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RESEARCH ARTICLE

ZEALOUS ELECTROCARE: CLOUD-NATIVE INTELLIGENT HOME SERVICES PLATFORM

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Abstract

This project introduces a cloud-native web platform designed to connect users with nearby electricians in tier-2 and tier-3 cities across Tamil Nadu, where access to reliable home services is often limited. Using a modern technology stack of React, Spring Boot, and MySQL, the platform offers a user-friendly booking interface, real-time availability tracking, and a review system enhanced with sentiment analysis to interpret customer feedback to handle Digital Service Management System (DSMS). The platform's intent is to improve DSMS service viaaccessibility, efficiency, and customer satisfaction, thereby supporting underserved regions.The features include automated invoice generation, service history tracking, and multilingual support.

Introduction:-

With the growth of urbanization, home services have become vital for convenient and efficient household management. However, smaller cities often lack streamlined access to professional services, impacting the quality of life and economic development. This project focuses specifically on meeting the demand for electrician services in these areas, aiming to standardize service quality and accessibility.

Users in smaller cities often struggle to find verified, reliable electricians. This platform addresses these issues by creating a user-centric, cloud-native platform that facilitates secure booking, proximity-based service matching, and feedback management with digital service management system.

Objectives:-

1. Develop a scalable, cloud-native platform for reserving electrician services.
2. Apply sentiment analysis on client feedback to give perceptivity for service enhancement.
3. Optimize the platform for league- 2 and league- 3 metropolises, fastening on original requirements and challenges.

Scope

This platform caters primarily to the electrician service sector but could expand to other home services. The compass includes stoner enrolment, reserving functionalities, service shadowing, and feedback analysis.

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Significance
By offering this platform, we hope to raise service norms in underserved areas, creating profitable openings for original electricians and fostering a dependable ecosystem for home services.

Urban Clap It's an app which is grounded on service business that connects client and service provider. The strategy of civic crack is to connect a lesser number of guests to use their operation. Civic crack provides services through their platform by planting their own professed professionals.

Justdial brings to you an each-new online shopping circus where you can browse through a large number of orders and find a deal that's perfect for you. The Biggest problem with the current system is that position does not always get precedence while probingUser Interface of the operation is unskilful due to unwanted announcements and bot

Online to offline, generally shortened to O2O (In Figure-1), It's an expression that's used in digital marketing to describe systems soliciting consumers within a digital terrain to make purchases of goods or services from physical businesses. They've lately gained fashion ability by applying the convenience benefit of online services to offline reality.

Literature Survey:-

The rapid-fire increase in demand for home services has led to the emergence of digital platforms that connect service providers with guests. These platforms enhance availability and grease employment for blue- collar workers. According to Gupta et al. [1], a home service web operation improves service vacuity by furnishing real- time backing, thereby adding client satisfaction.

Negative reviews posted by guests have a significant impact on the credibility and business growth of service platforms. Research conducted by Rita et al. [6] shows that inimical reviews impact guests' amenability to buy, increase perceived threat, and reduce overall product engagement. Managing negative feedback effectively is pivotal for maintaining a platform's character likewise, Marchiori et al. [13] assert that a company's online character directly affects client preference and fidelity

The elaboration of Online- to- Offline(O2O) platforms has introduced a mongrel business model that connects digital service requests with physical service delivery. Ryu et al. [3] presented an O2O Service design(O2O SB) to grease structured service delivery processes by integrating offline service providers with online platforms. In addition, Tsai et al. [10] introduced a serviceframe for propinquity commerce, which enables guests to connect with near service providers, thereby reducing service detainments and adding satisfaction situations.

In China, O2O platforms face unique challenges in offline service delivery. Du et al. [4] linked issues similar as low response rates,lack of trust, and service quality inconsistencies as major challenges. The study recommended strategic results to overcome these walls and ameliorate client satisfaction also, He et al. [14] anatomized competitive pricing models in O2O platforms and suggested dynamic pricing strategies that could enhance request competitiveness and increase offline service relinquishment. Consumer gest plays a vital part in the success of O2O platforms. Rohetal. [5] explored how moral scores impact guests'opinions regarding food delivery services, revealing that guests with advanced moral values are less likely to switch service providers also, Gu [2] delved factors impacting consumer group purchase intentions in O2O platforms and concluded that strategic marketing approaches significantly impact purchase opinions.

Technological advancements play a crucial part in enhancing the effectiveness of O2O platforms. Xiao et al. [9] proposed a character operation system using retiredSemi-Markov Models(HSMM) to assess client feedback and ameliorate service quality. The study demonstrated that integrating intelligent feedback processing mechanisms could reduce negative reviews and increase stoner retention likewise, Chen et al. [7] examined the power structure in retail force chains operating under O2O platforms. They suggested that balancing power dynamics among stakeholders improves service effectiveness and overall satisfaction.

The impact of technology on profit generation and client engagement in O2O platforms has also been explored in colorful studies. Zhang et al. [8] discovered that introducing new service channels within O2O platforms redounded in advanced profit and bettered client engagement. Agarwal et al. [15] introduced BlinkDB, a query processing

system able of handling large- scale data processing with minimum error, demonstrating how analogous technologies can ameliorate platform performance.

Effective communication with guests also plays a pivotal part in sustaining O2O platforms. IBM [12] proposed Smarter Commerce for Communication, which utilizes client data to offer substantiated services and enhance stoner engagement. Nguyen [11] introduced a five- construct model for measuring client satisfaction, which includes factors like service quality, client trust, perceived value, engagement, and fidelity.

Limitations-

1. Lack of Real- Time Feedback Current platforms detention feedback, affecting the service experience.
2. Poor Scalability numerous platforms struggle to handle large stoner bases efficiently, leading to slow response times and outages.
3. Fractured stoner Experience Separate interfaces for booking and service operation lead to a disconnected experience.
4. Limited Customization incapability to customize services and immolations according to stoner preferences.
5. Security Vulnerabilities shy data protection measures can lead to breaches and loss of trust.
6. Homemade Invoicing Lack of automated tab generation makes the billing process clumsy and error-prone.

Proposedsystem

Our system consists of three main corridors

1. Service Providers
2. Customer
3. Admin

With the help of O2O platform, our design provides services to guests from offline mode to online mode. Our point reduces walls between service provider and client and produce an online platform for them to interact with the original workers at their ease.

This creates further openings for original service providers through our platform which helps them to connect with further guests effectively. The strategy of Zealous ElectroCare is to connect original service provider to client which provides them fresh job occasion. It'll save client's time comparatively to all other being platforms. Cloud-native operations give the inflexibility to gauge and support a growing stoner base, making them ideal for platforms that anticipate rapid-fire growth in regions with sporadic access.

Sentiment analysis is decreasingly used in client feedback analysis to gather perceptivity and ameliorate service quality. Previous studies emphasize its part in understanding stoner satisfaction and relating specific areas for service enhancement, particularly in geographically distributed service models. It'll also minimize the cost and reduce the problem of overpricing. It also saves time of guests as it connects original service provider which are at near locales from the factual visiting address rather of hiring company workers that travels. So, they give fast service in lower time.

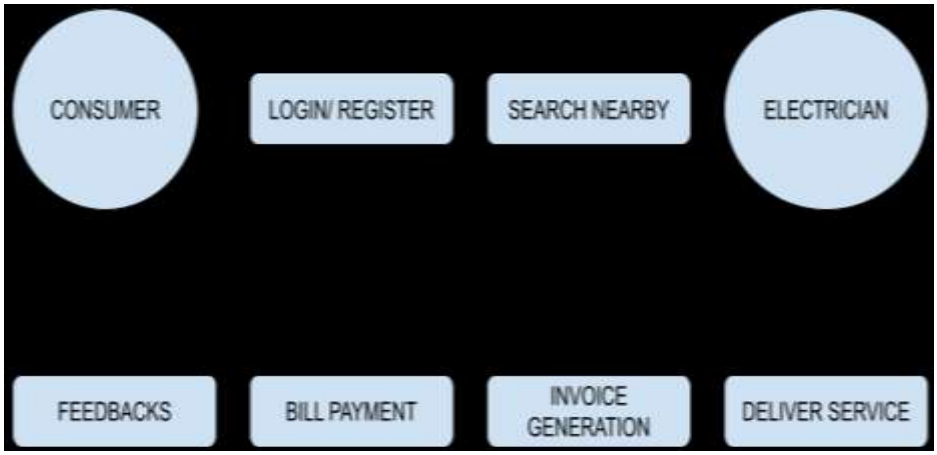


Fig:- Data Flow Diagram.

Dataflow shown in the below figure have some way. The consumer login or register them tone to our Zealous ElectroCare for searching nearby electricians, formerly provider set up the announcement popup to consumer, electrician complete their service formerly reach the place, ultimately tab for the service will be generated from provider's side. Payment can be made by consumer to the generated tab by provider, also the conditions for the service also will be made by consumer with suggestions. Those suggestions could be reused for sentiment analysis to ameliorate providers service quality.

Digital Service Management System

From the inflow map of the Digital Service Management System (DSMS), we can see the introductory inflow of information within the system. There are three key entities in the system. First of all, the stoner and the service provider must register in the DSM using unique credentials. Also, it can be fairly divided in to two corridors shown below

Service providers Electricians side

First, the service provider has to login in the system, also the provider can modernize their profile details which will also be stored in the database of the system. They can manage the services by examining services that requested and perfecting on the base of feedbacks entered from the client end. Accepting and generating tab of the service.

Customer Side

Similarly, after logging into the system, users with a stoner profile can update their profile and search for the digital management services they need. User can also request services that are demanded by them. They can check the status of their request any time during the process. After thecompletion of the request of the stoner he she can give some feedbacks depending on the experience after completing the payment of the service which has generated by provider. Then

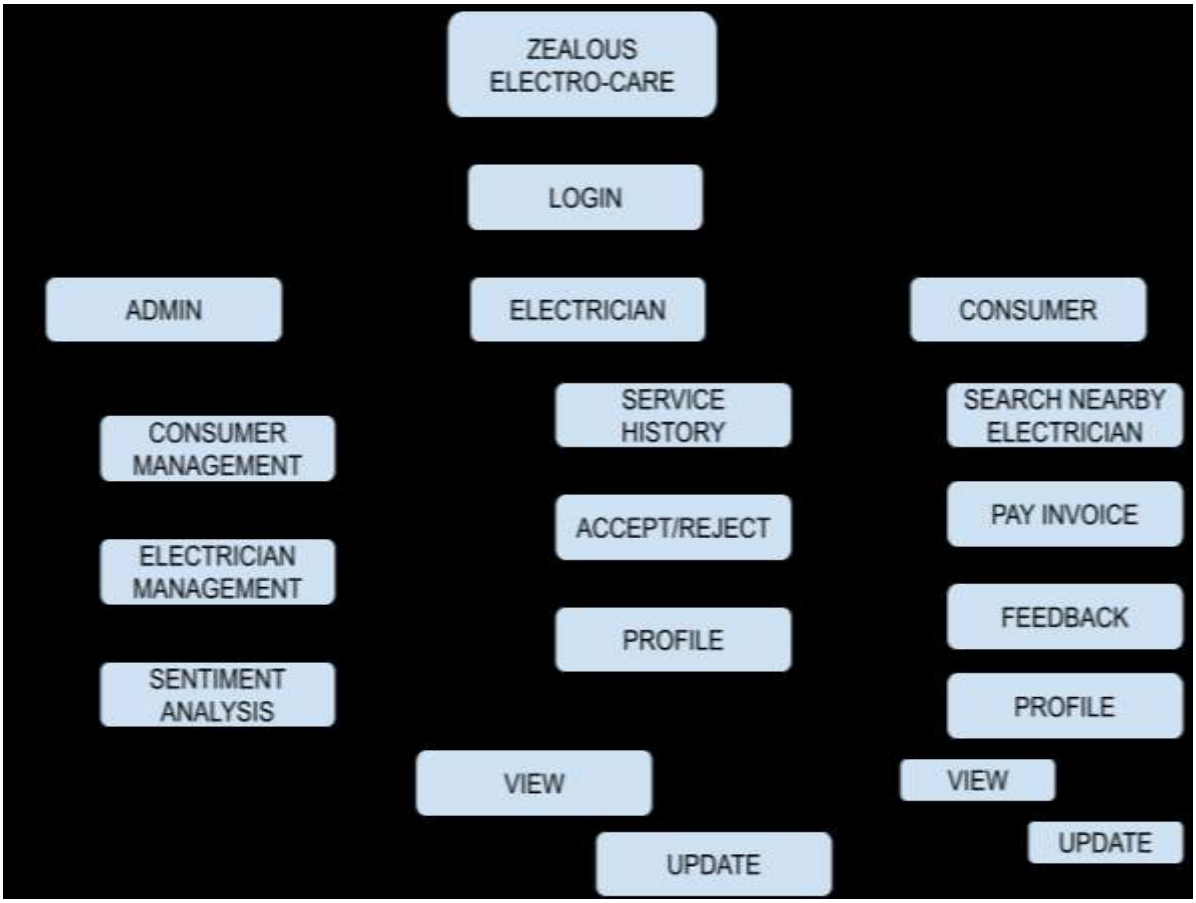


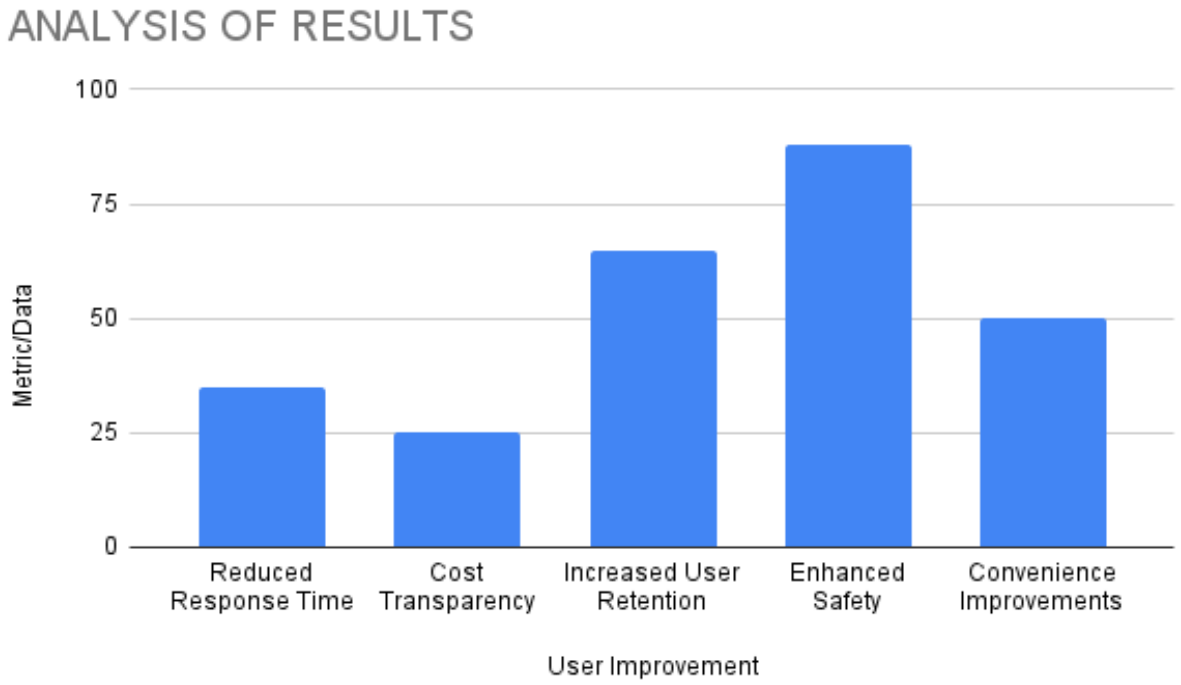
Fig:- Methodologyadmin can login to manage the website and working the problems of mismanagement of the druggies. Admin can also view the requests and feedback of the guests and modernize them on the database system for better functionality of the system.

Advantages

1. It promotes Original for Oral Initiative taken by our government
2. It helps in Connecting Original Service providers with guests with ease
3. Cloud-native operations give the inflexibility to gauge and support a growing stoner base, making them ideal for platforms that anticipate rapid-fire growth in regions with sporadic access
4. Sentiment analysis is decreasingly used in client feedback analysis to gather perceptivity and ameliorate service quality

Results and Analysis:-

User Improvement	Metric/Data	Impact
Reduced Response Time	Average response time reduced by 35%	Faster assignment of electricians due to real-timetracking, optimized scheduling.
Cost Transparency	25% reduction in overcharging complaints	Clear, upfront pricing ensures affordability
Increased User Retention	65% of users book electricians again within 30 days	High satisfaction levels leading to trust and repeated use of the service.
Enhanced Safety	88% users share positive feedback on safety protocols	Background-verified electricians and safety measures improve trust and service reliability.
Convenience Improvements	50% of users utilize the app for scheduling follow-ups	Easier and faster service scheduling boosts user convenience and satisfaction.



Conclusion and Future Enhancment:-

The Zealous ElectroCare Cloud-Native Intelligent Home Services for Digital Management Platform effectively addresses the need for dependable electrician services in league- 2 and league- 3 metropolises. By enabling propinquity- grounded booking, real- time vacuity, and feedback- grounded enhancement

The platform enhances service availability and client satisfaction. Sentiment analysis further provides practicable perceptivity for quality control. Unborn work could concentrate on expanding the platform to other services and enhancing NLP models to handle indigenous language feedback directly.

For our unborn compass we will ameliorate our stoner Interface/ stoner Experience. Microservices armature would be acclimated. Mobile app would be developed to ease of access for the consumers. Service and Security programs will be streamlined.

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