketing. In 1964,

these two companies merged to form IOCL. HPCL was first incorporated as Standard Vacuum Refining Company of India in 1952 and later named ESSO India. The company was renamed as HPCL in 1974. India's second largest integrated oil refining and marketing company, the Indian government is the major shareholder with a 51% stake in the company. IBP was first incorporated as Indo-Burmah Petroleum in the Burma (now Myanmar) in 1909. Though it was initially taken over by IOC in 1970, it got separated and formed as a public sector company in 1974 under the Ministry of Petroleum and Natural Gas, Government of India. The Indo Burma Petroleum Company Limited changed its name to IBP Co. Limited in 1983. In 2002, it was once again acquired by the IOC and became one of its group companies. IBP Co. Limited got merged with its parent company Indian Oil Corporation Limited in 2007 under the Ministry of Petroleum & Natural Gas, Government of India.

However, the market opening up and private sector being allowed to market petroleum oil products provided the petroleum companies with new avenues to innovate, so as to strategically achieve sustainable competitive advantage. They started to focus on product development and marketing initiatives –and the introduction of high-performance fuel was one of them.

This petrol, which are a blend of petrol and multi-functional additives, and contain deposit control additives that effectively remove harmful deposits from all fuel metering systems and components resulting in enhanced overall engine performance - easy starting / smooth idling, maximum power and acceleration, reduced emission, and no engine knocking - improved mileage and reduced maintenance costs, and hence are also referred to as high performance petrol.

When one buys a new vehicle, its fuel-port injectors, intake valves, as well as combustion chamber are completely free of deposits. Over a period of time deposits begin to accumulate on these engine parts, thus affecting the vehicle performance.

Due to deposits on port fuel injectors car ends up with poor ignition, rough idling, reduced acceleration and higher emissions. If one uses a fuel without additives, hard and porous deposits will soak up parts of fuel like a sponge. This leads to improper fuel -air mixture, which affects the vehicle performance as well as the CO-content of the exhaust gases. In extreme cases, deposits on the valve seat can prevent the valve from closing properly, which will damage the engine severely. The deposits on intake valves restrict airflow and hence, adversely affect fuel economy, power output and driving comfort. Deposits in the combustion chamber lead to rise in pollution levels, octane requirement increase (ORI) and higher lubricant consumption. In fact, combustion chamber deposits are the reason for a 'knocking sound', as well as reduced power and slower acceleration. Very advanced engines have 'anti-knock sensor' which can easily adjust compression ratios. Most new generation vehicles in India don't have such features. However, with the introduction of additised petrol, this disadvantage can be eliminated.

Bharat Petroleum ushered in the era of value-added, high-performance petrol with the launch of its "new generation" high performance petrol called "**Speed**" in July 2002. Bharat Petroleum initiated the concept of branding to a trade that was, until then, largely a commodity business in India. The same year in August Hindustan Petroleum Corporation Ltd (HPCL) launched its new petrol -- Power, later renamed **XtraPower**. Around the same time Indian oil corporation came out with its high-performance high-performance petrol called **IOC Premium**, which was then India's first 91 octane petrol. IBP Co Ltd joined high-performance fuel race in November 2002 with the introduction of its premium high-performance petrol under the name **Josh**.

The success of these petrol was partly aided by new car launches new technology and a renewed interest towards better, powerful, versatile, safer and environment friendly high-performance cars. According to industry observers, this trend was in line with the global trends wherein petroleum companies tried to build a loyal customer base by branding petroleum products. As petrol and diesel had traditionally not been seen as categories with much scope for product differentiation, branding of these products

LITERATURE REVIEW

A.K. Jain, B. S. Nagarkoti et al (2004) described the performance of various types of chemically different multifunctional fuel additives. Gupta and Chaturvedi² (2007) have studied the strategy of petroleum companies trying to build a loyal customer base by branding petrol. They concluded that since there is very little scope for product differentiation in petrol and diesel, branding of these products has been a landmark in the Indian petroleum sector. Urkude, and Attri (2011)³ in their paper give a brief background to the advent of global oil brands and the journey of India's petroleum market from a commodity to brands. Kannan and Chinniah (2012)⁴ have assessed the consumer awareness and usage pattern of Xtrapremium petrol. Atri, Pahwa et al (2012)⁵ have studied the customer brand loyalty and customer satisfaction with public sector oil marketing companies for refuelling their vehicles. Dugar (2013)⁶ undertook an empirical study of consumers of petrol who drive their own vehicles was found that although consumers see value in high-performance petrol they consider different brands of petrol as 'very similar' Mohan Raj and Milan (2013)⁷ studied the factors influencing customers preference of a specific petrol retail outlet. between cosmopolitan city and tier 2 city. Lina Pilelienė (2016)⁸ has studied the factors affecting petrol station brand choice. in Lithuania in 2014

. Rationale for the study

This study aims to study the awareness of high-performance petrol, benefits sought by users, trial purchase and adoption rate, brand recall, brand image, brand association with manufacturer/supplier and the degree of consumer satisfaction.

OBJECTIVES

With this background, a research was carried out to study the Indian consumers perception of high-performance petrol. Specifically, the research aimed to study

- Awareness of high-performance petrol
- Benefits sought
- Trial and adoption
- Brand recall
- Brand association with manufacturer/supplier
- Brand image and
- Degree of satisfaction of consumers

HYPOTHESIS

Trial of high-performance petrol is independent of gender of consumer.

Trial of high-performance petrol is independent of age of consumer.

Trial of high-performance petrol is independent of type of car owned by consumer.

Adoption of high-performance petrol is independent of gender of consumer.

Adoption of high-performance petrol is independent of age of consumer.

Adoption of high-performance petrol is independent of type of car owned by consumer.

METHODOLOGY

Research Design

The study has been conducted under conclusive research using Descriptive research design

Scope of Study

This study is concerned with the usage of four-wheeler passenger vehicle (car) owners who use their vehicles for non-commercial purposes (i.e., not for commercial freight or passenger). High-performance diesel was intentionally left out of the scope of the study as a majority of the diesel run vehicles are commercial vehicles and their fuel consumption pattern and behaviour is very different from that of individual consumers.

Data Collection

The study made use of primary data collected using a Structured Questionnaire. The questionnaire was divided into 2 sections –the first section was on awareness, trial and usage of high-performance petrol in general while the second section was to study the specific brands.

Aided recall was recorded using show cards and a word association test helped highlight the “image” consumers associated with each brand. Itemised rating scale was used to study satisfaction levels

The questionnaire was pretested on a small group of car owners and finalized thereafter-- Reduction of engine knocking was deleted as a parameter of satisfaction after the questionnaire pretest as none of the respondents could answer/understand it.

The survey was administered personally at petrol pumps and at parking lots of commercial/office complexes, shopping areas and malls.

Data Analysis

Graphical and percentage analysis are used for descriptive analysis. Non- parametric test – chi square test (X^2) at 5% level of significance was used for hypothesis testing used to test the hypothesis.

Sampling

The target population was vehicle owners who use their vehicles for non-commercial purposes (i.e., not for commercial freight or passenger) A sample of 477 such vehicle owners located in the national capital territory, Delhi was selected using non-random Convenience sampling. 50% of the respondents were approached at the petrol pumps while the remaining 50% were approached at parking lots of commercial/office complexes, shopping areas and malls. Of the 477 responses received, 27 questionnaires were rejected due to incomplete response.

Sample Size: 450 respondents

Period of Data Collection: The collection period spanned February 2016 to March 2016

Sample Profile

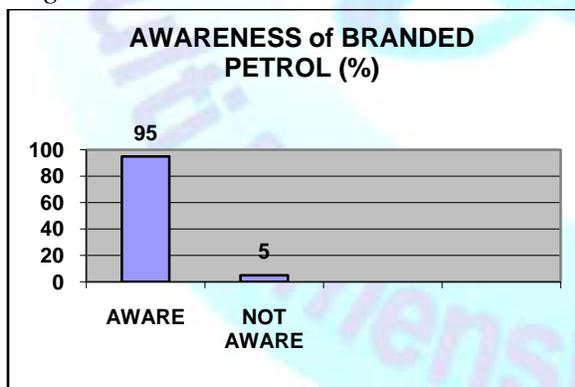
Table 1: Sample Profile of Respondents based on Demographics

variable		count	percentage
gender	Male	332	73.78
	female	118	26.22
age	18 – 30 years	110	24.45
	31 – 50 years	172	38.22
	Over 50 years	168	37.33
Type of car	Small	186	41.33
	Mid-size	171	38.00
	luxury	93	20.67

FINDINGS

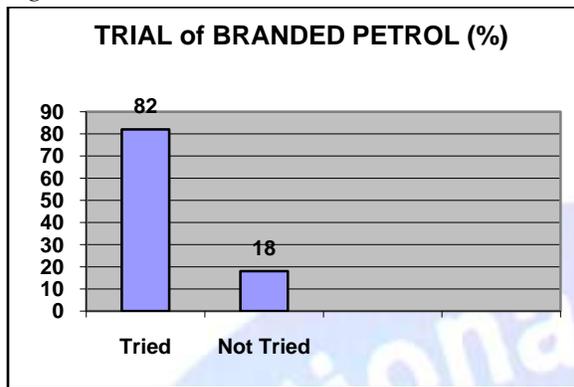
- Only 5% of the sample was not aware of the existence of high-performance petrol with all the 5% were females.

Figure 1



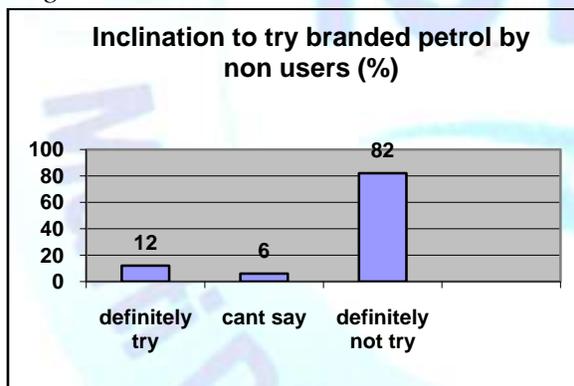
- Out of the respondents who were aware of high-performance petrol, 18% had never tried it while 82% had tried it at least once. Also, among those who had tried the high-performance petrol, a majority 67% had MPFI (Multi-Port Fuel Injection) cars while 33% were driving non-MPFI cars.

Figure 2



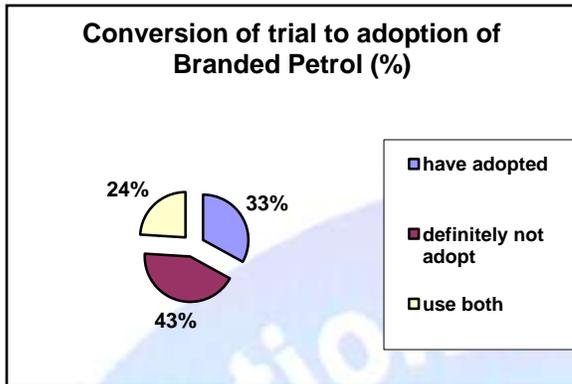
- Of the respondents who had never tried high-performance petrol only 12% cited an inclination to try it, 6% were non-committal while the remainder 82% were sure they would not want to try it in the near future. The reason the latter gave for it was
 - high-performance petrol is more expensive (78%)
 - Satisfied with regular petrol (87%)
- Both the reasons (65%)

Figure 3



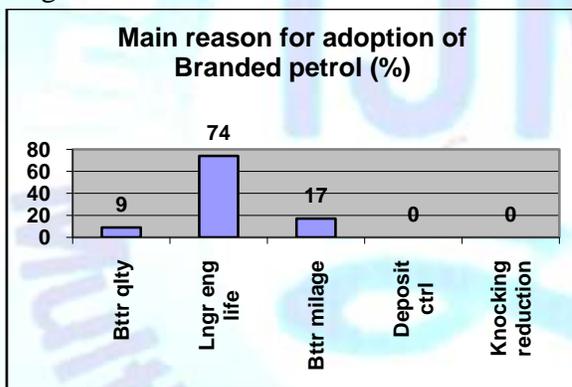
- The 82% respondents who had tried the high-performance petrol, is an exaggerated figure since it includes those consumers who were forced to refuel their cars with high-performance (expressed as “more expensive”) in the face of non-availability of regular petrol at the fuel station. This category accounted for for 8% and they definitely did not want to adopt the high-performance petrol. Another 35% of those who had tried were not willing to adopt it, while 33% had adopted it for regular use. The remainder 26% were using both high-performance petrol and regular fuel. 74% of the respondents who had adopted high-performance petrol for regular use were luxury car owners

Figure 4



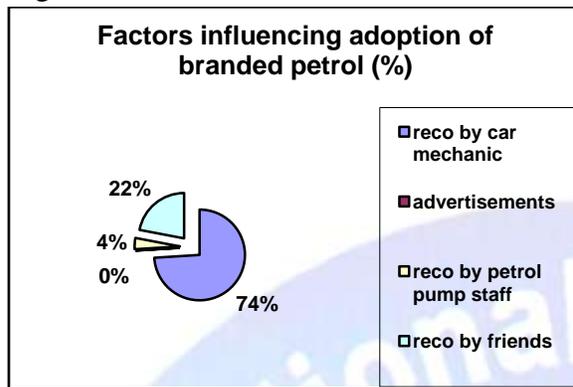
- the main reason for adoption of high-performance petrol was more subjective – it was based on (‘hope’) of longer engine life (74%), (‘impression’) of quality fuel (9%), or even ‘better’ mileage (17%). “Deposit control or effectively removing harmful deposits” and “reduction in knocking” cited by all oil companies as their advantage was not offered as the main reason by even a single respondent.

Figure 5



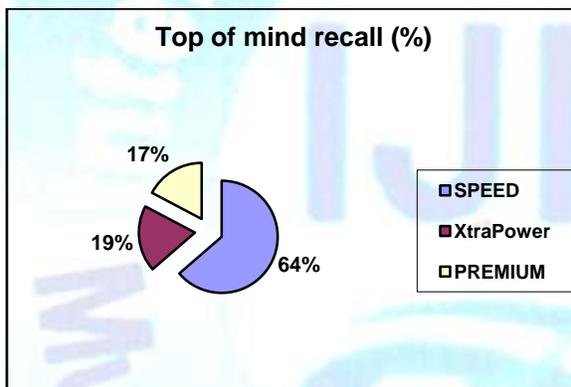
- Among the factors influencing the adoption of high-performance petrol, the clear winner was the car mechanic/workshop recommendation (74%), while friend’s recommendation was a low second at 22% and the petrol pump staff’s recommendation only 4% . Not surprising, but advertisements were not an influencing factor for any respondent. (Promotional schemes had tempted a few respondents to try the high-performance petrol but they remained in the non-adopter category)

Figure 6



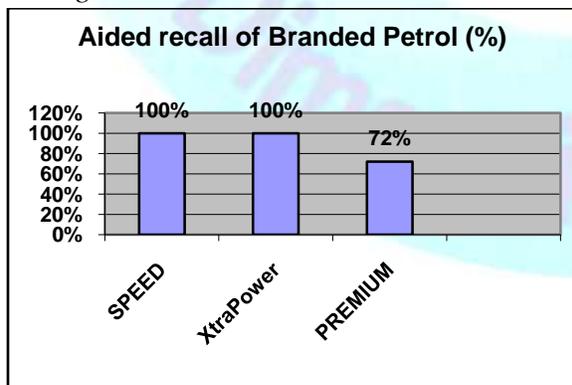
- In the TOM (top of mind) brand recall, Speed emerged the clear winner, with 64% respondents naming Speed as the first high performance petrol brand that came to their mind). XtraPower and Premium followed with 19% and 17%.

Figure 7



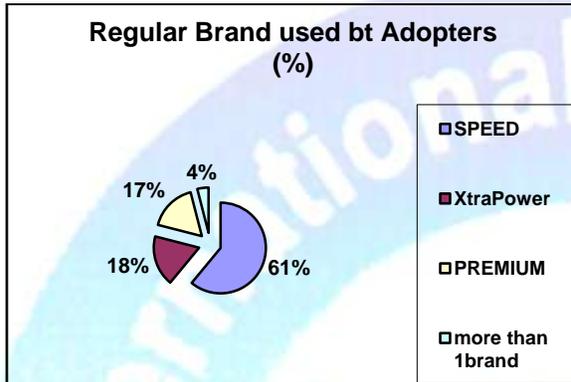
- Aided recall (using show cards) gave a 100% result for Speed and XtraPower; Premium was a little lower at 72%.

Figure 8



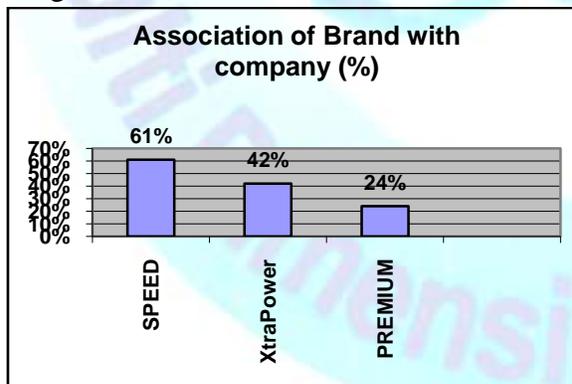
- Predictably, the regular brand used by adopters of high-performance fuel was very closely related (almost identical) to the TOM recall. Speed was regularly used by 61%, XtraPower by 18%, Premium by 17% while 4% used more than one brand of high-performance petrol. This translates to 96% of the consumers being brand loyal.

Figure 9



- In spite of a near total brand loyalty, there was incorrectness in the association between the oil company/ petrol pump supplying a particular brand. 61% respondents correctly associated Speed with Bharat Petroleum, 42% XtraPower with HPCL, 24% Premium with IOC. Since all the inaccurate associations were from non-users of the particular brand, it indicates a selective retention on the part of the consumers of high-performance petrol. Also, the high accurate association figures of Speed and Power can be partly due to the effectiveness of their advertising campaigns.

Figure 10



- All the brands do have a positive image in the minds of the consumers. A word association test helped highlight the “image” consumers associated with each brand
SPEED –Fast, translated as better acceleration

XTRAPOWERR –Strong, translated as better engine power

PREMIUM –Exclusive, translated as better quality

The brand loyalty appeared more out of habit-- a resistance to change -- rather than specific brand imagery.

- The demand for this high-performance petrol is very price sensitive but only in one direction – and what is important to the consumer is not so much the absolute price of the high-performance fuel but its price differential with the regular (administered price) petrol. During the period of the study the price of regular petrol in Delhi (as on 01-03-2016) was Rs. 56.61 /lt.

So, while 50% of the regular users will definitely discontinue (and another 27% might discontinue) the use of high-performance petrol if the price differential was to increase to Rupees five per litre or more, only 4% of the non-users would definitely shift (and another 11% might shift) to using high-performance petrol if the price differential was to reduce to Rupees two per litre.

Figure 11

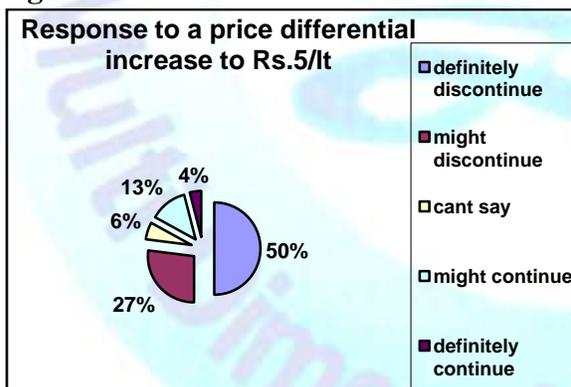
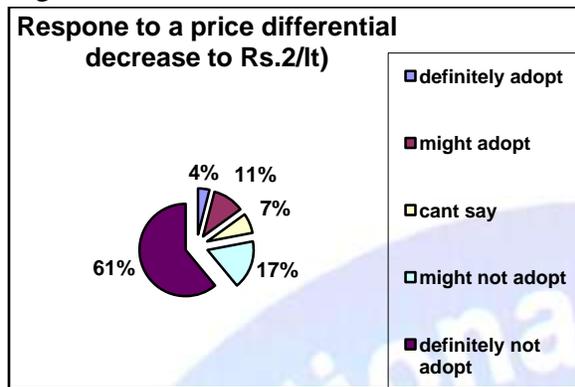


Figure 12



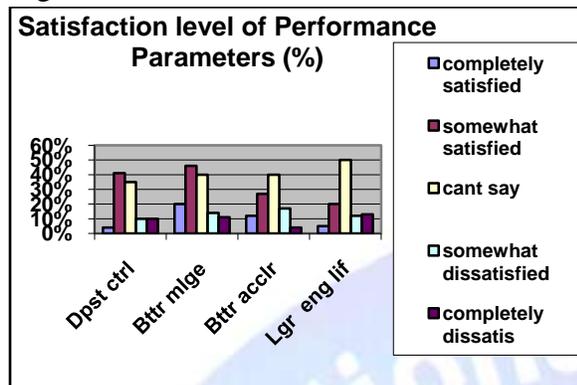
- In the analysis of the satisfaction level of the consumers with respect to the various parameters, the following picture emerged.

Table 2: SATISFACTION WITH PERFORMANCE PARAMETERS (%)

	Longer engine life	Better acceleration	Deposit control	Better mileage
Completely satisfied	5	12	4	20
Somewhat satisfied	20	27	41	46
Cant say	50	40	35	40
Somewhat dissatisfied	12	17	10	14
Completely dissatisfied	13	4	10	11

While a majority of consumers (35% to 50%) could not decide on their satisfaction level, there was a general positive feeling associated with the usage of high-performance petrol – 39% satisfied with better acceleration, 45% with deposit control, and as many as 66% with improved mileage. In contrast, there were only 25% consumers satisfied with the longer engine life promise since according to them their period of usage had not been long enough to substantiate it.

Figure 13



Hypothesis testing: The non-parametric chi square (X^2) test has been used at 5% level of significance to test the hypothesis.

Null Hypothesis: Trial of high-performance petrol is independent of gender of consumer.

Alternate Hypothesis: Trial of high-performance petrol is NOT independent of gender of consumer.

Table 3: Trial of high-performance fuel – gender-wise

	Male	Female	Total
Tried	68	13	81
not tried	264	105	369
Total	332	118	450

Calculated X^2 is 5.28 which is greater than tabulated (critical) value of X^2 of 3.84 at 5 % level of significance and 1 degree of freedom. Therefore, **the null hypothesis is rejected**

Null Hypothesis: Trial of high-performance petrol is independent of age of consumer.

Alternate Hypothesis: Trial of high-performance petrol is NOT independent of age of consumer.

Table 4: Trial of high-performance fuel – age-wise

	18-30yrs	31-50yrs	Over 50yrs	Total
Tried	14	35	32	81
Not tried	96	137	136	369
Total	110	172	168	450

Calculated X^2 is 2.74 which is less than tabulated (critical) value of X^2 of 5.99 at 5 % level of significance and 2 degree of freedom. Therefore, the **null hypothesis is accepted.**

Null Hypothesis: Trial of high-performance petrol is independent of type of car owned by consumer.

Alternate Hypothesis: Trial of high-performance petrol is NOT independent of type of car owned by consumer.

Table 5: Trial of high-performance fuel – car ownership wise

	Small	Mid-size	Luxury	Total
Tried	4	24	53	81
Not tried	182	147	40	369
Total	186	171	93	450

Calculated X^2 is 129.25 which is greater than tabulated (critical) value of X^2 of 5.99 at 5 % level of significance and 2 degree of freedom. Therefore, **the null hypothesis is rejected.**

Null Hypothesis: Factors influencing adoption of high-performance petrol is independent of gender of consumer.

Alternate Hypothesis: Factors influencing adoption of high-performance petrol is NOT independent of gender of consumer.

Table 6: Factors influencing adoption of high-performance fuel

	Male	Female	Total
Reco by mechanic	79	11	90
Reco by friend	10	17	27
Reco by petrol pump staff	1	4	5
Total	90	32	122

Calculated X^2 is 35.4 which is greater than tabulated (critical) value of X^2 of 5.99 at 5 % level of significance and 2 degree of freedom. Therefore, **the null hypothesis is rejected.**

Null Hypothesis: Factors influencing adoption of high-performance petrol is independent of age of consumer.

Alternate Hypothesis: Factors influencing adoption of high-performance petrol is NOT independent of age of consumer.

Table 7: Factors influencing adoption of high-performance fuel

	18-30yrs	31-50yrs	Over 50yrs	Total
Reco by mechanic	9	18	63	90
Reco by friend	3	7	17	27
Reco by petrol pump staff	0	1	4	5
Total	12	26	84	122

Calculated X^2 is 1.1 which is less than tabulated (critical) value of X^2 of 9.48 at 5 % level of significance and 4 degree of freedom. Therefore, **the null hypothesis is accepted.**

Null Hypothesis: Factors influencing adoption of high-performance petrol is independent of type of car owned by consumer.

Alternate Hypothesis: Factors influencing adoption n of high-performance petrol is NOT independent of type of car owned by consumer.

Table 8: Factors influencing adoption of high-performance fuel

	Small	Mid size	Luxury	total
Reco by mechanic	3	19	68	90
Reco by friend	4	5	18	27
Reco by petrol pump staff	0	1	4	5
Total	7	25	90	122

Calculated X^2 is 5.7 which is less than tabulated (critical) value of X^2 of 9.48 at 5 % level of significance and 4 degrees of freedom. Therefore, **the null hypothesis is accepted.**

CONCLUSION and RECOMMENDATIONS

High-performance petrol has arrived and has made its presence felt. Introduction of newer technology in cars (MPFI) and a desire for better quality petrol has helped it gain ground. However, the study reveals that it is taking a long time to take off—with only 33% of the consumers who tried high-performance petrol having adopted it.

Even though all the brands offer the same promise -- enhanced overall engine performance, maximum power and acceleration, reduced emission, no engine knocking, improved mileage and all are also retailing at near identical prices with no clear USP (unique selling Proposition), Bharat Petroleum's Speed is far ahead of the other two with 64% Top of Mind Recall and 100% aided recall. This can partly be attributed to a first mover advantage. Also, 61% of consumers of high-performance petrol regularly use only Speed. This is, among other factors, also due to the positive impact of BP's "Pure for Sure" promise.

The main concern of the non-users is its high price differential from the regular petrol price (which is Government controlled and subsidised). Another major hindrance for the non-users is that high-performance petrol is a more expensive proposition without any major or visible pay offs. Since brand loyalty is not very strong, the oil companies cannot hope for large brand switching and therefore the only option they have is to convert non-users to users/adopters of high-performance petrol. This is a major challenge since advertisements and promotion schemes are a minor influencing factor to induce adoption of high-performance petrol.

Trial of high-performance petrol is independent of age – but is related to type of car owned. Also, since car mechanic/workshop recommendation accounts for 74% of the adoption of high-performance petrol-- An effective strategy here would be for the oil companies to get the car

manufacturers to endorse the high-performance petrol as a general product category and recommend it for their (newer technology) new models and versions. Also, the Automobile Association of India and its chapters as well as the technical staff of authorized and registered service stations and workshops could be approached to educate their clients on the payoff of high-performance petrol. The study highlights that these strategies might be more effective than routine advertising of the high-performance petrol.

Limitations of the Study

The major limitations of the study are as follows:

- The data is obtained through convenience sampling (non-random sampling technique) and hence the obtained sample is not entirely representative. Thus, the results cannot be easily extrapolated and generalized.
- The selection of respondents only from NCT Delhi. Due to the low visibility of IBP and Josh in Delhi, and zero percent recall and regular user figures in the pretest stage, it was not included in the brand analysis.

Scope for further research

This study reveals that what is important to the consumer is not so much the absolute price of the high-performance petrol but its price differential with the regular (administered price) petrol further extensive research can be undertaken to study the price differential sensitivity of high-performance petrol. Also due to a growing preference of consumers towards diesel cars, a study on the high-performance diesel can be undertaken

REFERENCES

1. Jain, A., Nagarkoti, B., Tripathi, A., Bangwal, M. et al., "High-performance Petrol - An Experience with Indian Gasoline," SAE Technical Paper 2004-28-0056, 2004, <https://doi.org/10.4271/2004-28-0056>.
2. Gupta C.P., Chaturvedi M., Branding of Fuel by Indian Petroleum Industry and its Impact (With Reference to the High-performance Petrol) , INDIAN JOURNAL OF MARKETING, Volume 37, Issue 3, March 2007.
3. Urkude, A.M., Attri, R., and Pahwa, M.S., India's Petroleum Market: The Journey from a Commodity to Brands, Management Research Journal, Vol. 5, (July 18, 2011). pp. 78-82, 2011.

4. Kannan, V., and Chinniah,V., A Study on the Consumer Perception for High-performance Petrol with Special Reference to Xtrapremium Petrol of Indian Oil Corporation Limited in Coimbatore City, Srusti Management Review, Vol -V, Issue - I, January-2012. P1-14.
5. Attri, R., Pahwa, M.S., and Urkude, A. S., Loyalty and Customer Satisfaction with the Public Sector Oil Marketing Companies: Way Forward for Effective CRM Strategies, Indore Management Journal, (September 28, 2012). Refereed Proceedings of 4th Conference on Excellence in Research and Education, IIM-Indore, pp. 99-113.
6. Anurag D., Measuring Consumers' Preferences and Attitudes Towards High-performance Petrol: An Initial Investigation of the High-performance Petrol Market February 8, 2013, Research Article <https://doi.org/10.1177/0972150912466466>.
7. Mohan R.P and Milan, R. Measuring Customers' Choice and Commitment of Petrol Retail Outlets - Comparative Study between Cosmopolitan City & Tier-2 City Journal of Marketing and communication, Vol. 9, Issue 2, 2013, (December 30, 2013).
8. Lina P., Determination of Factors Affecting Petrol Station Brand Choice in Lithuania, Entrepreneurship, Business and Economics - Vol. 1 pp 535-543

BIBLIOGRAPHY

1. Indian petroleum & natural gas statistics – 2015-16, Ministry of petroleum and natural gas, Economic and Statistics Division, Govt. of India.
2. www.bharatpetroleum.com
3. www.hindustanpetroleum.com
4. www.iocl.com
5. <http://www.rediff.com/money/2008/jul/07infla.htm>