Summer Internship Project on

"Study of Retail Automation at Retail Outlets"

HINDUSTAN PETROLEUM CORPORATION LIMITED

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Submitted By:

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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES,

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हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड

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CERTIFICATE

This is to certify that Mr. Chirag Gupta has prepared his summer training project on the topic "Study Of Retail Automation at Retail Outlets" under my supervision and guidance from 21st May to 19th July 2013. The work is original and has been done independently by the student.

To best of my knowledge and belief the work has been based on investigation made, data collected and analyzed by him and this work has not been submitted anywhere else for any other university or institution for the award of any degree/diploma.

I further confirm that Mr. Chirag Gupta bears a good moral character.

Ms. Poonam Mittal

CERTIFICATE FROM THE CANDIDATE

This is to certify that I, **Chirag Gupta** have completed my project titled "**Study of Retail Automation at Retail Outlets**" to the best of my knowledge and this report has not been submitted earlier to College or any other Institution or company but still some parts of the report are taken from various sources. This work was carried during 21st May 2013 to 19th July 2013 at Hindustan Petroleum Corporation Limited.

Date:

Chirag Gupta
University of Petroleum and Energy Studies
Dehradun

Acknowledgement

I would sincerely like to forward my gratitude to Ms. Poonam Mittal (Manager, RE & MIS) , for her guidance and cooperation and allowing me to carry out this project which has been successfully completed. Also their guidance and help has helped me to learn many new things during my internship which would be carried by me for my whole life.

I also thank **Mr. Vijay Kansal** (Sales Officer, HPCL) for guidance and help extended in the conduct of this project on time, who was also the source of inspiration.

I would also like to acknowledge my friends Anchal Agrawal & Bhumika Singh as with their cooperation and support and team work ,I was able to learn and gain knowledge.

My humble gratitude to University of Petroleum and Energy Studies for giving me this wonderful opportunity to pursue my internship at HPCL.

Last but not least I wish to avail myself of this opportunity, express a sense of gratitude and love to my friends and my beloved parents for their manual support, strength, and help.

Abstract

A study of Retail Automation at retail outlets. The objective of the study is to understand the working of Automation system implemented in retail outlets in the city of New Delhi. Also to determine how the working of a retail outlet was affected by the automation system installed and what were the advantages and disadvantages incurred while working with such a system.

Need for further research is required so as to determine the various shortcomings which can be identified while the Automation system grows in each and every Retail outlet of HPCL.

Also the importance of Automation system for a customer is highlighted in this project. In addition to this, how Automation system is beneficial for dealer, and employees is also determined which helps in better and easier management at retail outlets.

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Introduction

The study of Retail Automation at Retail outlets leads to determination of what is Automation and how does it work in the retail outlets of HPCL.

Retail Automation is the automation of all the operations and business processes of a Retail Outlet. This is achieved by capturing, collating and analyzing all the transactions electronically. The system helps to seamlessly manage the forecourt, sales room (at the outlet) and HPCL Regional office (operation & business) transactions pertaining to Retail Outlets.

The origin of the research is accredited to the point when installation of Automation systems was initiated in Retail outlets of HPCL in Phase-I. This phase was the first attempt by the HPCL to implement automation systems in Retail Outlet's to increase convenience and customer satisfaction, through various additional service and features such as OPT machines (Outdoor Payment Terminal)etc. This phase marked the birth of Automation systems and provided vast amount of improvement opportunities which could be made in future for further development of services offered by an Retail outlet and also to develop advanced systems which can help in minimizing adulteration and increase customer satisfaction while ensuring quality and quantity.

Further development took place when Automation advanced to Phase-II and Phase-III. Additional features such as employee tag recognition systems, Better broadband connection adaptability, advanced Forecourt controller Units etc. were used and the importance of automation systems in retail outlets was felt as inevitable.

Background of HPCL:

Hindustan Petroleum Corporation Limited (HPCL)

Vision

To be a world class energy company which is known for delighting and caring the customers with innovative services and supreme quality products across both domestic and international markets with fast growth and delivering outstanding financial performance. The company will be a figure of excellence in meeting the norms of environment, social commitment, health, safety and in employee welfare and relations.

Mission

HPCL along with it's joint ventures, will be a fully integrated company in the hydrocarbon sector of exploration and production, refining and marketing. In addition to this major emphasis on quality and profitability, enhancement of productivity, caring for employees and customers, caring for cultural heritage and environment protection. The company will also indulge and achieve scale dimensions into other energy related fields and by taking up transnational operations.

Implementation

To comply with the spirit and requirements of corporate governance, necessary steps have been taken to comply with. HPCL gives special emphasis on conducting it's affairs within the internal and external regulations and framework policies in a transparent manner.

Corporate Governance in HPCL

Being a Government organization, the activities of HPCL are subject to review by several external agencies such as:

1. The central Vigilance Commission (CVC)
2. Comptroller and auditor General of INDIA
3. Parliamentary Committees
4. Statutory Auditors etc.

Decision Making Process

The apex level is the HPCL Board of Directors (The Board). , just like any other corporate.

The Board has constituted several sub-committees, such as

a. The audit committee
b. The investment committee
c. The committee of functional directors
d. The investor Grievance Committee
e. The HR Committee

The following were the achievements during 2008/09:

a. A market share gain of +0.35% in PSU industry and +0.62% in total industry due to the surpassed sales of 23.85 MMT during the year against a target of 23.03 MMT.
b. Gains in market share of MS retail +0.13% and HSD retail +0.32% in PSU industry. The major products have gained in market share viz., HSD- direct +0.16%, LSHS +4.20% & naphtha +3.18%
c. The LPG business has improved by +0.33%
d. The marketing function has achieved "Excellent" rating in almost all the parameters of evaluation as per MOU
e. The cumulative pipeline throughput during the year surpassed 10.64 MMT as against a target Throughput of 9.2 MMT.
f. The product sharing agreement with M/s Essar has enabled the source product locally avoiding imports and resulting in savings to the tune of Rs. 172 crores

g. "Asia Star and 2008 Award for excellence in Packaging" Asia- Pacific region & "India Star Award" for design and development of lube PET bottles have proved the capability to pioneer innovative solutions
h. To enhance safety & security of the terminals/depots CCTVs have been provided at 58 storage locations at an estimated cost of Rs. 11.0 crores in the year 2007-08.
i. In continuous effort to conserve petroleum products and carry out environmental friendly operations, bottom loading of tank trucks with vapor recovery systems have been developed.

HPCL is a Government of India Enterprise with a Navratna Status, and a Fortune 500 and Forbes 2000 company, with an annual turnover of Rs. 1,90,048 Crores and sales/income from operations of Rs 2,15,675 Crores (US$ 39.726 Billions) during FY 2012-13, having about 20% Marketing share in India among PSUs and a strong market infrastructure. HPCL's Crude Throughput and Market Sales (including exports) are 15.78 Million Metric Tonnes (MMT) and 30.32 MMT respectively in the same period.

HPCL 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 Vishakhapatnam, (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.

HPCL also owns and operates the largest Lube Refinery in the India producing Lube Base Oils of international standards, with a capacity of 335 TMT. This Lube Refinery accounts for over 40% of the India's total Lube Base Oil production.

HPCL has earned "Excellent" performance for fifteen Consecutive years upto 2005-06, since signing of the first MOU with the Ministry of Petroleum & Natural Gas. HPCL won the prestigious MOU Award for the year 2007-08 for Excellent Overall Performance, and for being one of the Top Ten Public Sector Enterprises who fall under the 'Excellent' category. HPCL's performance for the year 2010-11 also qualifies for "Excellent" rating.

HPCL, over the years, has moved from strength to strength on all fronts. The refining throughput has increased three fold between 1984/85 to 2007/08, rising from 4.47 MMTPA in 1984/85 to 16.19 MMTPA (2011-12).

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. The refining capacity steadily increased from 5.5 MMTPA in 1984/85 to 14.8 MMTPA presently. On the financial front, the turnover has grown from Rs. 2687 Crores in 1984-85 to an impressive Rs 1,69,011 Crores in FY 2011-12.

To maintain the quality and commitment of products HPCL take following measures:

Quality Policy

- Total customer satisfaction through quality products by doing it right the first time, every time.
- Ensure consistency of quality , and adherence to time deadlines.
- Strive to achieve excellence in quality through training, ,motivation, team work and continuous upgradation of technology.
- To take appropriate steps to minimize wastage, increase productivity and optimize the quality of products and services in a cost effective manner

Product Commitment

- To provide quality products and services which shall reflect in a growing list of satisfied customers.
- To consciously build a quality culture, through employee participation, motivation and training.
- To strive for an eco - friendly environment.

Literature Review

HPCL leverages technology to assure "Good Fuel Promise" at Retail Outlets. About 1700 retail outlets have Automation systems implemented by HPCL.

Objective: Retail Automation is the automation of all the operations and business processes of a Retail Outlet. This is achieved by capturing, collating and analyzing all the transactions electronically. The system helps to seamlessly manage the forecourt, sales room (at the outlet) and HPCL Regional office (operation & business) transactions pertaining to Retail Outlets.

The primary objective of Automation is to make the operations speedy, easy and efficient. Manual intervention is eliminated, and speed of transaction & operations is increased, resulting in a Quick Fill Experience. This strengthens the 'Club HP' brand image which is based on Quality & Quantity (Q&Q), Customer care and Vehicle care. These automated outlets have been branded as *"e-fuel stations"*.

Benefits: The system benefits all the stakeholders. It provides for better site management, quality and quantity assurance and many other features.

Way Forward: The Retail Automation System is now being installed at an additional 425 nos. of retail outlets under phase-IV of the project.

The e-Fuel Campaign was launched in Mumbai and West Zone by the Chairman & Managing Director, Shri Arun Balakrishnan.

He unveiled the automated billing terminal at Bandra T&E, signifying the technology driven automated fuelling experience for the customers at HPCL Retail Outlets. He received an automated receipt and shook hands with the robotic arm symbolizing the beginning of E-era at HPCL automated outlets.

HPCL is increasingly making use of automation for reinforcing quality & quantity assurance at HPCL outlets across the country.

*Source : *e-fuel Campaign Launched in Mumbai.* (2008, August 12). Retrieved July 7, 2013, from
http://www.hindustanpetroleum.com/:
http://www.hindustanpetroleum.com/En/ui/NewsnEvents.aspx?Id=88

Every consumer has the primary expectation of the money which they pay : Quality & Quantity. Diluted fuels and tampered gas dispensers (which deliver less fuel than the meter claims) have been a very major problem for petrol players. HPCL knew that the burden of proving their trustworthiness lay with it. With this ass one of her center of focus, Nishi Vasudeva, executive director-IS, HPCL, drove a 'good quality, right quantity' push that changed the outlook of customers towards HPCL.

And she changed the most intangible of business drivers, "trust", with one of business' most structured tools: IT. And how? She initiated by placing forecourt controllers at each bunk. Basically, the controllers monitor processes at gas stations including the quality of fuel that's being offloaded from trucks, the amount of inventory retailers hold, and the amount of gas received from a dispenser.

"This ensures that there is total control over what is getting out of a tanker and every drop that goes out from the nozzle," says Hariharan Kumar, GM, HPCL Retail SBU, HPCL. "Since dealers cannot tamper with the product, quality is assured. Since dispensing units are automated, They cannot shortsell customers. Cheating is not possible. The primary objective was to eliminate manual intervention and provide customer confidence.

That's was what Vasudeva exactly wanted. "The idea was to build trust on both quality and quantity fonts and impart efficiency to our retail customer," she says. It is required to point out on the needs of end customers, understand the needs of the market, and to look for solutions to solve challenges at both levels requires more than a technology-oriented executive.

Her work with the retail automation system created a huge boost in customer confidence. Proof of that trust can be found in a 2009 AC Nielsen study on India's most trusted brands. The study, which looked at different parameters including trustworthiness, a credible image and quality, cited HPCL as India's most trusted petrol retailer.

A lot of hard work was required for creating the level of trust across a customer base as large as HPCL's. In addition to the massive challenge of deploying the technology with its gauges and instruments in each retail outlet.

*Source :

Nishi Vasudeva, E. D.-I. (n.d.). *HPCL Strengthens Brand Image with Retail Automation.* Retrieved July 2, 2013, from http://www.cio.in: http://www.cio.in/case-study/hpcl-strengthens-brand-image-retail-automation

NCR Corporation has secured an order from Hindustan Petroleum Corporation Ltd (HPCL) and Bharat Petroleum Corporation Ltd (BPCL) to automate 325 petrol stations across India through NCR's 2000 solutions. In India, NCR has clearly showcased the dominance in automation of petrol pumps by automating over 415 petrol stations till now.

Ali Mir, NCR General Manager for Retail, Hospitality and Self-Service Solutions in India, said, NCRs Octane 2000 not only meets business objectives for the petrol station in terms of inventory management, increased volumes, automated pump and density readings and quality control but also acts as a key enabler in improving customer satisfaction by helping ensure speedy, accurate transactions as well as assured quality fuel and correct quantity while dispensing.

Petrol stations would be provided with an end to end solution deployment, including octane 2000 application software, supply of hardware, and implementation services. NCR will also provide HPCL and BPCL with a complete electronic fund transfer solution to handle debit/credit/smart-card transactions. They will supply, install and implement the retail automation solution, integrating all NCR and third-party hardware including forecourt peripherals , pumps, tank gauging systems, density display for customers (for quality assurance) and outdoor payment terminals.

The back office system & point-of-sale (POS) will be integrated with a Radio Frequency Identification (RFID) based tagging system. Each attendant will be provided with RFID tags to unlock the dispensing units for a transaction, tracking complete transactions details. Hence employee performance can be tracked and purity and quantity of fuel can be ensured for customers. Automated receipts will be provided showing the exact quantity of fuel purchased.

The NCR Octane 2000 solution will thus increase transaction speed, reduce manual intervention, and improve interaction with the customer for HPCL and BPCL. Wet stock(diesel and petrol) and dry stock(lubes and other accessories) can be monitored in real time for better inventory management. Data extraction and communication and effective retail fuel-price management can be facilitated through automation to headquarters. In addition to providing assisted-service solutions to HPCL and BPCL, NCR is a global leader in self-service solutions across a wide range of businesses.

According to a recent survey of Indian consumers commissioned by NCR, shows that waiting in queues goes much beyond frustration as 60% of respondents got really angry, 23% respondents admit to have cancelled or rescheduled important business plans, 22% of respondents had an argument, and 20% have pushed in line as a result of queue.

*Source

NCR secures HPCL, BPCL order for automating petrol station. (2007, November 15). Retrieved June 25, 2013, from moneycontrol: http://www.moneycontrol.com/news/business/ncr-secures-hpcl-bpcl-order-for-automating-petrol-station_313064.html

Engineering and construction major Larsen & Toubro (L&T) is working on a petrol pump automation project which can change the way of retailing petrol products. With the title, e-petrol pumps, Outsourcing of the entire back office operation of petrol pumps would be involved in the project.

The pilot project has been awarded by Hindustan Petroleum Corporation Ltd (HPCL) and this is the first time that an Indian company is venturing into such a project. The trial run will be carried out in Pune. The project is being implemented by electrical and electronics business division of L&T.

L&T has plans for taking the project forward to other oil companies in the future.

HPCL, which is on the divestment list, has set a target to automate 300 to 400 existing petrol pumps all over India in the next one year. While HPCL has been working with international players in the past, this is the first time an Indian company has been given an opportunity to carry out a trial run.

HPCL head (allied retail business)Mr. PT Suresh told that the pilot project would be carried out for a month and if found robust, L&T could join the race for tender. However, competition will be faced by L&T in the sector of petrol pumps.

Mr Suresh added that the motive of this automation was to improve efficiency while reducing manpower and thereby making petrol pumps more customer friendly. Automation was a symbolic effort of introducing Customer Relationship Management and B2b in the operations of petrol pumps.

An hefty investment anywhere between 10-20 lakhs would be required by HPCL. He added that be carrying out the automation product as well as implementation.

HPCL has already implemented automation at four of its petrol pumps in Mumbai — two at Bandra and one each at Ghatkopar and Bandra-Kurla complex.

HPCL has been the pioneer public sector oil company to introduce automation of petrol pumps. The company has been focusing on non-fuel business and this activity has been growing around the core business of the company.

HPCL has set up more than 100 ATMs at its retail outlets through public and private banks.

The electrical business unit comprises SBUs of electrical standard products, electrical systems and equipment and petrol dispensing pumps and systems. Electrical metering and protection systems, automation and control, medical and equipment systems are all covered by electronic business.

*Source

L&T To Pilot HPCL Pumps Automation. (2003, April 8). Retrieved July 2, 2013, from financial express: http://www.financialexpress.com/news/l&ttopilothpclpumpsautomation/75434/0

Hindustan Petroleum Corporation Limited (HPCL) has initiated the automation of petrol pumps in the district. The primary objective of this initiative is to ensure the quality of fuel and that customers are billed only for the amount of fuel they buy.

The company launched an e-fuel campaign in the city on August 13 2008. Pune division deputy commissioner (supply) Arun Unhale and district supply officer, Snehal Barge inaugurated the event. The chief guest on the occasion was G P Kolambakar, senior regional manager, HPCL. Initiatives taken by HPCL in retail trade in particular about retail automation and how this system can be used to serve public with better quality and quantity fuel were talked about. Company officials told that a target of six months has been set to complete the process of automation for HPCL's petrol pumps all over the country

Nilesh Jagtap, sales officer, Retail, and HPCL said, "Till now, oil companies used manual methods to check the quality and quantity of fuel. By automating our petrol pumps, we have ensured that the customers get the exact quantity and quality that they pay for. The new petrol vending machines are connected to a server. This server records when the nozzle to deliver petrol is picked up and also when the nozzle is put back into the machine. Then the machine itself generates the bill after the vehicle number is punched into the machine."

The customers, said Jagtap, will also benefit as they can get the all the back dated bills of the previous months by simply giving their vehicle number at out petrol pumps, as the customer purchase history will be stored in the central server. "They also will be able to see the density (quality) of the fuel on a real time basis at the petrol pump. Otherwise density invoice can be checked at the petrol pump."

Jagtap said, "All the machines and the storage tank at the petrol pump are connected to a server which is connected to the central server located at the regional office of HPCL in Pune. So we can track what quantity of fuel has been unloaded at the petrol pump at a time and tally it with the amount of fuel sent from the company."

*Source

HPCL promises quality fuel. (2008, August 13). Retrieved July 1, 2013, from expressindia:
http://expressindia.indianexpress.com/latest-news/hpcl-promises-quality-fuel/348196/

Objectives

1. To determine how the Automation system works in the retail outlets of HPCL
2. To conduct a survey among dealers, employees & customers and analyze the various shortcomings faced and the provide ways to overcome these shortcomings/difficulties
3. To learn necessary managerial skills and positive attitude towards your work.
4. To understand the day to day functioning of a department within the organization

Research Methodology

Design of the sampling plan :

Sample size :

(i)   Dealers: Throughout the research, 15 Retail Outlets were visited across the city of New Delhi and hence a sample size of 15 dealers is considered for the research.

(ii)   Employees : with 15 Retails Outlets covered, 5 employees from each retail outlet were randomly selected for considering the sample size of employees for the research

(iii)   Customers : 10 customers at each Retail outlet were selected on a random basis were selected and considered for the sample size of customers for the research.

Research design: Research design is analytical in nature.

Analytical Research has strong ability in performing sophisticated statistical analyses and interpreting their findings within the research context. Findings are based on well-designed and appropriate techniques providing well supported findings adequate for answering research questions, planning, decision support, and informative for policy making.

While there are many ways to perform market research, most businesses use one or more of five basic methods: surveys, focus groups, personal interviews, observation, and field trials.
The type of data I need would usually involved surveys and personal interviews.

- **Surveys:** With concise and straightforward questionnaires, a sample group that represents the target market can be analyzed.

- **Personal interviews:** Personal interviews include unstructured, open-ended questions. personal interviews provide more subjective data than surveys. The results are not statistically reliable, which means that they usually don't represent a large enough segment of the population.

Data Collection Method: Data that I have received for making the project is a combination of both primary and secondary data.

Primary Data: The primary data has been collected through some face to face talks with the dealers of various outlets, observations at the company, personal visits to the competitors' companies and a questionnaire that has been filled by 150 respondents .The basic motive was to

generate the awareness and gather different perceptions of consumers towards Automation. Names of the retail outlets from where data is collected are:

1. Auto car care (Niti marg, near Ashoka Hotel, New Delhi - 110 021)
2. Central service Station(E-24,Connaught place, New Delhi - 110 001)
3. R.D motors (Jasola, near Sarita Vihar, New Delhi)
4. Ess jay fuels (sector - 22, Dwarka, New Delhi)
5. Martin Motors (sector - 20, Dwarka)
6. Himalaya Service Station (sec-22, Dwarka, Delhi)
7. Rohtak oil Corporation (tikri kalan border, Rohtak road, Delhi - 110 041)
8. Deep Fuel centre (vikas marg ext, Karkardooma, Delhi - 110 092)
9. Kundan lal service station (shastri park, gt road,shahdara(near dmrc it park), Delhi)
10. Kundan lal filling station (5/8, loni road, gokul puri, Delhi - 110 094)
11. Highway Service Station (Bhikaji Kama place, New Delhi)
12. G.S. Service Station
13. Kamlesh Fuel Station (Sector-17, near Indraprastha University, New Delhi)
14. Moti Ram & Company (Kapashera Border, Old Gurgaon Road, Delhi-37)
15. Puran Service Station (Kirti Nagar, Delhi -110015)

Secondary Data:

- Company's annual reports
- Company's journal and magazines
- Company's website
- Company's leaflets
- Company's pamphlets
- Products and sales report

Design of questionnaire :

HPCL questionnaire for dealers

Name :   Age :

Experience :   Designation:

Q1. Since when are you working in this outlet?

_____

Q2. When was the Automation system initiated in this outlet?

_____

Q3. What Phase of Automation was installed in this outlet?

_____

Q4. What is the USP of your outlet?

_____

Q5. What is the most beneficial feature of Automation for you?

_____

Q6. Was any training given to you on the operation of Automation?

_____

Q7. Do you interact with the customers about the Automation System?

_____

Q8. Have you showcased any display boards giving details of the benefits of automation system in past?

_____

Q9. How effective is the Automation system in your Retail Outlet :

    (i) Have the sales of this outlet increased after installation of Automation system?

_____

(ii) Has the Waiting time for customers reduced after installation of Automation system?

_____

(iii) Maintenance of account and overall retail outlet becomes easy with Automation system?

_____

Q10. Any Suggestion for HPCL?

_____

HPCL questionnaire for employees

Name :   Age :

Q1. How long have you been working in this Retail outlet?

_____

Q2. What are your working hours in this Retail outlet?

_____

Q3. Have you ever been given any training for use of Automation System?

_____

Q4. Is it easy to operate and print bill using OPT machine?

_____

Q5. Do you believe with the help of Automation system the waiting time for customer is reduced?

_____

Q6. What is the most important and beneficial feature of Automation for you?

_____

Q7. Is it easy to enter customer no and vehicle no. details in the bill?

_____

Q8. Any Suggestion for HPCL

_____

HPCL Questionnaire for Customers

Name :   Age :

Q1. Do you regularly come to this Retail Outlet?

_____

Q2. Are you aware of the Automation system functional at this outlet?

_____

Q3. Are you satisfied with the quality and quantity of petrol/diesel you purchase through this outlet?

_____

Q4. Is waiting time less in this Retail Outlet?

_____

Q5. Time taken by employees to do service i.e. print your bill, swipe your debit/credit card is low or high?

_____

Q6. Do you ask for Computerized Receipts?

_____

Q7. Do you always check zero?

_____

Q8. Do you always receive computerized receipts i.e. Bill in printed form?

_____

Q9. Any suggestions for HPCL?

_____

Understanding Retail Automation and it's working

Why Retail Automation

Quality & Quantity assurance at retail outlets is taken care of by Retail Automation which provides:

- Assured products and services to customers
- Faster fuelling experience with minimal wait/Transaction time

How Automation works

System Components :

Major components installed as part of the Automation system are as follows (including associated accessories):

1. Forecourt Controller (FCC)

2. Automatic Tank Gauging Probes & controller (ATG System)

3. Density Probes

4. LEDs for density display

5. Back Office System

6. Point of Sale System

7. Radio Frequency Identification (RFID) based tags & readers for attendant tagging

8. Outdoor Payment Terminals (OPT)

- Receipt Printers
- Magnetic Strip/Smart card readers

9. UPS

10. Cabling

11. Controlling Office (CO) System

12. Tag Visual Display

Typical Architecture of RA
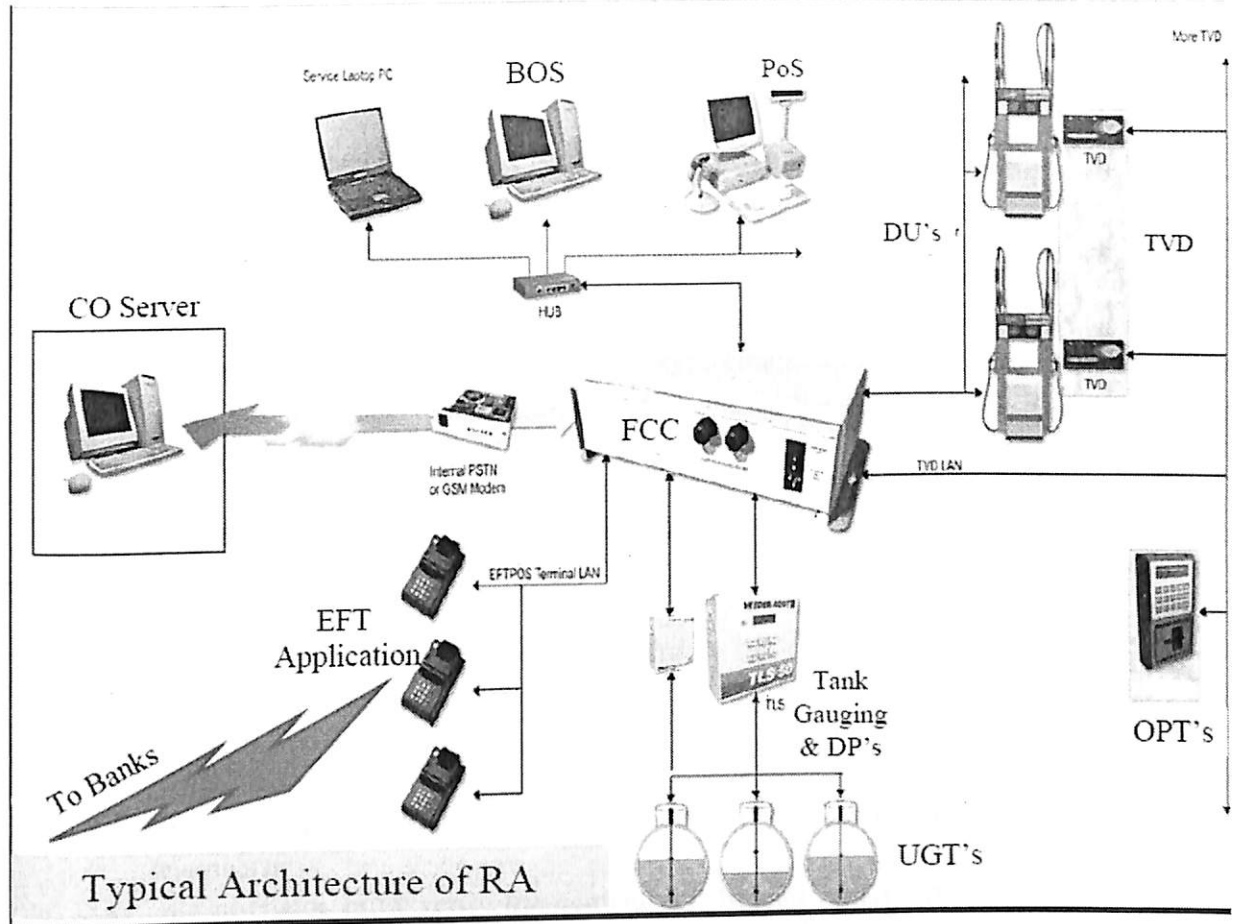
Connectivity options for automation systems (Comparison)

Mode	Availability	Cost	Reliability
Dial up	High	Low	Medium
Broadband	Medium	Medium	High
GPRS	High	Low	High
CDMA	High	Low	High
VSAT	Low	High	High

Do's

1. Clean touch screen, monitor display and all exterior surfaces with clean, dry cloth.
2. Observe and maintain the site environment conditions.
3. Clearing of simple machine jams such as paper jams caused by media and consumables. Replenishment of consumables, including but not limited to, receipt and journal, paper, inking kits, laser-jet cartridges, printer ribbon cartridges
4. Provide safe working conditions and appropriate utility services for maintenance personnel. (e.g. site people shall open tank chamber covers, when engineers has to work on U/G tank probes etc.)
5. Maintain automation Earth Pit properly with daily watering the pit.
6. Ensure DG set body is properly earthed through dedicated earth PIT.
7. Ensure DG set OUTPUT SUPPLY NEUTRAL is properly earthed through dedicated earth PIT.
8. Notify on any change of the Equipment at site (e.g. DU, U/G tanks etc.) and/or alteration of the address
9. Log a break down call on the mentioned toll-free number and always insist on a getting ticket number
10. Site in-charge should always seek the completely filled-in call report Form from the engineers.
11. Site in-charge must verify the contents of the call report before signing the report. One copy of the signed report will be kept at the office for future reference.
12. Site in-charge shall be responsible for the maintenance of attachments, devices or any other equipment not supplied or approved.

Don'ts

1. Never connect a device which is not maintained or approved
2. Never change or allow anyone to change the settings or configuration of equipment's set.
3. Do not abuse the equipment's
4. Never remove Automatic Tank Gauging (ATG) probe from tank without presence of Engineer.

Challenges in Retail Automation

Dealer	Vendor	Technology Provider	Environment
Acceptability	Resources	Proprietary Technology	Power Conditions
Usability	Flexibility	Long Lead Time	Connectivity
Ownership	Spare Inventory	Costly Spares	Other

Mitigation

Dealer	Vendor	Technology Provider	Environment
Closer involvement in solution and implementation	Adequate pool of trained manpower	Develop indigenous and open technologies.	Choose sites with reliable power availability and maintain adequate power backup.
Training of Dealer and Dealer men.	Indigenize technology. Interact more closely with users during solution designing and development.	Set up production facilities in India	Select suitable connectivity as per location and availability
Periodic refresher trainings.	Maintain sufficient spares at several locations to enable quick resolution.	Develop rugged hardware locally for Indian conditions	Dedicated earthing is recommended for automation. Generators of reputed and reliable makes and proper rating should be used.

Initiatives by HPCL
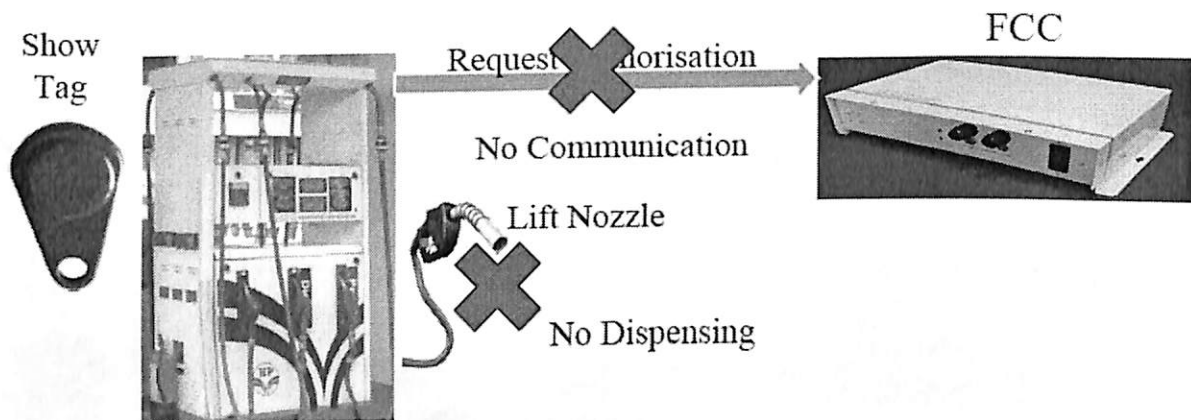
NANO : No Automation No Operation

The Process

•Disabling of "Manual "mode of all DUs

•Changing of control cards with new firmware

•Locking DUs to work only in "Auto "mode, changing of old passwords and security of new passwords

•DUs cannot be operated in "manual "mode

•Ensures matching of stock reconciliation

Normal Operation of Dispensing Unit under Automation

Show Tag

Request Authorisation

Authorisation Received

Lift Nozzle

Dispense

FCC
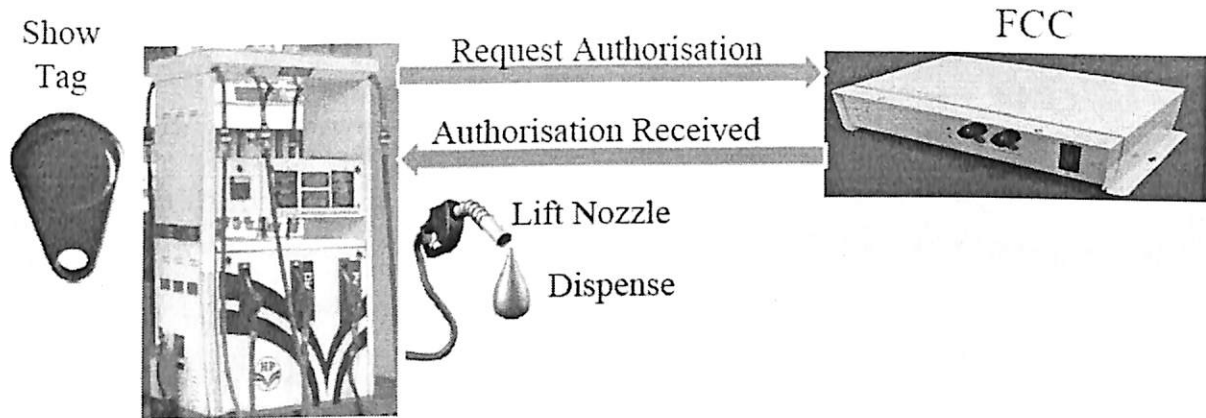
In case of failure of Automation, Dispensing Unit can be switched to manual mode and operated

Operations Under **No Automation No Operation**

Show Tag

Request Authorisation

No Communication

Lift Nozzle

No Dispensing

FCC

With **No Automation No Operation** implementation, in case of failure of Automation, Dispensing Unit cannot be switched to manual mode.

ATG (Automatic Tank Gauging) Interlock

No ATG No Fueling

Show Tag

Request Authorisation

Authorisation Received

Lift Nozzle

Dispense

FCC

Check ATG Status

Status OK

Automatic Tank Gauging
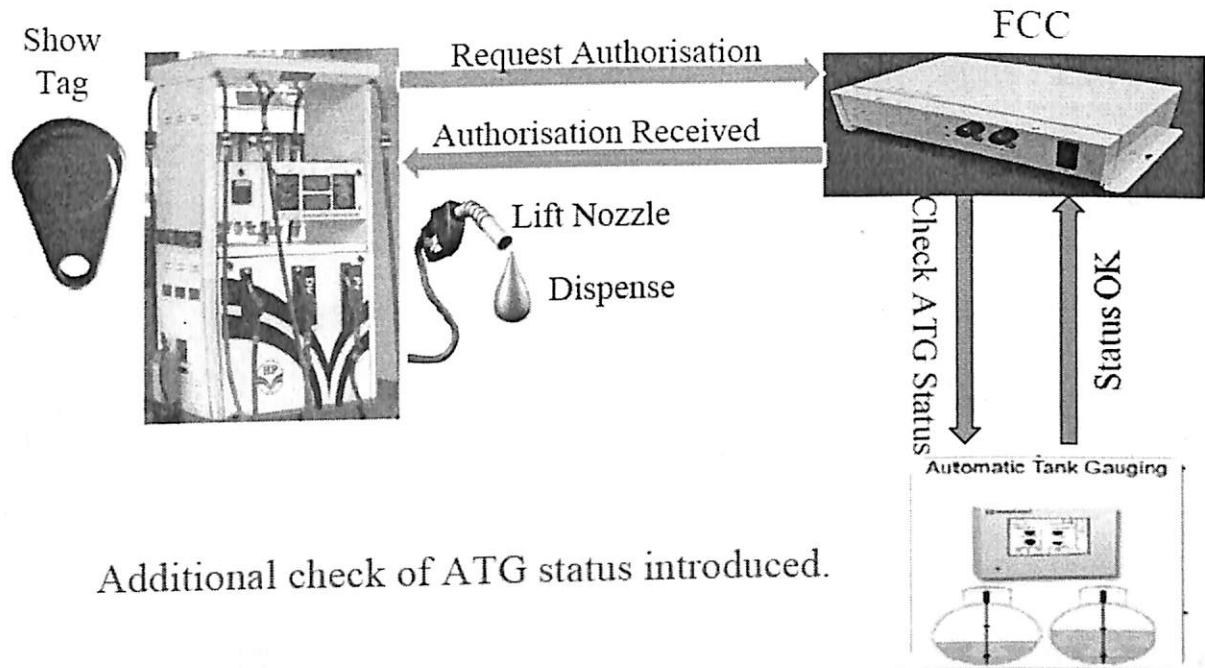
Additional check of ATG status introduced.

No ATG No Fueling

Show Tag

Request Authorisation

Access Denied

Lift Nozzle

No Dispensing

FCC

Check ATG Status

No communication

Automatic Tank Gauging
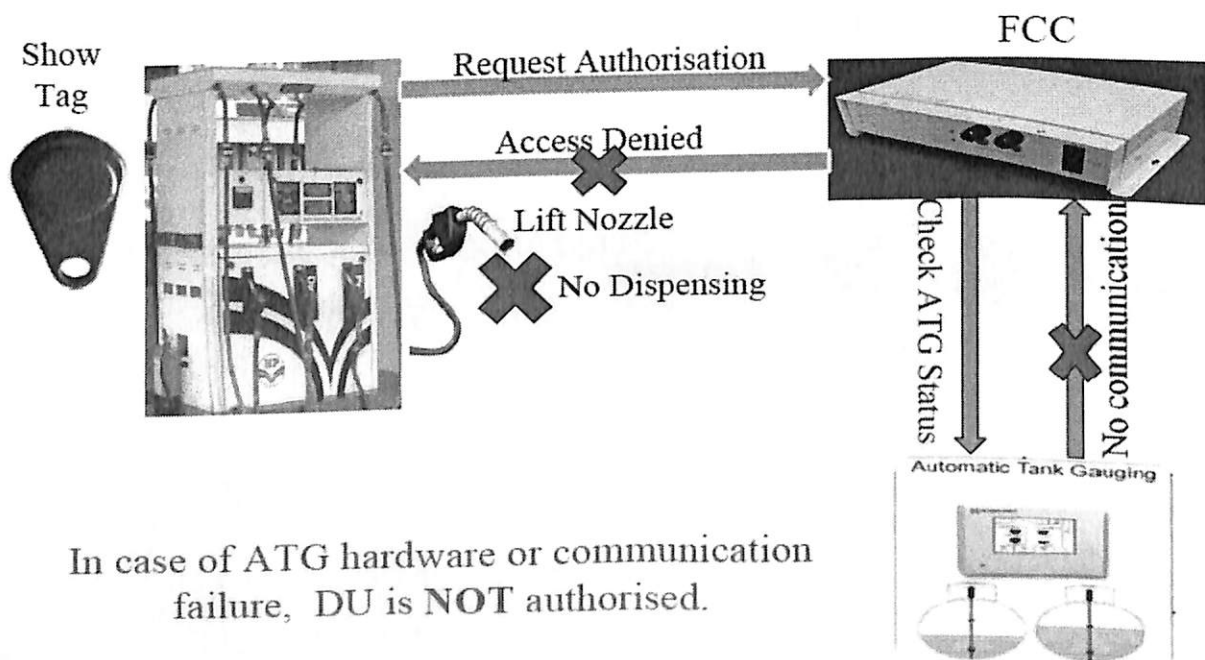
In case of ATG hardware or communication failure, DU is **NOT** authorised.

Control Room Architecture/Data Flow

RETAIL OUTLET

HPCL DATA CENTRE

Router

tunnel

Communication Server   DB Server   Integration Server

Communication Server   DB Server   Integration Server

Local Gateway

FCC

Automatic Tank Gauging and Density

BOS

Application Server   DB Server   Middleware Server

Fault/ Alarm at outlet reported to Control Room

Console Workstation   Display Controller   LCD Screens

Control Room

EFT (Electronic Fund Transfer) at HPCL fuel outlets Phase-III

Payment System Interface for Banks & Loyalty cards (Including Bank Agnostic Switch)
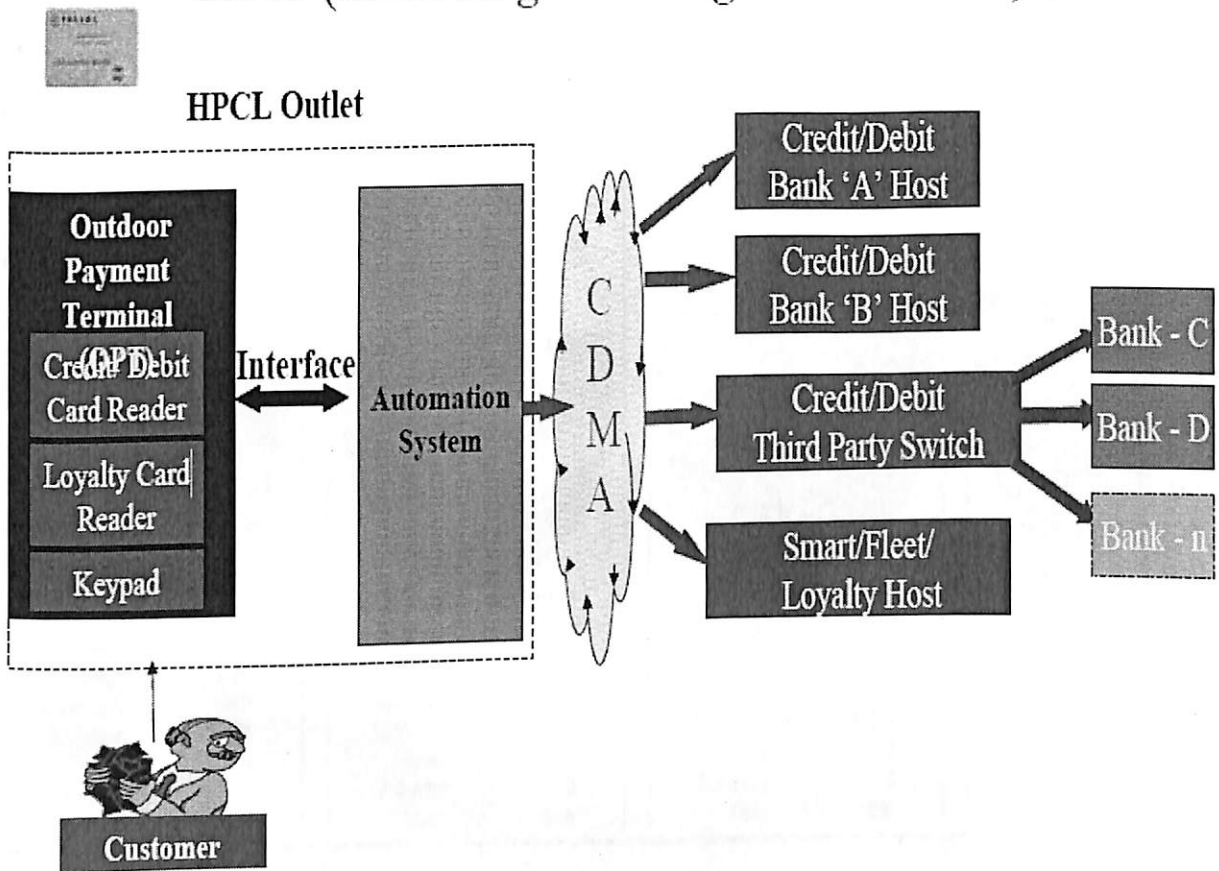
Real Time Forecourt Snapshot

	Diesel	Unleaded	Power	Unleaded	MPD	MPD	MPD	MPD	MPD	Unleaded	MPD	MPD	MPD
	1	2	3	4	5	6	7	8	9	10	11	12	13
	Waiting for Customers			R1000.00 20.67L			Tagging			R37.25	Finalising Sale		Ushering Vehicle

Tank 1 - DIESEL		Tank 2 - Power		Tank 3 - UNLEADED		Tank 4 - TURBOJET	
Capacity	24100	Capacity	15980	Capacity	24100	Capacity	15980
Volume	16937	Volume	9839	Volume	17428	Volume	11035
Ullage	7185	Ullage	6141	Ullage	6694	Ullage	4945
Temperature	29.7	Temperature	28.9	Temperature	29.2	Temperature	29.4
TC Volume	16735	TC Volume	9668	TC Volume	17119	TC Volume	10874
Water	0	Water	0	Water	0	Water	0
Deliveries	0	Deliveries	0	Deliveries	0	Deliveries	0
Sales	2465	Sales	1454	Sales	1893	Sales	894

Benefits of Automation

Benefits to Dealer

- Automates and integrates all business operations at one site
- Eliminates human error and malpractices by staff
- Better customer handling through credit accounts and cards
- Easier / Faster closing for Shift-end & Day end.
- Daily reports of sales & stock reconciliation.
- Better & Easier site management.
- Increased customer satisfaction and hence better sales

Benefits to Company

- Centralized monitoring of stock position of outlets
- Helps in handling customer complaints through available back end data
- Helps in understanding the pattern of sales and hence helps in designing sales campaigns
- Increases customer confidence thereby increasing sales and profitability.

Benefits to customer

- System Driven Fuelling experience.
- Computer generated Receipts ensuring quality and quantity
- Vehicle Registration no. reported in the Receipt.
- Online Density Display at the point of dispensing.
- Card swiped at the island in the presence of customer.
- Faster fuelling.
- Increased Customer Satisfaction.

Data Analysis

Dealer Analysis

Which **phase** of automation is installed in your Retail Outlet
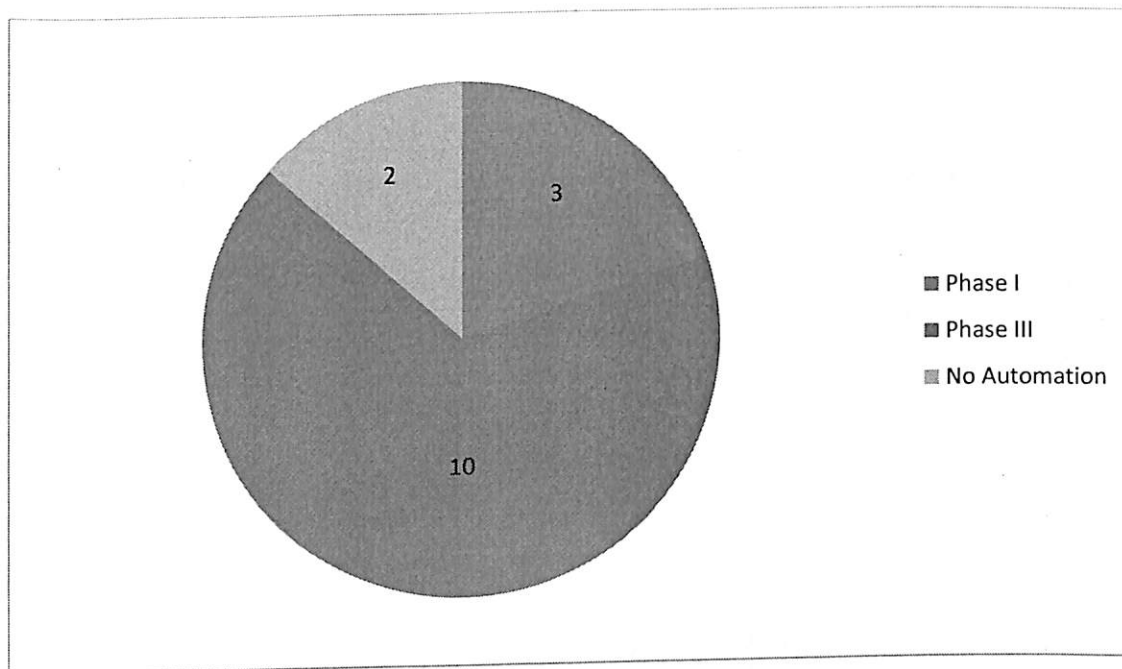
Majority of dealers had phase-III automation installed, with latest automation features and services readily available for customers

What is the most beneficial feature of Automation for you?
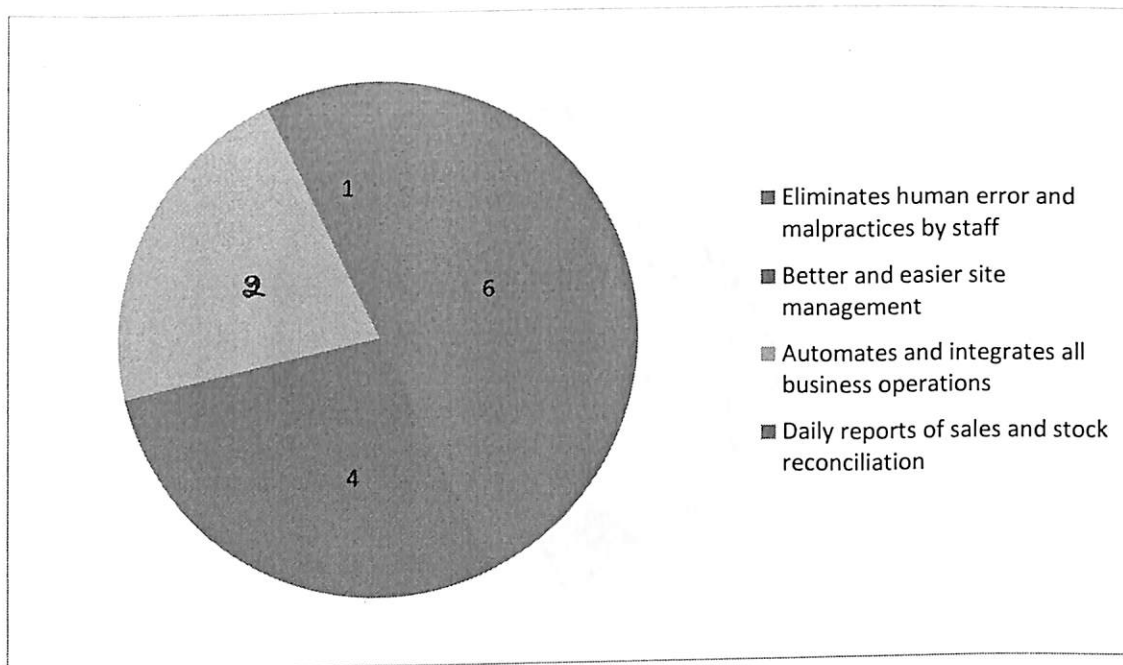
The most beneficial factor for a dealer which was revealed in the survey was that Automations helps in eliminating human error and malpractices by staff, followed by better & easier site management.

Any **display boards** regarding the features and benefits of automation system?
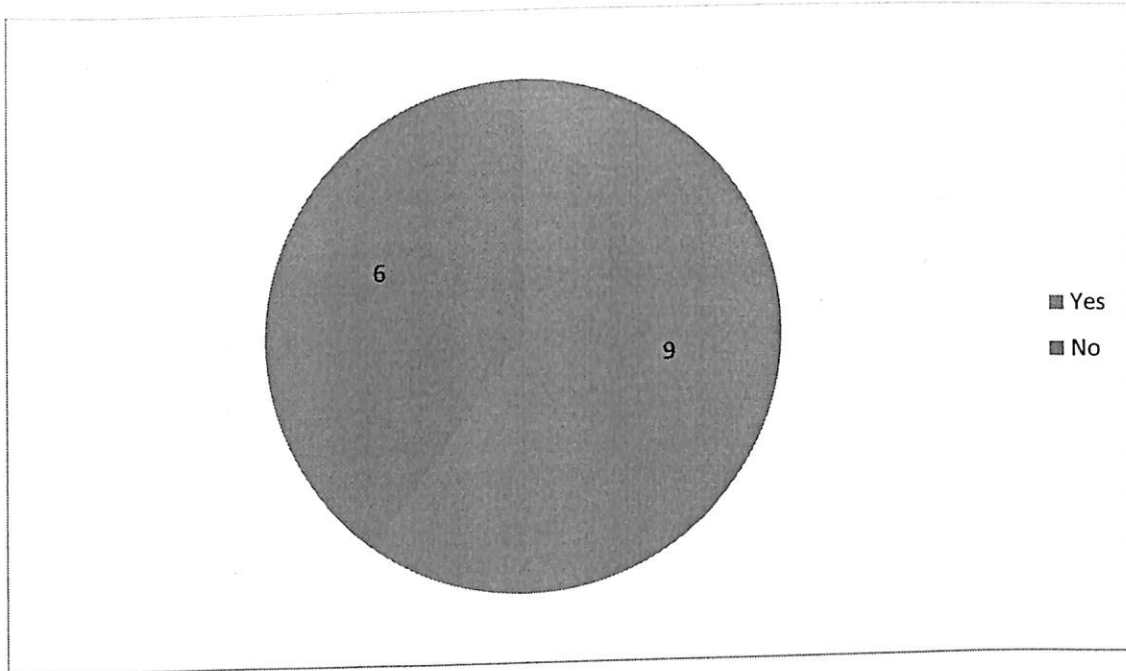
Majority of dealers had display boards providing information regarding features and benefits of Automation system. But still, a healthy number dealers required automation systems to be installed and display boards

What is the USP(Unique Selling Point) of your retail outlet?
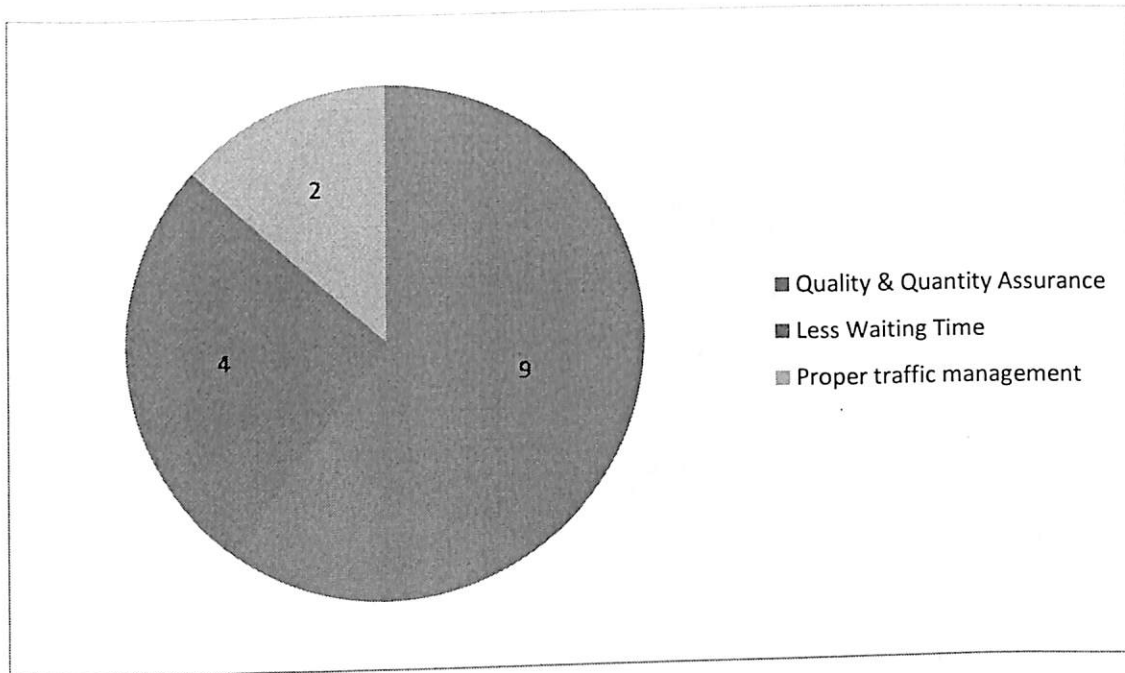
Most of the dealers had Quality and Quantity Assurance as their Unique Selling point as they provided computerized receipts which is one of the most important benefits of Automation systems installed. The dealers who had no automation system had proper site management as their USP since the covered area of their retail outlets was more as compared to others hence better traffic management.

Was any training given to you on the operations of Automation system?
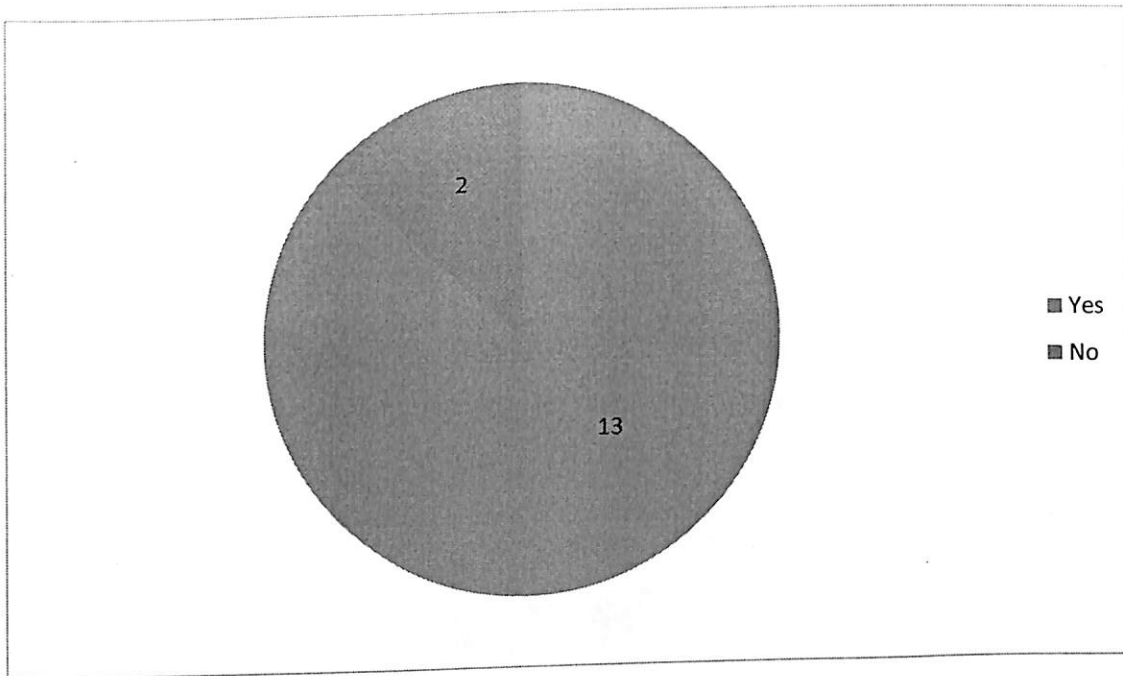
Have the Sales of this outlet increased after installation of the Automation system?
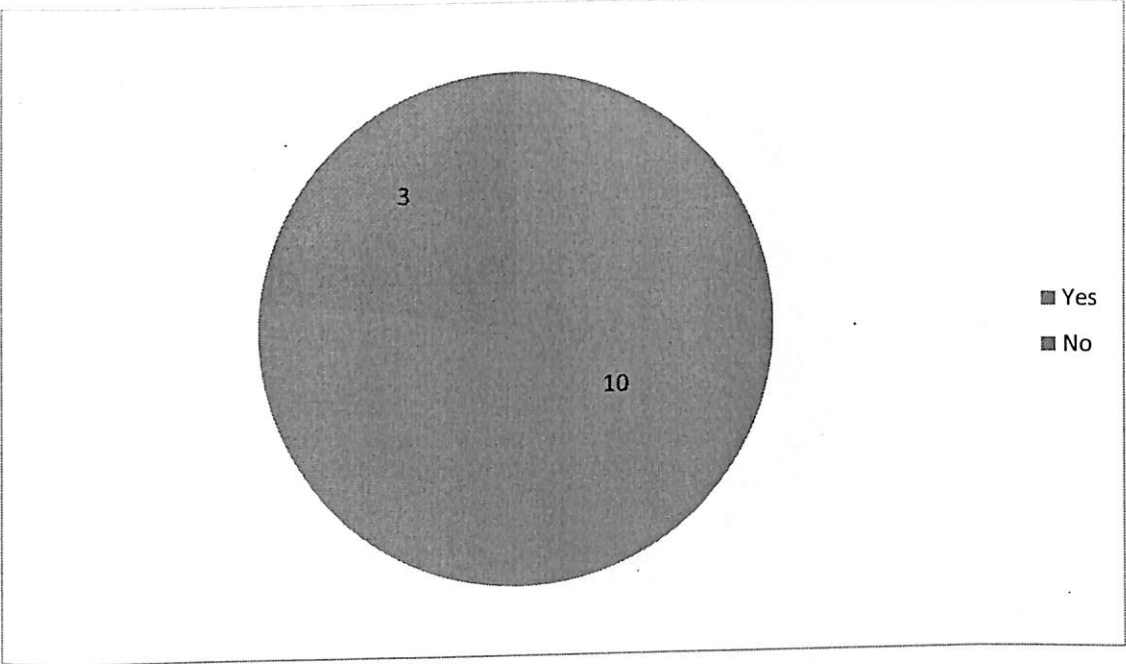
Employee Analysis

Have you ever been given any training for use of Automation System?
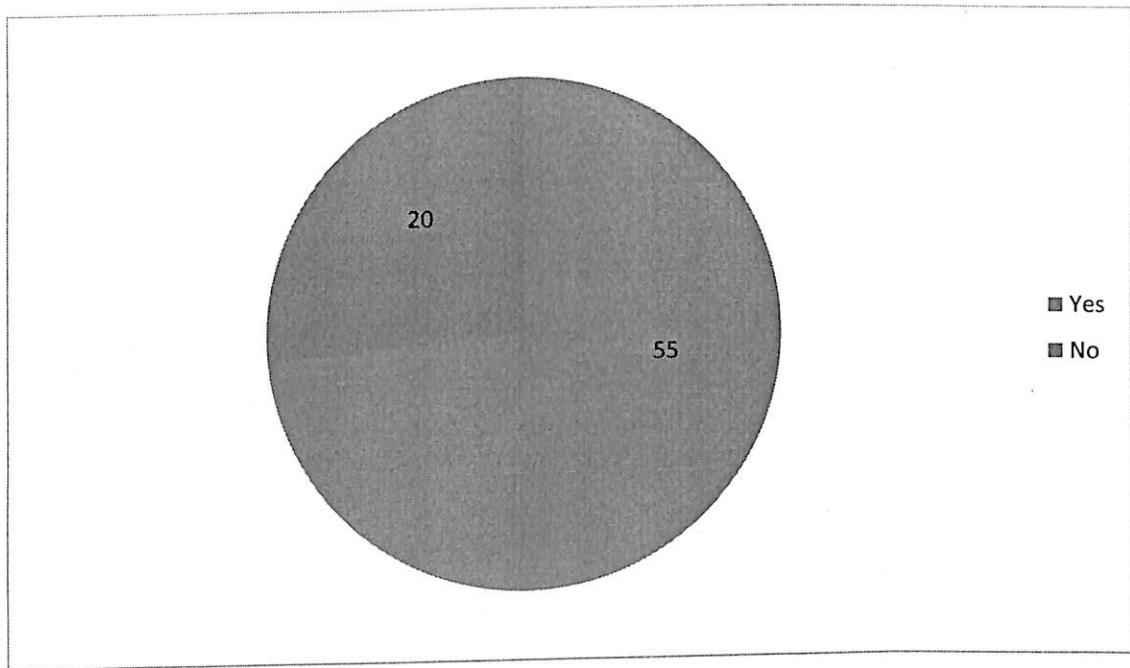
Majority of workers were given training for the use of automation system at dispenser, while a few number of employees didn't had any training for the use of automation system because of reasons like new recruitments.

What is the most important and beneficial feature of Automation for you?
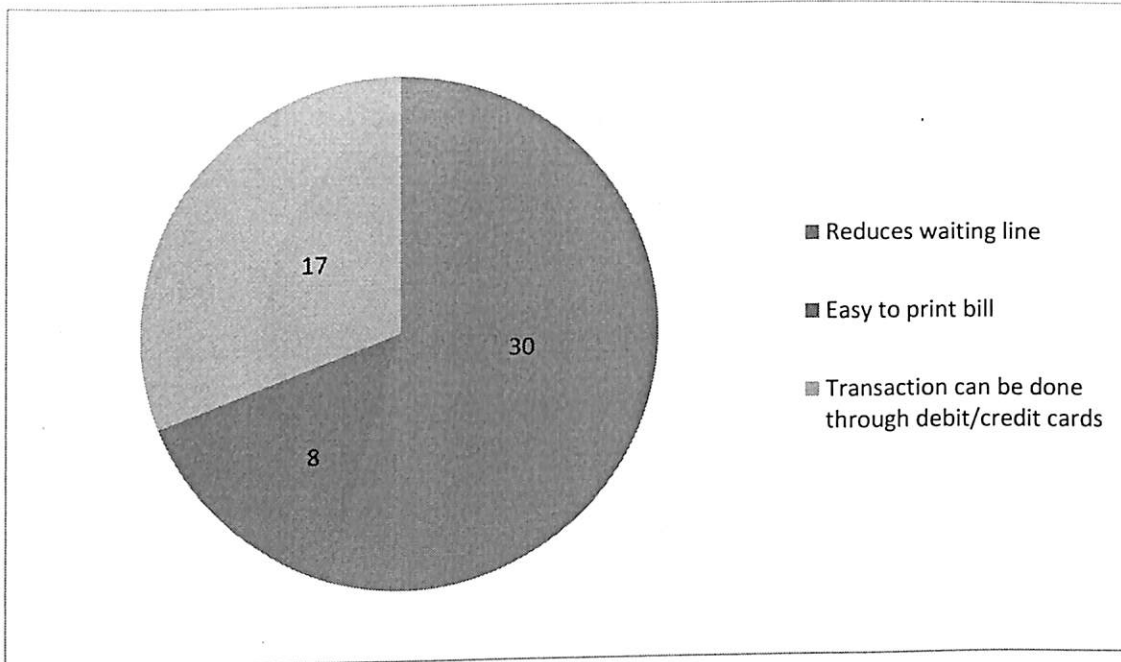
The most beneficial feature for employees turned out to be the reduced waiting time and better site management which helps them to organize the traffic at their respective retail outlets

Is it easy to operate and print bill using OPT machine?

17

48

Yes
No
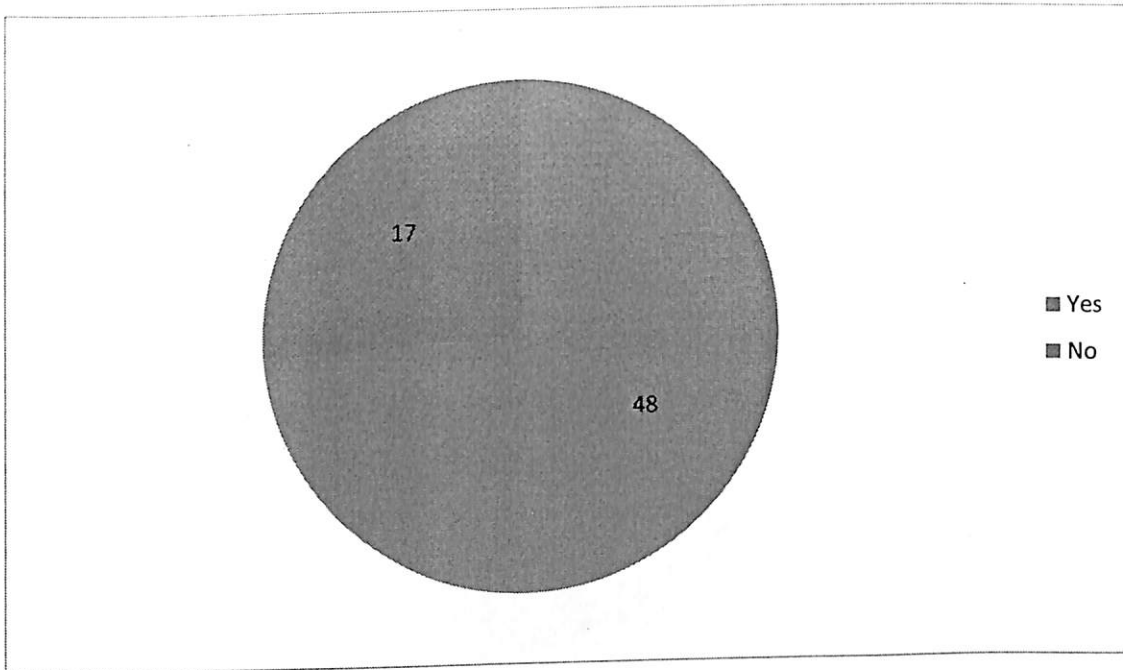
Customer Analysis

Are you aware of the Automation system functional at this outlet?

Sales

40

110

Yes
No
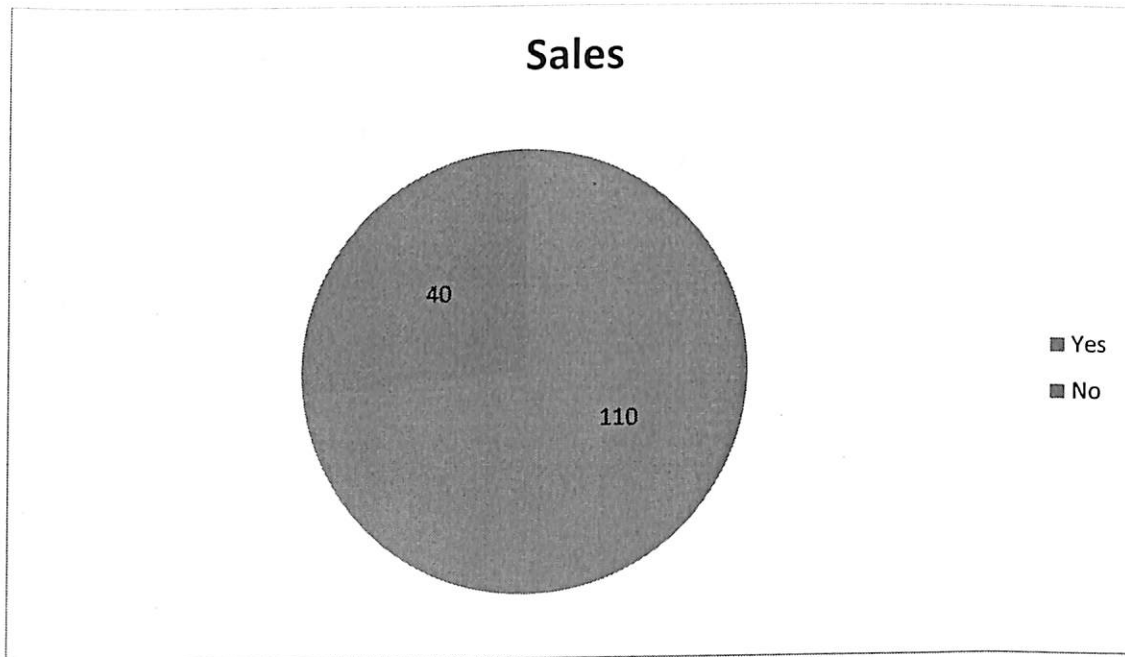
Majority of customers did not know of the Automation system functional at the outlets and what can be the most important benefit to them i.e. computerized receipts ensuring quality and quantity.

Do you ask for computerized receipts?
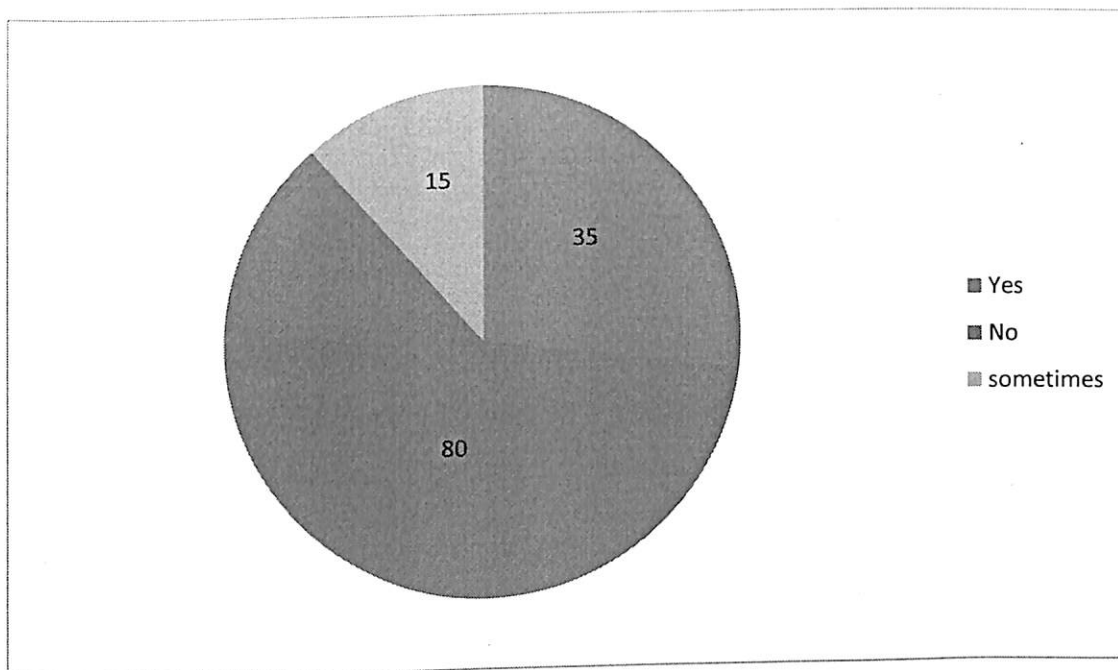
Majority of customers do not ask for computerized receipts and just leave the retail outlet as soon as the refueling is done. This indicates the lack of awareness among people about the importance and benefits of automation system which can help them in ensuring quality and quantity of fuel they are purchasing.

Do you always receive computerized receipts i.e. Bill in printed form?
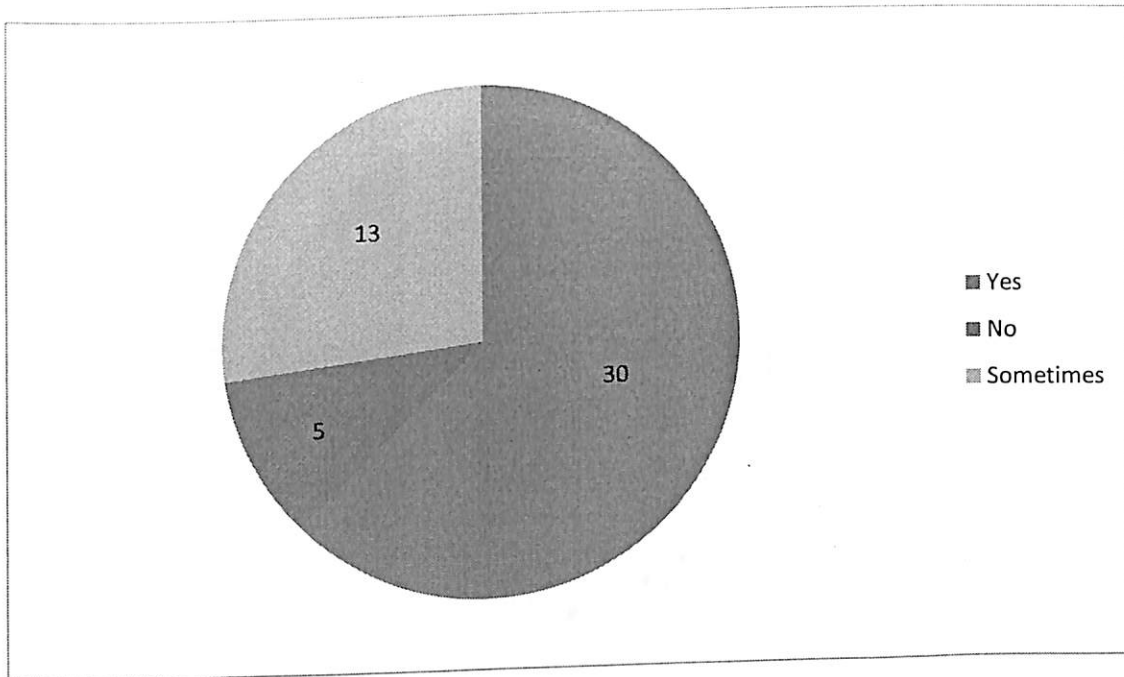
Majority of customers who ask for computerized receipts get their bill in printed form. However few customers are not provided receipts because of reasons like machine failure and lack of supplies such as paper roll.

Time taken by employees to do service i.e. print your bill, swipe your debit/credit card is low or high?
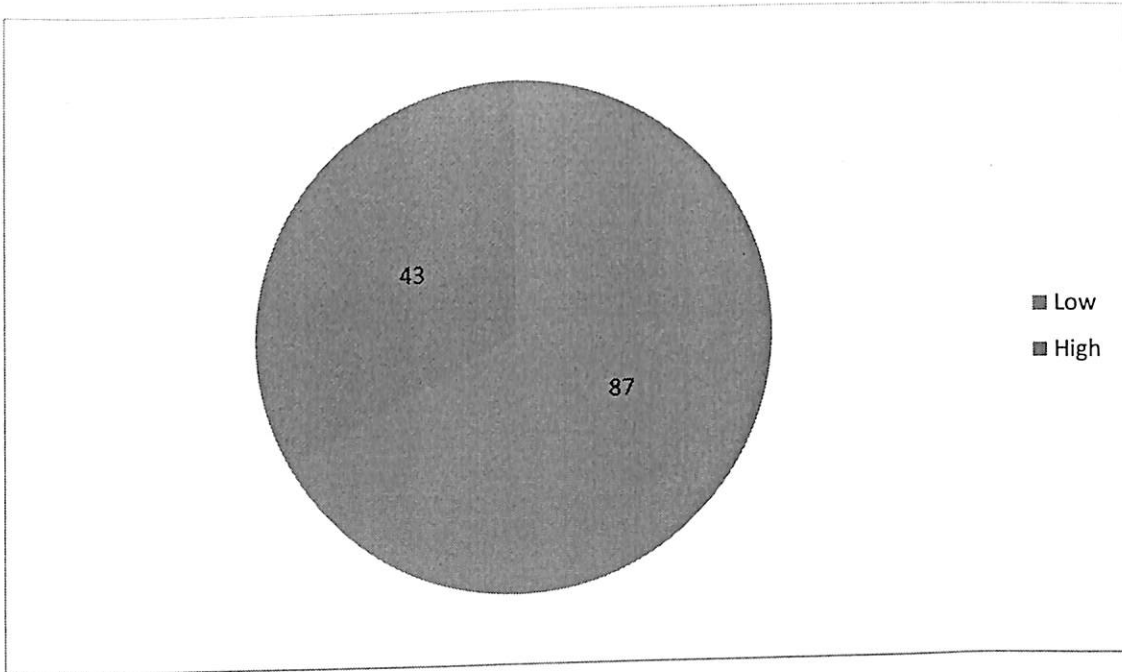
Majority of customer believe that time taken by employee to print their bill/Swipe Debit or credit card is low, however, cash is the preferred mode for payment because it is much more faster than payment through Debit/Credit Cards. With appropriate awareness, the fast payment mode of payment through debit/credit cards can be brought into consideration with the use of Automation System.

Do you always check zero?
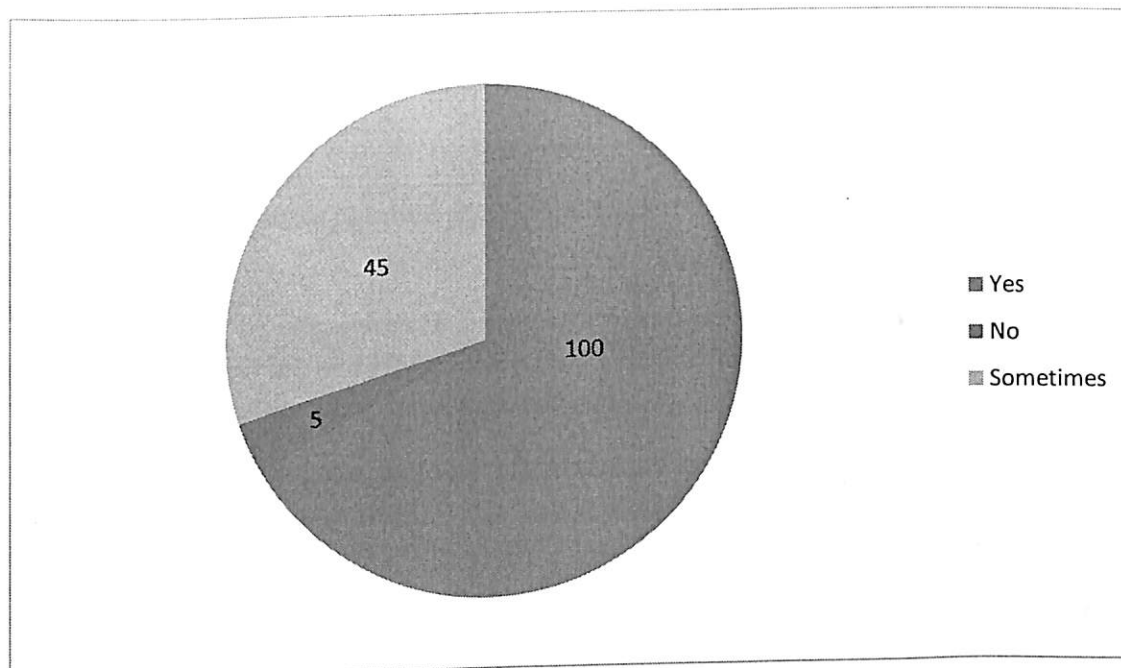
Majority of customers do check zero as a result of the various hoardings and banners placed in retail outlets and initiatives by employees, which gives assurance of the correct quantity of fuel being delivered. But Still, a healthy number of customers still do not check zero and hence more awareness needs to be generated to make people check zero and provide better customer satisfaction.

Findings

The most beneficial factor for a dealer was that Automations helps in eliminating human error and malpractices by staff, followed by better & easier site management.

number dealers required automation systems to be installed and display boards

Phase-I & Phase-II outlets needed to be upgraded to Phase-III so as to take maximum advantages of Automation

Though majority of employees had received training of working of Automation, new recruits need to receive training as soon as possible so that they can understand the operations conducted with the help of Automation and in turn serve better.

Majority of customers do not ask for computerized receipts hence awareness among the consumers is required to make them realize the importance of computerized receipts which ensures quality & quantity for them.

.Most of the customers check zero, but still a healthy number of customers do not check zero. Hence for them proper banners, hoardings, information strips on dispensing units should be used emphasizing on checking zero and ensuring the correct quantity of fuel being provided.

Conclusion

Automation has helped on a large scale to integrate all business operations at one site providing better and convenient site management. In addition to this it provides computer generated receipts which give the assurance of quality and quantity of the fuel which is the most prominent factor for a customer.

Automation systems also help in better control on forecourt operations and overall outlet activities with Daily reports of sales & stock reconciliation. Hence Automation has proved to be a very important factor to be inculcated in Retail Outlets for maximizing customer satisfaction and improve operations efficiency.

However latest automation systems are required to be installed in Retail Outlets to take maximum advantage of the facilities provided by them. Though most of the new outlets are running on phase-III, still there are number of outlets running on Phase-I and Phase-II automation with some outlets having no automation at all. Hence upgrading outlets to Phase-III automation will not only help in better site management by dealer but will also bring convenience for the company in terms of centralized monitoring of stock position of outlets, dealer management and increased customer satisfaction.

The lack of awareness among people about the importance and benefits of automation system is restraining them from ensuring quality and quantity of fuel they are purchasing. Also, a healthy number of customers still do not check zero and hence more awareness needs to be generated.

Automation if used with appropriate measure and support systems such as (awareness campaigns and addition of features in automation systems) will not only help the dealers and employees in convenient operations but will help the customers in ensuring quality and quantity of fuel, hence providing maximum customer satisfaction and gain trust which is the ultimate goal of any company.

Suggestions

1. Ensure availability of dedicated telephone line from dealers for automation system
2. Ensure general upkeep & maintenance of the system installed at the outlets
3. Ensure replenishment of consumables (receipt paper rolls, printer cartridges etc.)
4. Ensure system generated receipt printing for every transaction at the outlets
5. Ensure operation of automation system by the dealer in prescribed manner ; performing End of Day / End of Shift on regular basis
6. Launch an Automation awareness campaign so as to promote the features and advantages of the automation system.
7. Conduct employee training programs giving detailed advantages of automation system which they can use to make customers realize their value for money.

Limitations

- All Dealers of HPCL could not be visited during the survey due to time constraint.
- The survey was limited to the city of New Delhi.
- Many customers didn't cooperated for the survey and hence their valuable feedback could not be retrieved.

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