ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

Volume 11 Issue 08 August 2024

UtilityHub: Bridging the Gap Between Users and Trusted Service Providers

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***Abstract*— In response to the increasing integration of technology into our daily lives, there arises a critical need for a streamlined and comprehensive solution for accessing essential services. This paper introduces UtilityHub, A pioneering website offering centralized access to essential services like housekeeping, cleaning, and carpentry. Unlike existing platforms, it addresses shortcomings such as limited service offerings, opaque pricing, and compromised security. Through innovative features and robust security protocols, it promotes efficiency and sustainability while prioritizing user data protection. By integrating diverse services into a single, accessible interface, it revolutionizes utility management, catering to user and provider needs while con- tributing to environmental concerns. This paper presents Utility- Hub as a promising solution, marking a significant advancement in utility management systems.**

***Index Terms*— Services, Centralized, Robust, Sustainability, Advancement**

I. INTRODUCTION

In response to the escalating demand for online service platforms driven by convenience and efficiency, "UtilityHub" emerges as an innovative solution tailored specifically to streamline the provision of essential household services. By adeptly addressing the challenges encountered in sourcing trustworthy service providers, UtilityHub functions as a key middleman, facilitating seamless interactions between citizens and skilled local professionals. Our primary objective is to simplify the tedious process of discovering, booking, and scheduling services, thereby offering peace of mind to users in their quest for reliable domestic assistance.

The platform boasts a diverse array of services, including housekeeping, cleaning, carpentry, plumbing, and more. Each service provider is accompanied by comprehensive profiles, empowering users to make well-informed decisions. Thorough examination is applied to all providers to ensure the utmost quality and dependability. Notably, UtilityHub goes beyond enhancing convenience for users; it also plays a crucial role in supporting service providers by facilitating the expansion of their client base and enabling them to reach a broader audience. UtilityHub stands as a testament to our unwavering commitment to providing a complete solution for household service requirements. With its intuitive and accessible interface, the platform exemplifies a dedication to user-centric design principles. By adhering to the standards set forth by the IEEE format, we underscore our commitment to clarity, precision, and professionalism in communicating the value proposition of UtilityHub.

In the modern era, household services such as housekeeping, cleaning, painting, and more poses a significant challenge. The absence of a centralized platform facilitating the connection between service seekers and qualified professionals often results in frustration, time wastage, and concerns regarding service quality. To tackle this challenge, there is a need for the creation of an online platform known as 'UtilityHub', which centralizes a wide range of household services and bridges the gap between users and trusted service providers. The overarching objective of the website is to streamline the procedure of discovering, reserving and arranging various ser- vices, thereby furnishing users with convenience and assurance when seeking trustworthy domestic assistance. With a focus on enhancing user experience and promoting efficiency, it endeavors to alleviate the burdens associated with household service procurement, offering a seamless solution tailored to meet the needs of modern-day consumers.

The paper is structured as follows: In Chapter 2 Various research papers have been discussed. Chapter 3 provides the detailed Methodology. Chapter 4 Implementation of the web-site is explained in detail. The paper is concluded in Chapter 5.

II. LITERATURE SURVEY

The paper [1] explores the emergence of ATOZ Doorstep, a web application facilitating household services, amidst the growing reliance on E-Commerce technologies. It addresses the challenges individuals face in sourcing reliable service providers by offering a user-friendly platform for booking skilled professionals with minimal interaction. ATOZ Doorstep's model aligns with these findings, providing a wide range of services accessible through a simple booking process and online payment options. However, comparisons with similar platforms like Easyfix underscore the need for continuous improvement and expansion of service offerings.

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Future plans involve enhancing platform performance and expanding service options to meet evolving user needs in the dynamic landscape of online service provision.

Rakesh Basak et.al [2] delves into the development of a web application aimed at addressing daily inconveniences by connecting users with skilled professionals for tasks such as plumbing and electricity. The project seeks to bridge the gap between users in need of quick assistance and service professionals seeking employment opportunities. The survey discusses the use of database-based searching and notification reminders to facilitate user-worker interactions, along with voice search capabilities. The proposed system offers several advantages, including a user-friendly interface, secure data handling, and flexibility for service professionals to set their rates. However, it relies on user-provided location data and lacks automatic detection, which could affect accuracy. Overall, the survey highlights the potential of the web application to streamline service booking processes while identifying areas for improvement such as location detection capabilities.

The paper [3] presents a system designed to alleviate the burden of household chores by offering a wide range of services at the users' doorsteps through a convenient online platform. It addresses the challenge of balancing professional and family life by providing easy access to skilled professionals for various household tasks. It emphasizes the importance of authenticated login modules and secure payment gateways to ensure a smooth user experience. The use of WordPress as the backend and PHP for dynamic features is highlighted, along with the system's reliance on an external payment gateway for secure transactions. However, the system's reliance on specific software and hardware requirements may limit its accessibility to users with different setups. Additionally, while the system offers a variety of services, there may be room for expansion to cater to evolving user needs, such as adding additional payment methods and service offerings. Overall, the proposed system shows promise in streamlining household services but may benefit from further refinement to enhance accessibility and adaptability to user preferences.

This survey [4] introduces an on-demand home service system aimed at providing various household services such as plumbing, electronic repair, gas range repairing, RO servicing, and electrical maintenance. The system serves two main users: home service providers and customers. The system facilitates easy access to necessary home services without delay. The proposed system architecture includes modules for admin management, user registration, service provider listing, feedback collection, and service request handling. One of the significant advantages of this system is its convenience, offering easy access to a variety of home services through a user-friendly interface. Users can quickly find service providers and request services, reducing the time and effort required. Additionally, the transparent process allows users to track the status of their service requests, ensuring accountability and transparency. However, there are some limitations to consider. The system may have limited service coverage, potentially excluding users in areas not supported by registered service providers. Furthermore, variations in service quality and security concerns regarding personal information and online transactions need to be addressed to enhance user satisfaction and trust in the platform.

The author Ananya Bhattacharjee et.al[b5] presents an integrated platform to address the communication gap between household service providers and receivers, particularly in Bangladesh, where such issues are prevalent. The proposed system facilitates two-way communication, service recommendations based on location, and a feedback-based rating system to enhance service quality. Divided into user, technician, and administrator versions, the platform allows for tailored functionality and efficient management. Features like search with problems and location, user reviews, and reporting/blocking mechanisms enhance user experience and ensure accountability. However, the paper lacks extensive empirical validation and technical implementation details, potentially limiting its generalizability and robustness. Overall, the proposed platform shows promise in improving efficiency and satisfaction in household services, particularly in third-world countries like Bangladesh, but further research and refinement are needed for broader applicability and scalability.

This research [6] introduces an innovative personal service platform tailored for Taiwan's evolving social structure, catering to the needs of co-working families and self-employed individuals. By integrating various city services like sales, mobility, health, and government services, the platform aims to optimize individual satisfaction and enhance overall quality of life by leveraging time, place, and personal information. Utilizing IoT technology and Recurrent Neural Networks for data collection and analysis, the system operates through three phases: 3D data collection, prediction of the next step 3D data, and operation based on predicted data. Evaluation examples demonstrate its potential effectiveness, while considering so- cial impacts from user, supplier, and government perspectives. Although facing challenges such as secure data management and scalability, the system presents promising prospects for economic dynamism and public health improvement, with future tasks including expanding participation and integrating real-time health monitoring.

The author Apeksha Adekar [7] founded Household Veritas, an Android app platform designed to address the increasing demand for household services by providing convenient access to service providers. It highlights challenges faced by customers in finding reliable providers and emphasizes the app's features such as service listings, ratings, reviews, and real-time updates on service requests. The system analysis includes architectural and modular

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

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design, use cases, and sequence diagrams to illustrate functionality. The app's potential to revolutionize household service access, enhance customer satisfaction, and provide business opportunities for service providers is dis- cussed, along with considerations for ongoing development and market competition.

III. METHODOLOGY

UtilityHub serves as a centralized online platform designed to simplify and streamline the process of discovering and booking household services. The system aims to bridge the gap by offering a user-friendly and efficient solution that connects users with skilled local professionals. The cost of the services are also cheaper compared to other private companies in this field. This platform also helps employ local service providers and make use of their expertise. Key functionalities of the system include:

- User Registration: Users are required to create accounts, providing essential information such as name, age, gender, contact details (email), and location.
- Service Listings: A comprehensive database of services across various categories including housekeeping, cleaning, carpentry, electricians, plumbing, etc., is maintained. Users can search, read reviews, compare prices, and book services.They also can contact us via the email or phone number provided to adress their issues or even advertise with us.
- Service Booking: Users can easily book services through the platform by selecting preferred dates and time slots, allowing for convenient scheduling. The users can select their desired service provider based on the availability of the service provider on their desired time slot.
- Service Reviews and Ratings: A rating and review system ensures transparency and builds trust. Users can leave feedback and rate their experiences, helping others to make quick and safe decisions.
- Service Provider Verification: A rigorous verification process for service providers ensures service quality and user trust. Providers need to register and submit qualifications for verification.
- Security and Privacy: Prioritizing user data protection through encryption and secure authentication methods to safeguard personal and financial information.

A. Architecture

USER LOGIN

User login is a process that allows the user to access the website by providing credentials that verify their identity. This process typically involves the following steps:

- Username/Email: The user provides their username or email address, which serves as a unique identifier for their account.

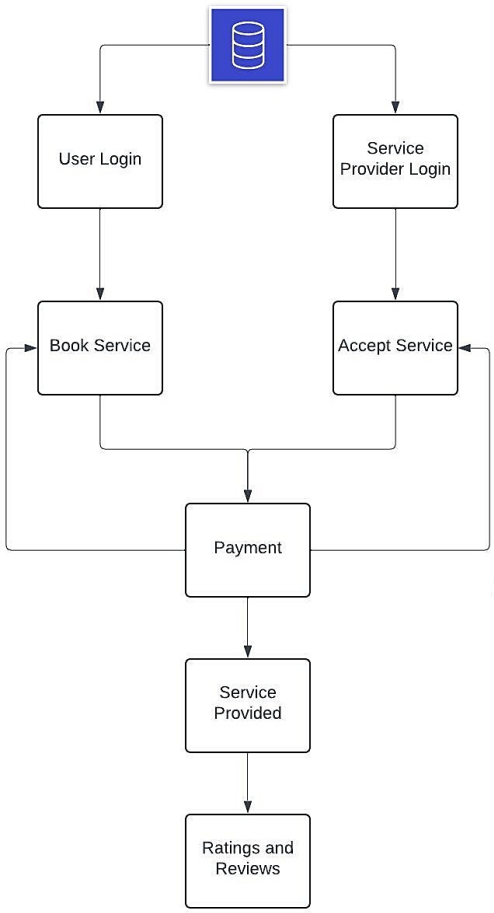

Fig. 1. Architecture of UtilityHub.

- Password: Users enter their password. This step is crucial for verifying the user's identity and preventing unauthorized access.
- Authentication: The system verifies the provided credentials against its records to ensure that they match an existing user account.

SERVICE PROVIDER LOGIN

Service provider login is a process that allows the service provider to access the website by providing credentials that verify their identity. This process typically involves the following steps:

- Username/Email: The service provider provides their username or email address, which serves as a unique identifier for their account.
- Password: Users enter their password. This step is crucial for verifying the user's identity and preventing unauthorized access.
- Authentication: The system verifies the provided credentials against its records to ensure that they match an existing service provider account.

BOOK SERVICE

The user selects the type of service they require. The system checks the availability of service providers for the

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

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selected service. If the requested service provider is available, the user proceeds to book the service. The user receives a confirmation of their reservation if the service is accepted by the service provider.

ACCEPT SERVICE

The customer initiates the process by requesting a service. Upon receiving the request, the service provider reviews the details provided by the customer. Based on the review, the service provider decides whether to accept or reject the request. Once the service provider makes a decision, they notify the customer whether the request is accepted or rejected.

PAYMENT

If the request is accepted, the customer receives a notification and can move towards the payment page. Once the payment is completed, the customer receives confirmation of their booking.

SERVICE PROVIDED

The service provider prepares for the scheduled service appointment or booking. Then the service provider delivers the requested service to the customer according to the time and price fixed by the customer.

RATINGS AND REVIEWS

Ratings can be assigned to the service by the customer based on their overall satisfaction or experience. Reviews can also be provided by a customer detailing their experiences and opinions. This influences user behavior and booking decisions.

B. Working

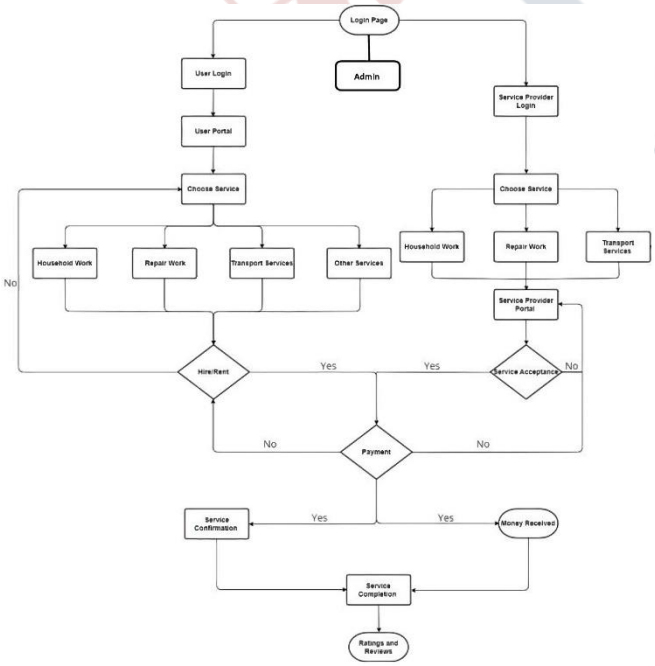

Fig. 2. Flow Diagram of UtilityHub.

In the process of logging in, users and service providers navigate distinct steps to securely access the platform. Initially, they input their unique usernames or email addresses, alongside passwords, to authenticate their identities. These credentials are then examined by the system to ensure accuracy. Following this verification, users can proceed to book services, depending upon provider availability, receiving confirmations upon successful reservations. Service providers, upon receiving service requests thoroughly review the details provided by users and make decisions regarding their acceptance, promptly notifying users if their request is being accepted or not. Once a service request is accepted, users can proceed to the payment stage, completing transactions and receiving booking confirmations thereafter. Service providers prepare for scheduled appointments, delivering services on time. After service completion, users have the opportunity to provide feedback through ratings and reviews, which can significantly impact the decisions and experiences of future users.

IV. IMPLEMENTATION

Fig. 3. Home page for UtilityHub.

In the implementation phase, we developed the user interface for Utility hub to ensure easy navigation and accesibility. Fig 3 shows the home page of utility hub where the design prioritize ease of use since users can access various household services conveniently. As we can see the homepage shows the few famous service providers of the website. Also if the user scrolls down they will find an option of contact us from where they can reach out to the website handlers for advertisement or collabration purposes.

Fig. 4. Electricians page for UtilityHub.

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)

Volume 11 Issue 08 August 2024

Fig 4 depicts the electricians page within UtilityHub where the user can see the various service providers in their region. They can also see the experience, star ratings and average service price of each provider. From here they can easily choose which provider fits their budget needs. The prices of these services would be shown when the user hovers over each of the service.

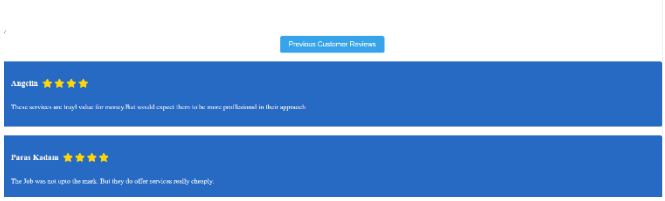

Fig. 5. Previous Customer Reviews of Basil Electricals.

Fig 5 the customer would be able to judge the work of each service provider from their previous customer review making it easier for them to get a good service provider.

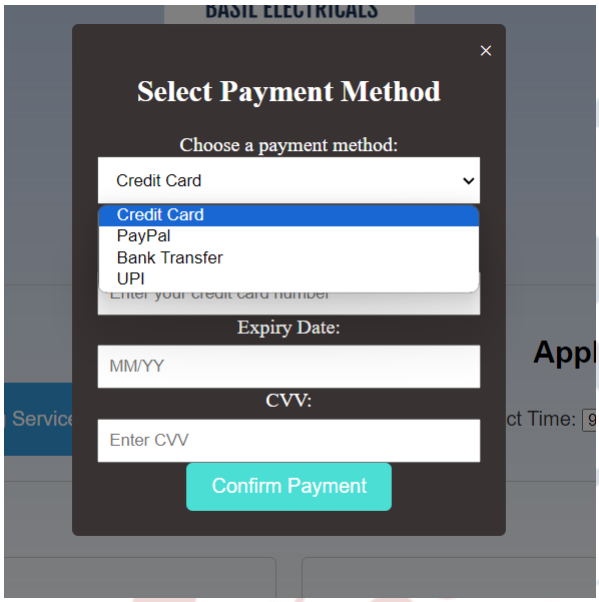

Fig. 6. Payment page of UtilityHub.

The user can then book the service provider and pay them using variety of payment methods like Credit Card, Paypal, UPI or bank transfer. These variety of methods ensure seamless transaction between user and service provider.

V. CONCLUSION

UtilityHub presents a promising solution for managing utilities in our evolving technological landscape. As technology becomes increasingly integrated into our daily routines, there's a growing need for a more efficient and accessible way to handle essential services. This proposal envisions a future where utility management is inter-connected, efficient, and sustainable. By connecting users with utility providers, UtilityHub not only offers convenience but also contributes to a greener environment. It showcases the transformative power of technology in improving our lives, ensuring that essential utilities are easily accessible with just a click. In essence, UtilityHub isn't just a website; it's a pathway to a more connected and harmonious approach to managing the necessities that shape our lives.

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