

GOLDEN RESEARCH THOUGHTS

PROBLEMS AND FACTORS OF THE SINGLE HP LPG CUSTOMERS IN COIMBATORE DISTRICT



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Abstract

Humanity faces unique and far-reaching challenges in the fast moving and growing world. Our energy needs are increasing as a result of continued population growth, economic development, and individual fuel/energy consumption. At the same time, emissions from fuel wood and fossil fuels are also increase, the main energy source for heating in homes and powering our economies, are contributing to climate change and affecting the quality of air. Liquefied Petroleum Gas (LPG) is used as fuel for thousands of applications. In developing countries the main benefits of LPG is in helping people to switch from unsustainable biomass use to a clean and safe cooking fuel. LPG's domestic uses can never be ignored. It has played a revolutionary role when it comes to changing the face of domestic fuels used for heating and cooking. HPCL commenced marketing of LPG under the brand name "HP GAS". Now a day particularly the single domestic LPG customers are facing so many problems due to inadequate and delayed supply of the LPG. Henceforth the data is fully based on Primary & Secondary data collection. Four objectives are framed for this analysis. The statistical tools applied for this study are Garrett's ranking technique, chi square test and ANOVA. Through this study the HP Gas Company is suggested to improve their service to rectify the problems faced by the customers.

Keywords: Domestic fuel, Energy, HPCL, LPG, Problems, Service.

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INTRODUCTION

LPG's domestic uses can never be ignored. It has played a revolutionary role when it comes to changing the face of domestic fuels used for heating and cooking. LPG for household consumption is nearly 89% of total LPG off-take in India. Total LPG consumption in the country for the year 2011-12 is projected to be more than 16.5 MMT (Million Metric Tons) and it is increased by 4.71% in the year 2013-14 as per document of Ministry of Petroleum and Natural Gas. There are still many rural areas where they have no awareness on use of LPG for domestic purpose. These areas and even many in the urban sectors are using LPG as an alternative source of fuel. However, LPG is not commonly found in rural areas where biomass use tends to be highest and where the health effects of smoke are also highest. Nonetheless, it is used amongst middle or high income groups in urban areas of developing countries. In developing countries the main benefits of LPG is in helping people to switch from unsustainable biomass use to a clean and safe cooking fuel. This provides enormous health benefits helping to avoid the 1.6 million deaths per year from respiratory problems caused by smoke and other pollutants released by inefficient biomass burning in enclosed spaces. It also releases women and children from the drudgery of collecting firewood and health problems associated with carrying heavy bundles long distances. There are also benefits for the local ecology and biodiversity. The UN Millennium project recommends that globally the number of households using non-sustainable biomass for cooking should be halved by 2015.

The main domestic uses of LPG are with respect to lighting, refrigeration, cooking and most of all heating. It is as good for powering standalone stoves and huge cooking stoves. It has been found to be cost effective and hence is used in large scale cooking also. The main reason behind this is easy accessibility, low cost per unit and the environment friendly properties of LPG. Other household or domestic uses of LPG include water heaters, dishwashers, space heaters and even incinerators. One main reason behind LPG being a popular choice of fuel in domestic uses is that it promises a low level of fuel consumption. LPG equipments do not demand high maintenance and it also has a narrow range with respect to flammability. With multiple advantages, LPG has seen a wide growth when it comes to domestic uses. With time, there have been more in-depth studies required for control the price and improve the service provided by LPG gas companies can be increased with respect to domestic purposes.

LIQUEFIED PETROLEUM GAS

LPG, otherwise also known as Liquefied Petroleum Gas, is used as fuel for thousands of applications, in commercial business, industry, transportation, farming, power generation, cooking, heating and for recreational purposes. It is actually a mixture of hydrocarbon gases. It includes butylenes, propylene, butane as well as propane, which is present in substantial part. It is a flammable mixture and one needs to be highly cautious when dealing with it. Propane and butane gases that become liquid under pressure and can then be stored in pressurized containers. The proportion of each gas varies depending on the source and climate. Propane is preferred where the climate is cold and butane where it is warm. LPG has a high energy per unit volume and is convenient to use. Its calorific value per unit volume is about 2.5 times larger than that of natural gas (methane).

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LPG AGENCIES IN INDIA

LPG here stands for the liquefied petroleum gas which is flammable gas used for several of the purposes all over the world as a fuel in the vehicles and in several of the chemical industry where the flammable gas is required. In several of the uses of the gas the main use of it lies as the cooking gas. In India, the use of LPG in the cooking is very high as compared to the other uses of it. There are various companies in India which are in the business of manufacturing the LPG gas in India. Most of the companies are under the government authority while some of them are private organizations also. The several LPG manufacturing companies are as follows:

Bharat Petroleum Corporation Limited: It is mainly known as the BPCL. The company is very large and mainly a state owned company which is having its headquarters at Mumbai. The company deals in lubricants, fuels and mainly the LPG gases. They are in the field of the manufacturing LPG gases from very long time and have listed themselves in the fortune 500 lists. Bharat Gas is a product of Bharat Petroleum Corporation Limited (BPCL). At present, the Bharat gas has coverage of around 25 million households across the country as well as hundreds of commercial and industrial establishments. Bharat gas has always been the frontrunner in maximizing the efficiency and in enhancing the customer satisfaction.

Hindustan Petroleum Corporation Limited: HPCL is a Government of India Enterprise with a Navratna Status, and a Forbes 2000 and Global Fortune 500 company. It had originally been incorporated as a company under the Indian Companies Act 1913. It is listed on the Bombay Stock exchange (BSE) and National Stock Exchange (NSE), India. HPCL has an annual sales/income from operations of Rs 2,32,188 Crores (US\$ 38.75 Billions) during FY 2013-14, having about 20% Marketing share in India among PSUs and a strong market infrastructure. HPCL's Crude Thruput and Market Sales (including exports) are 15.51 Million Metric Tonnes (MMT) and 30.96 MMT respectively in the same period. It operates 2 major refineries producing a wide variety of petroleum fuels & specialties, one in Mumbai (West Coast) of 6.5 Million Metric Tonnes Per Annum (MMTPA) capacity and the other in Vishakapatnam, (East Coast) with a capacity of 8.3 MMTPA. HPCL holds an equity stake of 16.95% in Mangalore Refinery & Petrochemicals Limited, a state-of-the-art refinery at Mangalore with a capacity of 15 MMTPA. In addition, HPCL has constructed a 9 MMTPA refinery at Bathinda, in Punjab, with Mittal Energy Investments Pte. Ltd. Pte. Ltd. as a Joint venture. Presently HPCL produces over 300+ grades of Lubes, Specialities and Greases. HPCL's vast marketing network consists of 13 Zonal offices in major cities and 101 Regional Offices facilitated by a Supply & Distribution infrastructure comprising Terminals, Pipeline networks, Aviation Service Stations, LPG Bottling Plants, Inland Relay Depots & Retail Outlets, Lube and LPG Distributorships. HPCL, over the years, has moved from strength to strength on all fronts. Consistent excellent performance has been made possible by highly motivated workforce of over 11,000 employees working all over India at its various refining and marketing locations.

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Indian Oil: Indian Oil is India's flagship national oil company with business interests straddling the entire hydrocarbon value chain - from refining, pipeline transportation and marketing of petroleum products to exploration & production of crude oil & gas, marketing of natural gas and petrochemicals. It is the leading Indian corporate in the Fortune 'Global 500' listing, ranked at the 83rd position in the year 2012. The Indian oil is that much largest company in the India which is having 10 out of 18 oil refineries in India. It is having its head office at Delhi. The company is the largest in terms of the sales among all the companies in India. For the benefit of its LPG cooking gas customers, Indian Oil is promoting fuel-efficient, safe & quality products through its Indane distributorships.

ONGC: ONGC stands for the oil and natural gas Corporation limited. The company is also a PSU which is headed by the state and having its head office in the degrading. The company is involved in the production, exploration and the refining of the oils and the gases in India. The gases here stand for the LPG gas mainly which is very highly used in India as cooking gas. It is the second largest gas agency in India. ONGC company limited ranks as the numerous Uno oil and gas exploration & production (E&P) in Asia. It contributes over 78% of India's oil and gas production. ONGC offers Liquid Petroleum Gas (LPG) for home usage. It offers LPG cylinders in various capacities. It provides easy access to the customer through various modes that includes telephone, SMS, online access etc., It provide home delivery of cylinders. It also offers LPG gas suppliers through pipe lines. ONGC has been ranked to in various international surveys. It also offers the anytime emergency services throughout the country.

STATEMENT OF THE PROBLEM

Humanity faces unique and far-reaching challenges in this growing world. Our energy needs are increasing as a result of continued population growth, economic development, and individual fuel/energy consumption. At the same time, emissions from fuel wood and fossil fuels are also increase, the main energy source for heating in homes and powering our economies, are contributing to climate change and affecting the quality of air. In this situation, there are many opportunities for LPG to contribute to improved living standards. LPG is known to be the most useful and effective energy alternative for domestic, as well as business, use. The fact that it is offers versatile usage at lower costs than other energy sources, accompanied with its environmentally-friendly nature, greatly increases the demand among people. Now a day particularly the single domestic LPG customers are facing so many problems due to due to price increase, inadequate and delayed supply of the LPG. Even though the price is the political sensitive mater, the companies have to take the necessary step to reduce the problem. Consumer satisfaction is the basic tenet (true) of modern concept of marketing. It is the basic philosophy of management, which forces the organization to align its actions with the market mandates.

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SCOPE OF THE STUDY

The scope of the study is mainly relates to the problems faced by the customers towards the domestic HP LPG. It also helps to find out the satisfaction level of consumer. The scope of the study can be identified as follows:

- ❖ The study helps the researcher to have a practical exposure in this specific field.
- ❖ The study helps the HP Gas Company to know the problems faced by the customers among their product as well as service.
- ❖ The Study helps the respondents to disclose their opinion and views about the HP LPG services.
- ❖ The study results will be of a great help to the government as well as the company in future distribution policy making.
- ❖ It would be useful the student and future research scholars for future studies.

OBJECTIVES OF THE STUDY

- ❖ To study the problems faced by the customers towards HP LPG in households.
- ❖ To study the customers opinion towards the services provided by the company.
- ❖ To offer valid suggestions for realizing the customer importance and their satisfaction of living and the need for improve the service quality.

I. HYPOTHESIS OF THE STUDY

Respondents' opinion towards services provided by the company and the means are same with the socio-economic factor of the LPG customers such as Age and Gender.

II. RESEARCH METHODOLOGY

Research in common parlance refers to search for knowledge. In short the search for knowledge through objective and systematic method of finding solution to a problem is 'research'. As such the term 'research' refers to the systematic method consisting of enunciating the problem formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solution towards the concerned problem or in certain generalization for some theoretical formulation.

RESEARCH DESIGN

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with the economy in procedure. In view of deciding objectives of the study, the researcher feels that descriptive analysis is most suitable to study the problems faced by consumer. Descriptive analysis is concerned with describing the characteristics of a particular individual or a group.

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SAMPLE METHODS

The researcher has conducted a pilot study and based on results the researcher has judged that the single gas customers are facing the problems due to inadequate supply of the LPG; Hence the Judgment sampling method is applied.

SAMPLE DESIGN

Researcher has derived the sample criteria from the total population, such as domestic single HP LPG customers, who are all using for last 3 years (from 2011 to 2014). The primary data are collected from the domestic HP LPG customers, who are having Single HP LPG connection.

SAMPLE SIZE

In this study the sample size is 351, who are all using single HP LPG connection in Coimbatore central zone.

SOURCE OF DATA

The present study depends on both primary and secondary data. Primary data are directly collected from the sample respondents. The secondary data is collected through the company agents, offices and company web site.

STATISTICAL TOOLS

The tools used for the study are:

1. Garrett's ranking technique
2. ANOVA

LIMITATIONS OF THE STUDY

- It is a micro level study and therefore the findings of the study are applicable only to the market segments possessing the characteristics of Coimbatore central zone.
- Only the single connection of HP LPG users was taken for the study.
- The response received from consumer may not represent the views of the universe
- Since the study is based on the primary data collected through questionnaire, the results of the study is subject to all the limitations of the primary data.
- The analysis based on some statistical tools which has its own limitation.
- The findings and suggestions are based on the information given by the respondents.

REVIEW OF LITERATURE

K.V.Narasimha Murthy and Antonette D'Sa (2004)¹ in study their report, "Report on the use of LPG as a domestic cooking fuel option in India" stated that the government/regulator would have to set standards to maintain safety and avoid corruption, impose measures for ensuring that the cylinders are checked for their user-worthiness and are properly filled, and provide consumer

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protection. (With a large numbers of operators and poor enforcement of standards, accidents and commercial malpractice can occur). While the government has to be involved, at least through its policies, in helping to provide energy services to the economically disadvantaged, there has also to be a suitable environment for the private sector to cater to those who can pay for their Needs. Subsidies will continue to be necessary for a while, but have to be applied with care. Development assistance/grants - from aid agencies, etc. could help only small fractions of the population; which means that the government and market forces have to handle the rest and their extent and effectiveness have to be expanded to meet Current and growing needs.

According to a **Case Study of Domestic Energy by PT Pertamina (2007)**² found that

- ❖ Package of 3 kg LP Gas is sufficient (not too big and not too small) 92%
- ❖ Do not see obstacles in the use of LP Gas, but the fear of leakage and possible fire danger remains 60%
- ❖ Using 3 kg LP Gas within 6-8 days 67.8%
- ❖ LP Gas Refill Price per cylinder was cheap 86.4%
- ❖ LP Gas is more efficient and cheaper than kerosene 97.6%
- ❖ Prefer LP Gas to kerosene for the main reasons: faster, economical, practical and clean 99.8%

This paper also described a “mega program” of household fuel and technology conversion in a socially-sensitive institution of Indonesia. This sensitivity is not unique to Indonesia. In many emerging economies, government policies and programs related to household fuels have long been a flashpoint for controversy and social unrest. For governments struggling with fuel conversion issues, there may be useful lessons from the Indonesian experience. Although Pertamina, as sole NOC, plays a special role in the national economy, countries with an NOC are increasingly common and important on the world energy scene. NOCs accounted for 52% of global oil production, controlling 88% of proven oil reserves in 2007.

According to **OGJ editors, (2012)**³ in their article entitled “**LPG market dynamics on brink of change**” The report says, however, that that scenario has not in fact occurred. Only Qatar has produced LPG volumes it said it would. For various reasons, others have not. The very large gas carrier (VLGC) fleet has recently been in surplus because of over-ordering, the study says. But now, fleet demand is beginning to catch up with supply. FGE has seen a large improvement in utilization over 2010-12, from 82% to 90%. The current new building delivery program may prevent it from improving for a while, but the VLGC balance and market rates should improve by 2015, says the study, as longer-haul LPG exports to Asia from the US gulf increase.

.David Asamoah (2012)⁴ in his study titled “**Analysis of Liquefied Petroleum Gas (LPG) Shortage in Ghana: A Case of the Ashanti Region**” He concluded that, main producer and supplier of LPG, TOR, contributes extensively to the shortage of LPG in the market due to infrastructural limitations. It is thus recommended that the government secures private sector participation in the mid-stream refining segment. Private sector investors must be encouraged by the government to make long-term investments in developing the storage and transmission capacity of LPG within the country. The fact that LPG shortage is not experienced everyday throughout the year means that there comes a time when supply of the product either exceeds or equilibrates demand. This

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invariably means that a constant supply to the market by TOR at its current capacity is enough to meet the demand of LPG. It is thus recommended that TOR ensures that vessels with LPG berth weekly to deliver products so as to regulate the shortfall from TOR's production. This will increase the local stock levels for LPG. Also, the current system whereby consumers send their empty containers to refilling stations to fill them could be improved upon. Consumers should have the option of purchasing already filled cylinders at shops while they exchange their empty containers. This is practiced in other countries like Cameroon and Senegal where marketing companies own the cylinders (similar to the soft drinks distribution system that exists in Ghana). When this system is adopted, it would indirectly increase the overall storage capacity of LPG in the country; which will consequently reduce the storage constraints associated with storage at TOR. Although the supply of LPG is faced with many challenges, it is recommended that while the government is promoting the continuous usage of LPG as a clean fuel to save our forests, it equally campaigns for the conservation and judicious usage of the product by consumers. LPG as a source of fuel is increasingly becoming popular among Ghanaians. This is because it is affordable, clean and efficient in the distribution of goods and services. The increase in consumption of LPG would not end anytime soon, it is therefore imperative on all stakeholders to ensure that the excessive demand of the product does not result in shortages. As such there is the need for the continuous supply and sustainability of LPG to every area of the populace. There is no doubt that improvements in the supply chain of LPG would ensure that the product is always available for consumers.

Dr. C S Yatnalli Bhasavaraj, H. Huggi, D V hire math (2012)⁵, conducted a study entitled, "A study on customer awareness and satisfaction towards LPG in hirekerur taluk (Karnataka)", According to their study they have concluded that the company should follow the following tips to improve the quality of service 1,periodical servicing of gas store should be conducted to ensure safety and economy in the use of LPG, 2.awareness about safety and fuel saving should be created among the LPG users through mass media like TV advertisement ,newspaper, magazines etc., 3.all the LPG companies should restrict the maximum number of customer for each distributor after the maximum number of the customer oil company should allot another distributor for that place.

S.S Tarapore (2013)⁶ in his article "LPG subsidy: Twists and turns in the tale", found that the initial mistake in phasing out or reducing the LPG subsidy was the introduction of multiple pricing. The problem was compounded by linking the number of cylinders used with the subsidized price. More appropriately, the subsidy should have been linked to the merit of the consumers and not the cylinders consumed. By linking the subsidy to the number of cylinders consumed, the subsidy got directed to those who clearly do not deserve the subsidy. The task of dealing with 140 million LPG connections was not clearly perceived by the policymakers. The brunt of the pressure fell on the final distributors, who faced the ire of consumers storming their small offices, while the government barraged the distributors with a proliferation of instructions. The nation needs to salute the large number of distributors who have borne the burden of immense pressure with great courage and fortitude. It is fortunate that the distributors and the Oil Marketing Companies (OMC) had very efficient computerized data systems which could track all customers. While it was recognised that the LPG under-recoveries were as large as Rs 32,000 crore per annum, political economy constraints seem to have forced the government to increase the number of subsidized cylinders from six to nine per year. The upshot of this is that despite all the turmoil of the past six

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months, there has been virtually no reduction in the LPG subsidy and on present reckoning the subsidy bill could even swell.

DATA ANALYSIS AND INTERPRETATION

To complete this study properly, it is necessary to analyse the data collected in order to test the hypothesis and answer the research questions. This chapter comprises the analysis, presentation and interpretation of the findings resulting from this study. This section explains the problems faced by the customers towards HP LPG product as well as services in households. Various statistical tools are utilized to analyze and interpret the data collected.

GARRETT'S RANKING TECHNIQUES

Garrett's ranking technique was used to find out the most significant problem / services which influence the respondent of this study. As per this method, respondents have been asked to assign the rank for all statements and the outcome of such ranking has been converted into score value with the help of the following formula:

$$\text{Percent position} = \frac{100 (R_{ij} - 0.5)}{N_j}$$

Where, R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variable ranked by j^{th} respondents

With the help of Garrett's Table, the percent position estimated is converted into scores. Then for each factor, the scores of each individual are added and then total value of scores and mean values of score is calculated. The factors having highest mean value is considered to be the most important factor.

In this study Garrett's ranking techniques is used for the following analysis.

8.1.1 Problem faced by the customer

8.1.2 Most satisfied services

PROBLEMS FACED BY THE CUSTOMER RANKED BY THE RESPONDENTS

TABLE - 1

Problem factors	Ranks		1	2	3	4	5	6	7	8	9	10	Total	Total Score	Mean Score	Ranks
	Garrett's Table Value (score)		82	70	63	57	52	47	42	37	30	18				
Problem with gas booking	f	19	21	28	30	40	56	32	45	38	42		351	16119	45.92	VIII
	fx	1558	1470	1764	1710	2080	2632	1344	1665	1140	756					
Poor communication on Gas booking & delivery time	f	78	42	35	26	27	36	29	24	36	18		351	19629	55.92	IV
	fx	6396	2940	2205	1482	1404	1692	1218	888	1080	324					
Irregularity of increasing price	f	150	52	30	28	34	17	12	13	8	7		351	23344	66.51	I
	fx	12300	3640	1890	1596	1768	799	504	481	240	126					
high Installation and additional cost	f	90	42	71	32	14	9	20	12	36	25		351	20582	58.64	III
	fx	7380	2940	4473	1824	728	423	840	444	1080	450					
Insecure of LPG	f	28	12	11	9	23	56	45	81	51	35		351	15217	43.35	X
	fx	2296	840	693	513	1196	2632	1890	2997	1530	630					
Less quality of stove, lighter and other related items.	f	19	26	45	32	24	40	34	23	52	56		351	16012	45.62	IX
	fx	1558	1820	2835	1824	1248	1880	1428	851	1560	1008					
Unstrained services in agency outlets	f	34	56	21	42	27	19	36	39	48	29		351	17639	50.25	VII
	fx	2788	3920	1323	2394	1404	893	1512	1443	1440	522					
Delayed supply of refilled cylinders.	f	96	27	65	59	41	12	26	19	6	0		351	21891	62.37	II
	fx	7872	1890	4095	3363	2132	564	1092	703	180	0					
Waiting time to get the new LPG connection and additional.	f	35	48	61	23	35	40	28	59	13	9		351	18995	54.12	V
	fx	2870	3360	3843	1311	1820	1880	1176	2183	390	162					
Compulsion to buy other related products.	f	29	37	45	63	29	34	42	33	21	18		351	18439	52.53	VI
	fx	2378	2590	2835	3591	1508	1598	1764	1221	630	324					

Note: x = Scale value; f = Number of Respondents; fx = Score

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INFERENCE

The above table reveals that, there are ten major problems faced by the consumers. It is observed from the above table, "Irregularity of increasing price" was ranked first by the respondents with the mean score of 66.51. "Delayed supply of cylinders" was ranked second with the mean score of 62.37. "High Installation and additional cost" was ranked third with the mean score of 58.64. "Poor communication on Gas booking & delivery time" was ranked fourth with the mean score of 55.92. "Waiting time to get the new LPG connection and additional." was ranked fifth with the mean score of 54.12. "Compulsion to buy other related products." was ranked sixth with the mean score of 52.53. "Unstrained services in agency outlets" was ranked seventh with the mean score of 50.25. "Problem with gas booking" was ranked eighth with the mean score of 45.92. Less quality of stove, lighter and other related items." was ranked ninth with the mean score of 45.62. "Insecure of LPG" was ranked tenth with the mean score of 43.35.

It is concluded that the respondents are highly suffered with the "Irregularity of increasing price and Delayed supply of refilled cylinders. These two factors are most important problems faced by the customer.

2.1.1 MOST SATISFIED SERVICES RANKED BY THE RESPONDENTS

TABLE - 2

Service Factors	Ranks	1	2	3	4	5	6	7	Total	Total Score	Mean Score	Ranks
	Garrett's Table Value (Score)	79	66	57	50	43	34	21				
Periodical servicing of gas stove	f	97	23	50	72	31	29	49	351	18979	54.07	IV
	fx	7663	1518	2850	3600	1333	986	1029				
Quick response from Mechanic or LPG Dealer in case of Leakage	f	88	61	39	51	40	29	43	351	19360	55.16	III
	fx	4819	3366	2223	4400	1720	986	903				
The Agency conduct Mandatory inspection on time	f	38	51	29	48	54	42	89	351	16040	45.70	VI
	fx	3002	3366	1653	2400	2322	1428	1869				
Quick action on complaint registration	f	65	81	90	53	24	18	20	351	20325	57.91	I
	fx	5135	5346	5130	2650	1032	612	420				
Delivery man Confirms the Weight of Cylinder	f	35	99	89	71	23	16	18	351	19833	56.50	II
	fx	2765	6534	5073	3550	989	544	378				
Distribution of refilled cylinder on time (after booking & waiting period)	f	77	65	44	20	60	51	34	351	18909	53.87	V
	fx	6083	4290	2508	1000	2580	1734	714				
All the safety and efficient handling measures provided by the agency	f	36	49	56	27	13	68	102	351	15633	44.54	VII
	fx	2844	3234	3192	1350	559	2312	2142				

Note: x = Scale value; f = Number of Respondents; fx = Score

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INFERENCE

From the above table it is clear, that there are seven major services provided by the company among them most satisfied services Ranked by the respondents. It is observed from the above table that "Quick action on complaint registration" was ranked first by the respondents with the mean score of 57.91. "Delivery man confirms the Weight of Cylinder" was ranked second with the mean score of 56.50. "Quick response from Mechanic or LPG Dealer in case of Leakage" was ranked third with the mean score of 55.16. "Periodical servicing of gas stove" was ranked fourth with the mean score of 54.07. "Distribution of refilled cylinder on time (after booking & waiting period)." was ranked fifth with the mean score of 53.87. "The Agency conduct Mandatory inspection on time." was ranked sixth with the mean score of 45.70. "All the safety and efficient handling measures provided by the agency" was ranked seventh with the mean score of 44.54.

It is concluded that the respondents are very much satisfied with "Quick action on complaint registration" and "Delivery man confirms the Weight of Cylinder". But the agencies need to concentrate and improve the quality of other services also.

ANALYSIS OF VARIANCE

The ANOVA used for studying the difference among the various categories of one independent variable on a dependent variable is called one-way ANOVA. In this analysis, the total variance in a set of data is divided into variable within groups and variable between groups. The analysis of variance technique is used when the independent variables are nominal scales and the dependent variable is metric or least interval scaled. In this study ANOVA has been used to study the opinion towards services provided by the company with the following personal profile;

- ❖ Gender
- ❖ Age

ANOVA between Gender and Respondents Opinion towards Services provided by the company

Null Hypothesis (H_0): There is no significant difference between Gender and Respondents opinion towards services provided by the company.

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8.2.1 ANOVA BETWEEN GENDER AND OPINION OF RESPONDENTS TOWARDS SERVICES PROVIDED BY THE COMPANY

TABLE - 3

Services provided by the company	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Result
Periodical servicing of gas stove	Between Groups	19404.15	1	19404.15	6.78	6.6	S
	Within Groups	14313.30	5	2862.66			
	Total	33717.45	6				
Quick response from Mechanic or LPG Dealer in case of Leakage	Between Groups	19404.15	1	19404.15	7.03	6.6	S
	Within Groups	13791.30	5	2758.26			
	Total	33195.45	6				
The Agency conduct Mandatory inspection on time	Between Groups	19404.15	1	19404.15	13.30	6.6	S
	Within Groups	7291.30	5	1458.26			
	Total	26695.45	6				
Quick action on complaint registration	Between Groups	19404.15	1	19404.15	8.11	6.6	S
	Within Groups	11963.30	5	2392.66			
	Total	31367.45	6				
Delivery man Confirms the Weight of Cylinder	Between Groups	19404.15	1	19404.15	8.35	6.6	S
	Within Groups	11617.30	5	2323.46			
	Total	31021.45	6				
All the safety and efficient handling measures provided by the agency	Between Groups	19404.15	1	19404.15	17.03	6.6	S
	Within Groups	5697.30	5	1139.46			
	Total	25101.45	6				

Significant p-values \leq 0.05; S-Significant; p-value \geq 0.05; NS- Not Significant

INFERENCE

The above one way ANOVA table describes that the calculated F value of problem faced by the customers such as 6.78, 7.03, 13.30, 8.11, 8.35 and 17.03 are greater than the table value 6.6 at 5% level of significance. Therefore, the null hypothesis is rejected in all the above cases.

It is concluded that there is a significant difference between Gender and Respondents opinion towards services provided by the company in all the above cases. Hence the two group means are not same.

ANOVA between Age and Respondents Opinion towards Services provided by the company

Null Hypothesis (H₀): There is no significant difference between Age and Respondents opinion towards services provided by the company.

GOLDEN RESEARCH THOUGHTS

8.2.2 ANOVA BETWEEN AGE AND OPINION OF RESPONDENTS TOWARDS SERVICES PROVIDED BY THE COMPANY

TABLE – 4

Services provided by the company	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.	Result
Periodical servicing of gas stove	Between Groups	692.91	1	692.91	0.22	5.6	NS
	Within Groups	21681.55	7	3097.36			
	Total	22374.46	8				
Quick response from Mechanic or LPG Dealer in case of Leakage	Between Groups	692.91	1	692.91	0.23	5.6	NS
	Within Groups	21159.55	7	3022.79			
	Total	21852.46	8				
The Agency conduct Mandatory inspection on time	Between Groups	692.91	1	692.91	0.33	5.6	NS
	Within Groups	14659.55	7	2094.22			
	Total	15352.46	8				
Quick action on complaint registration	Between Groups	692.91	1	692.91	0.25	5.6	NS
	Within Groups	19331.55	7	2761.65			
	Total	20024.46	8				
Delivery man Confirms the Weight of Cylinder	Between Groups	692.91	1	692.91	0.25	5.6	NS
	Within Groups	18985.55	7	2712.22			
	Total	19678.46	8				
All the safety and efficient handling measures provided by the agency	Between Groups	692.91	1	692.91	0.37	5.6	NS
	Within Groups	13065.55	7	1866.50			
	Total	13758.46	8				

Significant $p\text{-value} \leq 0.05$; S-Significant; $p\text{-value} \geq 0.05$; NS- Not Significant.

INFERENCE

The above one way ANOVA table describes that the calculated F value of problem faced by the customers such as 0.22, 0.23, 0.33, 0.25, 0.25 and 0.37 are lesser than the table value 5.6 at 5% level of significance. Therefore, the null hypothesis is accepted in all the above cases.

It is concluded that there is no significant difference between Age and Respondents opinion towards services provided by the company in all the above cases. Hence the two group means are same.

GOLDEN RESEARCH THOUGHTS

FINDINGS

GARRETT'S RANKING TECHNIQUE

- ❖ Majority of the respondents are highly suffered with the “Irregularity of increasing price and Delayed supply of refilled cylinders with the mean score of 66.51 and 62.37 respectively. And the customers are also suffered with the High Installation and additional cost” and “Poor communication on Gas booking & delivery time” with the mean score of 58.64 and 55.92 respectively
- ❖ Majority of the respondents are satisfied with “Quick action on complaint registration” and “Delivery man confirms the Weight of Cylinder”. With the means score of 57.91 and 56.16 respectively. But the agencies need to concentrate and improve the quality of other services also.

ANOVA

- ❖ There is a significant difference between Gender and Respondents opinion towards services provided by the company in all the cases. Hence the two group means are not same.
- ❖ There is no significant difference between Age and Respondents opinion towards services provided by the company in all the cases. Hence the two group means are same.

SUGGESTIONS

The following suggestions were given on the basis of the findings of the study.

- ❖ Most of the customers are facing the irregularity of increasing the price of the gas. So HP Gas Agencies and the Government should take the necessary action to rectify it and make the customer awareness on increasing price of the gas.
- ❖ Most of the customers have an opinion that there is a delay in supplying the LPG cylinder, HP LPG godowns and outlets may be installed in few more places as the study area is vast. Hence they can reduce the time delay in distribution.
- ❖ HP Gas agencies should improve their service in all aspects such as communication on Gas booking & delivery time, services in agency outlets, Behavior of counter staff/Deliverymen and Mechanic, Customer care response over landline, Service / Inspection after sales.

GOLDEN RESEARCH THOUGHTS

CONCLUSION

"The customer is always right" is a famous business slogan. The underlying truth behind this statement is realizing that, customers are the life blood for any business. In this competitive environment, quality service has become the secret of success in all service sectors. Quality service is absolutely to satisfy the customer needs. Keeping this in mind, this study has been conducted at Coimbatore city to identify the problems faced by the customers towards the domestic HP LPG services. The findings of the study depict that the customers has faced the irregularity of price increase and delayed supply of LPG gas cylinders. It is suggested that the HP gas company should take necessary action to improve their service quality by the way they can introduce additional dealers, godowns and provide constant service to the customers. While distributing the refilled cylinders HP Gas Agencies should give more preference to the single gas customers and provide refilled cylinders with minimum waiting period. It is essential for a healthy business in creating new customers, keeping loyal customers, and developing referrals for future customers.

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