



Quality Improvement In Vehicle Service Process

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Abstract

Customer service is a multidimensional and extensive notion with numerous variables that directly affect customer satisfaction and customer loyalty throughout the customer life cycle. In order to make customer satisfied, it is necessary for the companies to add numerous factors into practice to provide nonstop evaluation and enhancement of their service conditioning such as addressing customers queries and meeting customer's prospects. When the vehicle is in the service center, every customer wants to know the vehicle status. For this, the customer has to call the service center and gather the information orally. Due to lack of trust, there might be a friction between the customer and service center when there is a detention in the listed time. In the present work step by step information to the client about the vehicle will be given by developing an online link Universal Resource Locator (URL). In the service center the data of vehicle and service updates are to be entered by system operator. Once the login credentials are furnished by the customer, the updates of service completed will be known and the customer can anticipate the time taken for total service and vehicle delivery. Giving this information to the customer can provide a better experience and more satisfaction with the service center that in turn may improve the quality of service by the service department. It is proposed to develop this process for Sri Durga Automotives Private Limited, Anantapuramu, an authorized sales and service center of Maruti Suzuki India Limited[6] [7].

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Keywords: - Services, Quality, Updates.

I.INTRODUCTION

In our daily life vehicles play important role. The use of vehicles is increasing day-by-day. Maintenance of vehicle is neglected by many people, as many companies are sending alerts for the vehicle service based on time period of last service. But regular maintenance of vehicle will run smoothly without any discomfort. Many customers have less confident with the service centres. Many of customers will not satisfy with the services done by the service centre because of the doubt in customer mind that weather the service is done to all repair

parts else neglected the customers complaints. When a customer handed the vehicle for the service in the service centre

[1], Customer has serious issue in replacing the new vehicle parts with outmoded. And it might be challenging to the customer that services are done for what they are paying. Service providers may overcharge by manipulating that change of parts without intimating to the customer.

CAR OWNERSHIP IN INDIA STATE WISE: -

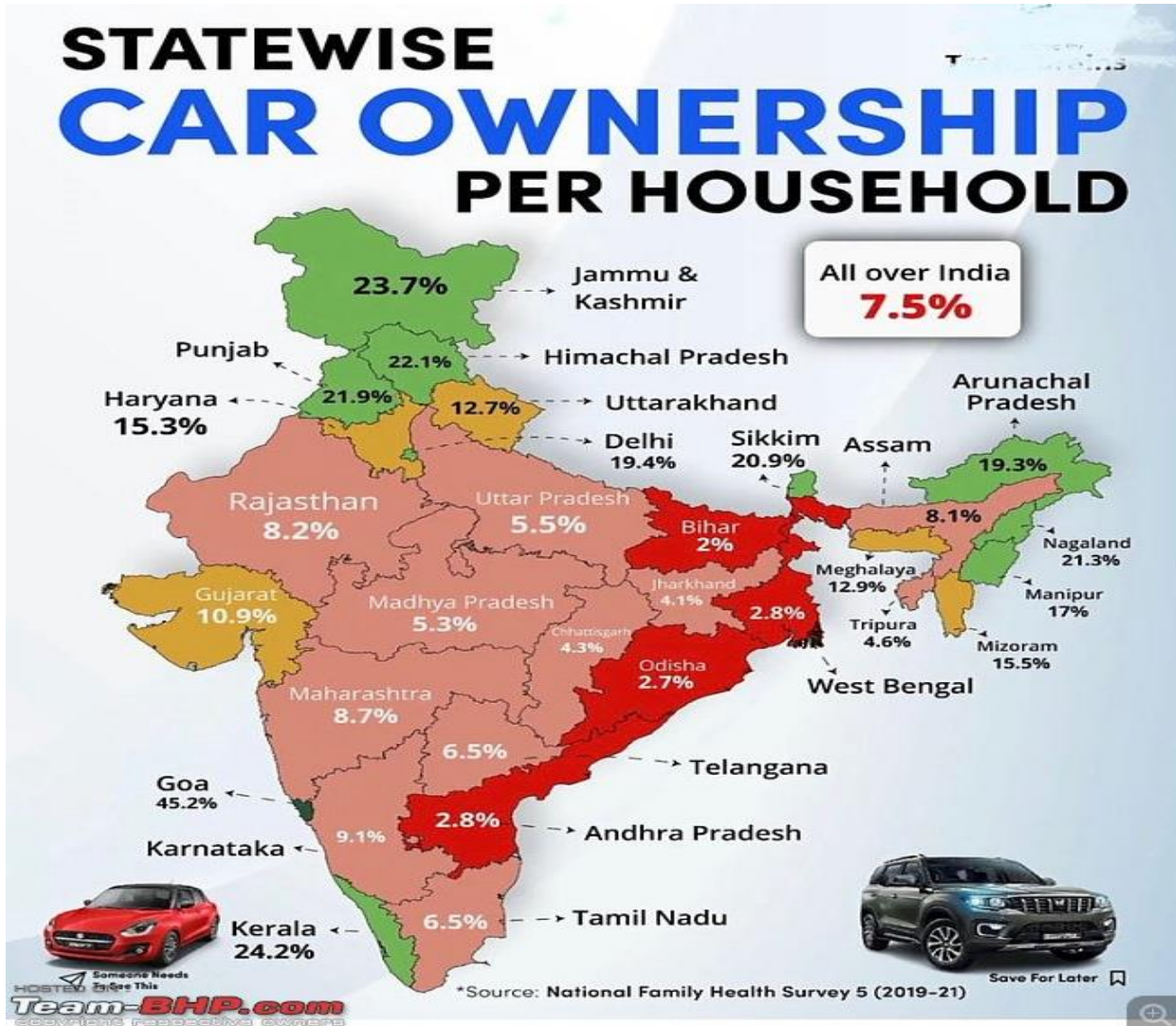


Figure 1 State Wise Car Ownership in India

From Figure 1 we can know the details of state wise car ownership per household according to 2019 to 2021.

SALES OF CARS FROM 2015 TO 2021.

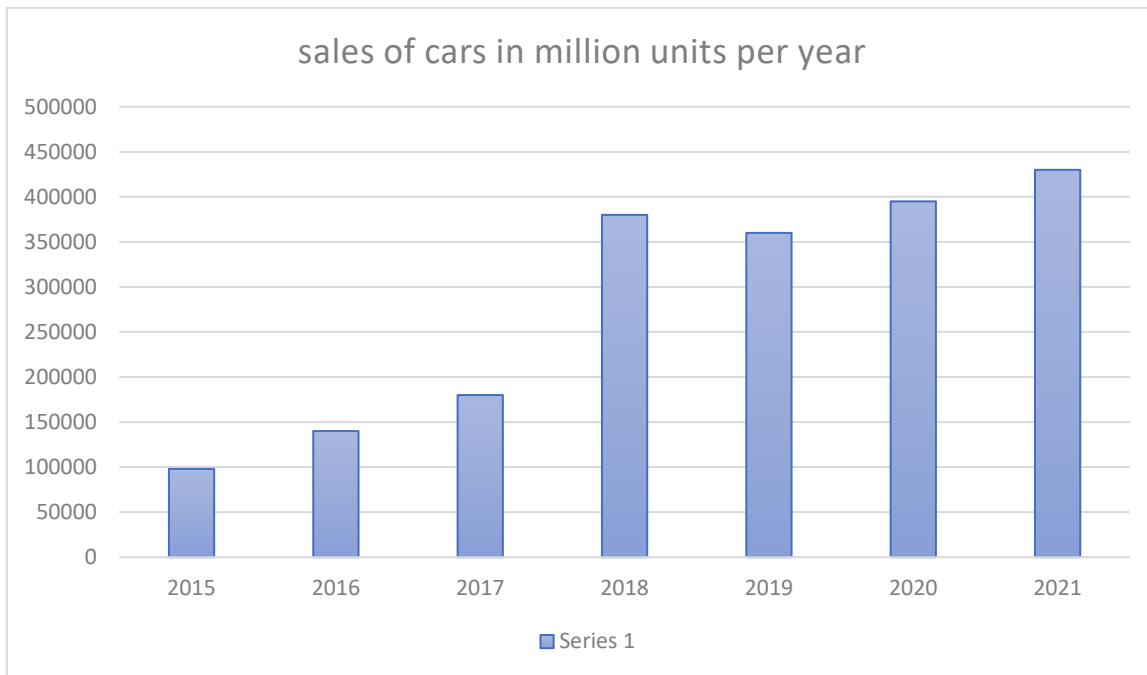


Figure 2 Car Sales in Units

From Figure 2 Graph shows Car’s sales from 2015 to 2021.

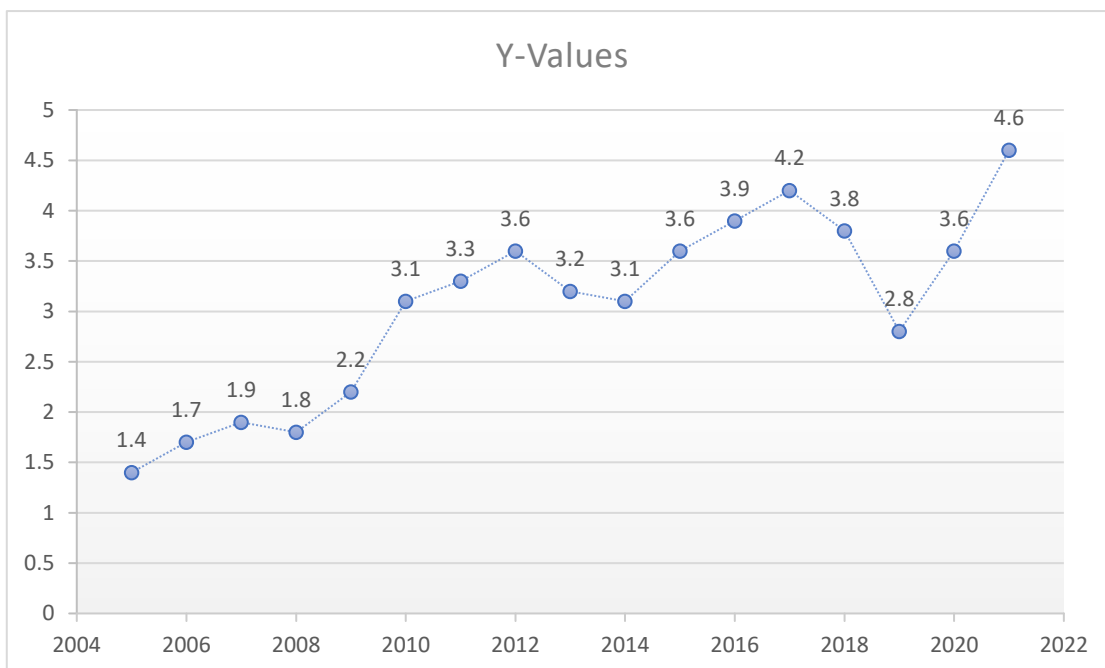


Figure 3 Sales in Units

From Figure 3 Graph of Sales of cars in million units from 2005 to 2022.

Generally periodic maintenance service is there for every vehicle. A vehicle service is done by predetermined time frame or by distance travelled. As of general a vehicle has to get service for every six months or 10000 kilometres travel distance. Periodic maintenance service (PMS) is useful in this situation, this will give information about the parts that it is to be repaired or replace this data is obtained by the sensors in the car that is used to track the various components in the vehicle. PMS also guides the schedule of the next service and give warning in the mobile applications, When PMS is used it will give clarity about repair parts and it saves lot of time and money.

SERVICE MAINTAINANCE ACCORDING TO THE DISTANCE TRAVELLED:

KILOMETERS TRAVELLED	TYPE OF SERVICE
10000	MINOR SERVICE
20000	MAJOR SERVICE
30000	MINOR SERVICE
40000	MAJOR SERVICE
50000	MINOR SERVICE

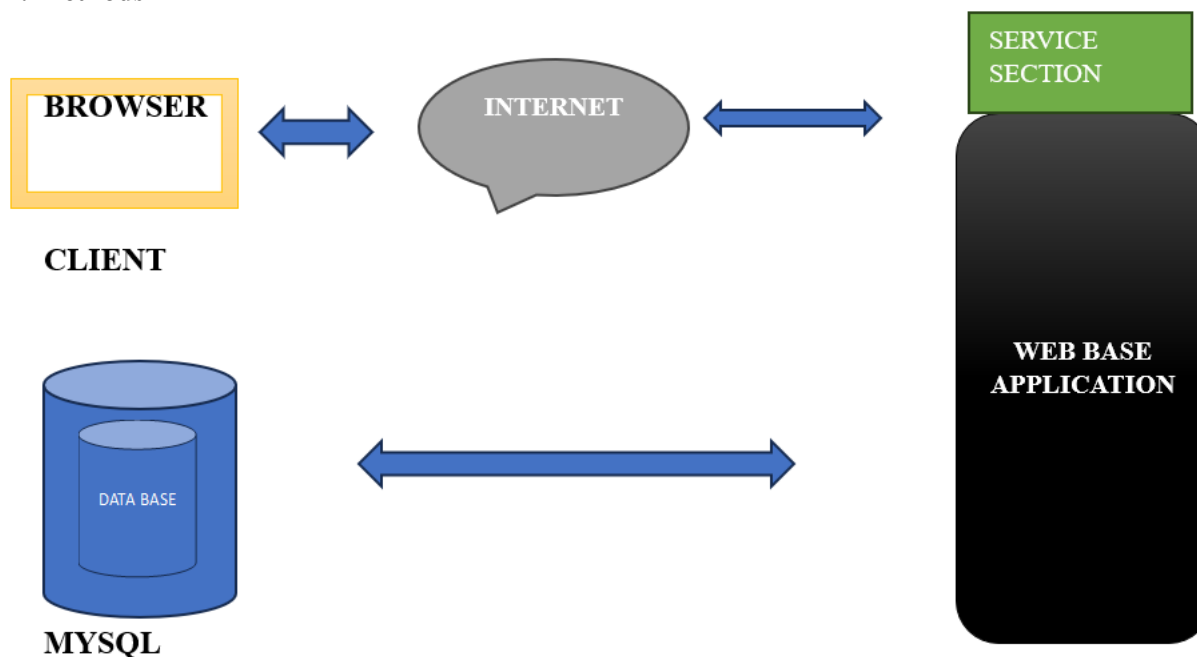
*Table 1 Service Maintenance According to Distance Travelled***SERVICE MAINTENANCE ACCORDING TO TIME PERIOD: -**

TIME PERIOD	SERVICE TYPE
1 st year	MINOR SERVICE
2 nd year	MAJOR SERVICE
3 rd year	MINOR SERVICE
4 th year	MAJOR SERVICE
5 th year	MINOR SERVICE
6 th year	MAJOR SERVICE
7 th year	MINOR SERVICE

Table 2 Service Maintenance According to Time Period

MAJOR SERVICE : - Full body oil change. see Table 1 Table 2

MINOR SERVICES: - Only general service and Engine oil change. See Table 2 and Table 1

II. Methods**Methodology and Working Procedures.**

Vehicle Management system is developed in PWA (Progressive web application) by using HTML (Hypertext markup language)[5], CSS (Cascading style sheet), JavaScript and web assembly. By designing this web-based application[3], the discomforts that cause in the service centre between customer and service operators is mostly reduced. When an online update[2] is provided to the customer mechanics who are doing repairs in the vehicle will do work in time because of the updates are going to the customer so that they will not neglect the work and performance also improved by the mechanics with the motivation of the service manager. So that customer can know the waiting time, working speed of the services is improved and Quality of the services[8]

that are providing to the vehicle is improved. By the suggested strategy it will boost service centre operations effectively and overall customer happiness when receiving the car.

How to use: It is simple to use, it is a web page it can easily access in the mobile there is no need of downloading apps.

In this web application there are two different modules,

1. Admin Module
2. Customer Module

1. Admin Module: -

In Admin module all access is granted with the login permits with login ID and password, filling new registration form, adding and deleting of services, Updating the services and Deleting data these are done by Admin.

2. Customer Module: -

In customer module, Here the customer can check the status with the help of registration number which is generated randomly by the system while registering for service, by this customer can see the updates of the vehicle in the service centre.

The goal of the vehicle services is to provide a better information so that the service centre can maintain good bonding with the customer with which the services providing by service centre.

III. Results and Discussions

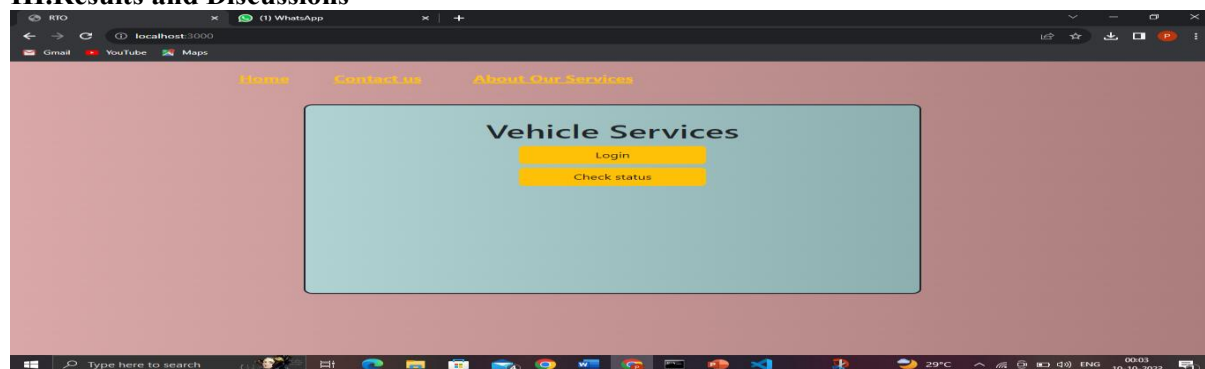


Figure 4 Home Page

Figure 4 Shows the welcome page when code started running and login displayed on screen.

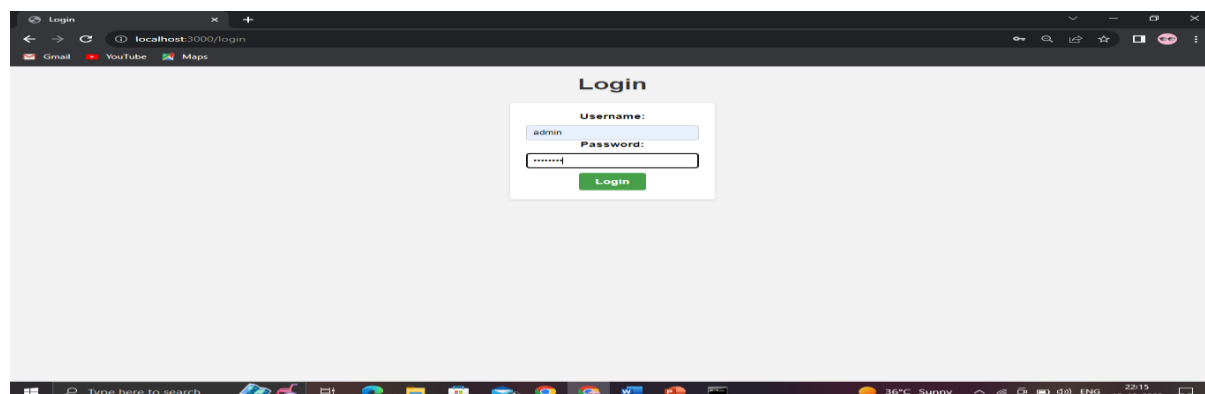


Figure 5 Admin Login Page

Figure 5 Shows that when click on the login option login page for Admin details, Username and password.

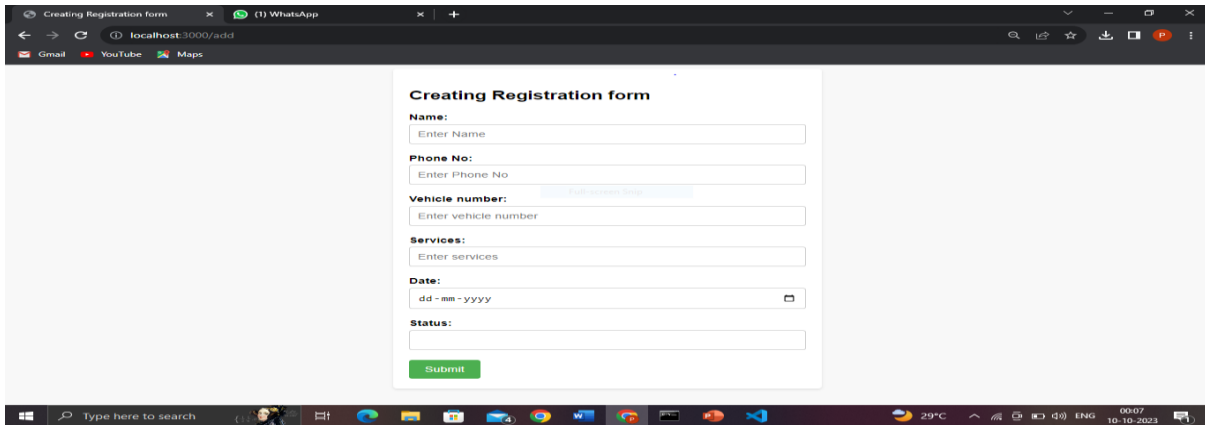


Figure 6 Registration Form

Figure 6 Shows the registration form in Admin module to fill details of customers.

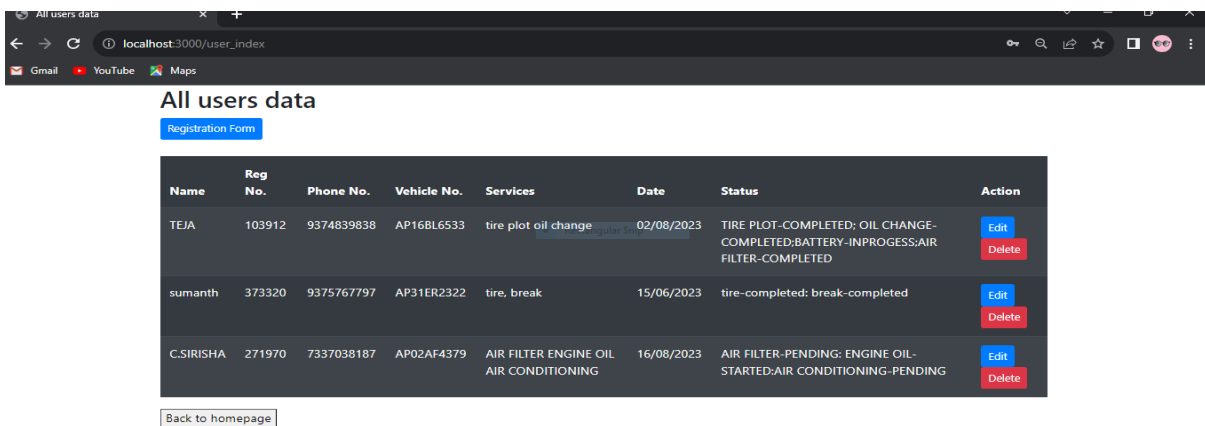


Figure 7 Data in Amin Login

Figure 7 Shows data in the admin login where Admin can edit or delete the data.

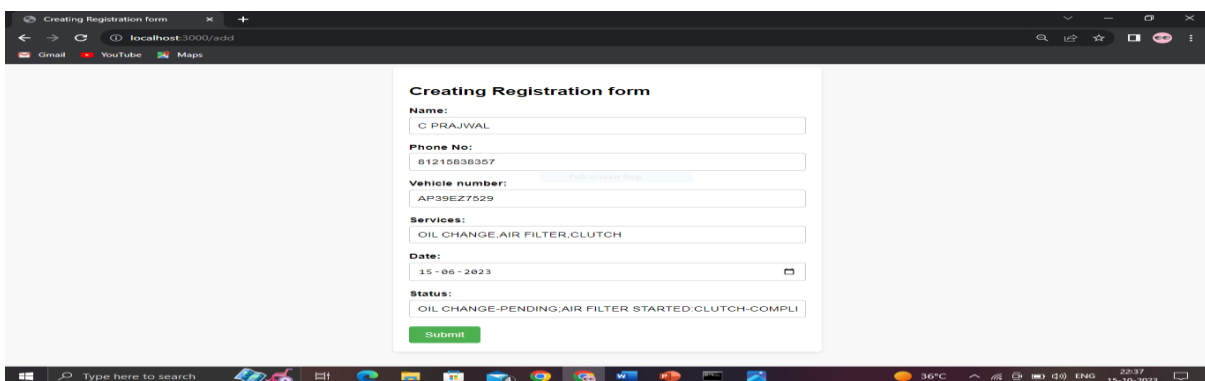


Figure 8 Filling New Registration Form

Figure 8 Shows filling of new registration with the customer details.

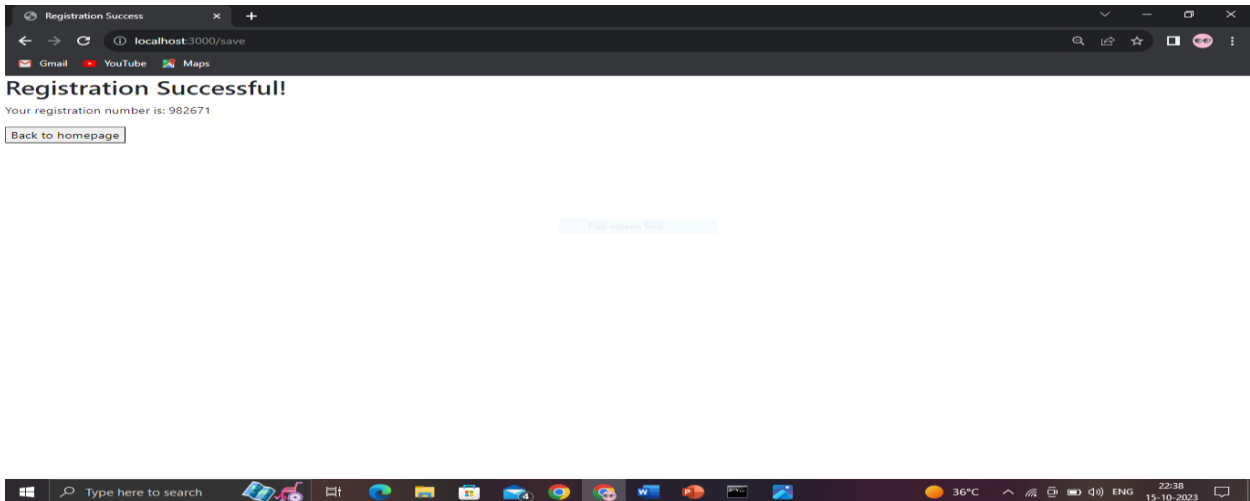


Figure 9 Successful registration

Figure 9 Shows registration successful and registration number is generated for checking the status to customer.

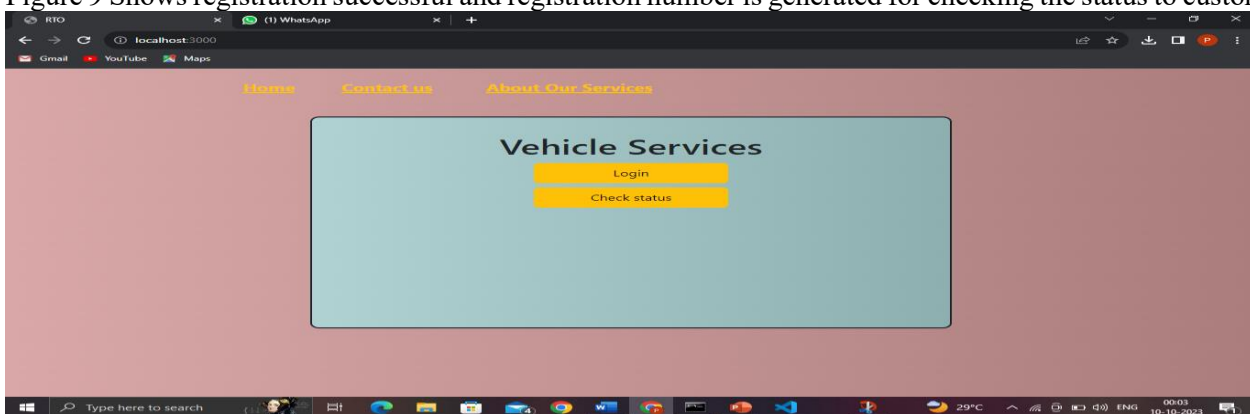


Figure 10 Check status For Customer

Figure 10 Shows check status option for customers.

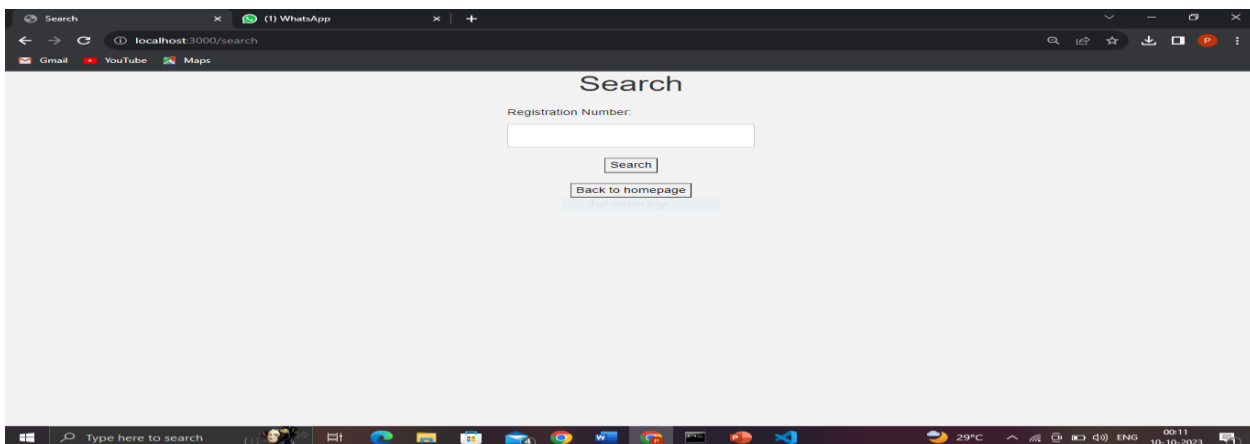


Figure 11 Check Status by Customer

Figure 11 Shows for checking status to customers through registration number that is generated randomly after submission of details.

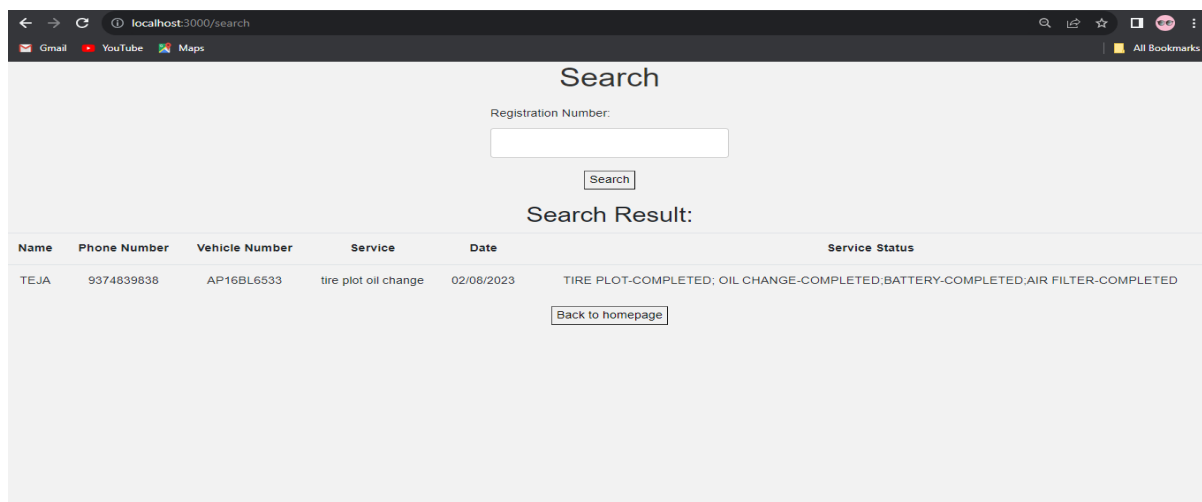


Figure 12 Updates of Services to Customers

Figure 12 Shows the updates of services to the customer when connecting to the same server running the Web-Site in Localhost (Port 3000).

IV Conclusions

The project development has led to following, Efficiency is increased by automating service process system when compared to current system. It is easy to operate depending on the options it gives permit based on the proper access. We need routine maintenance to car for functioning well. By this it overcome communication lag between service centre and customer. By automating the system using IoT[4] it helps to get quick and smart service to vehicle. It helps to track service process and it gives entire updates of repairs done to the vehicle, by this customer can easily know about services and can come to service centre to take delivery of vehicle by seeing updates. I have simplified our lives. This technique reduces customer effort and at the same time it improves the efficiency of service to vehicle.

V Future Scope

Now a days major uses are related in our daily life with the software. By using of simple example, it is simple approach to know about the product details, Availability, Delivery time etc in a supermarket run mall or a mart. Likewise, by developing a website to use in a service centre it will give better information than the current working process, through this customer can track the vehicle and see the updates accurately, so that customer can collect the vehicle at the right time of delivery, by deploying this code in online process also we can know the availability of the spear parts in service centre. To happen this all sections in the service centre has to come in single platform by this the website is easily implemented.

List of Abbreviations

PWA: Progressive Web Application.
 HTML: Hypertext Markup Language.
 CSS: Cascading Style Sheet.
 SQL: Structural Query Language.
 URL: Universal Resource Locator.
 PMS: Periodic Maintenance Service.

Declarations

Availability of data and materials

The corresponding author may provide the datasets used and/or analysed for this study upon reasonable request, and the principal researchers may grant access to particular data.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request, and detail data is available with the permission from the primary researchers.

Competing interests

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Authors' contributions

Conceptualization, data collection, investigation, methodology, and writing original draft done by C. PRAJWAL KUMAR. Supervise done by Dr.Smt. G. PRASANTHI and approved the final manuscript.

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