



SMART LAUNDRY APPLICATION

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Abstract: Our proposed system is an online smart laundry service that enables customers to use it easily. It overcomes the disadvantages of the queuing system. Our proposed system is a medium to place orders online to the Laundry Services anywhere near the customers. This system improves the method of taking orders from customers. The Smart Laundry Application sets up a laundry list, and customers can easily place an order and select a delivery service as they wish. Also, they can easily track the orders. This Application also provides a feedback system in which users can rate the laundry shops. The payment can be made either way based on their chosen delivery mode. Since it's a laundry application, each user has a unique ID and password to maintain integrity and security.

IndexTerms - Smart Laundry, Laundry Business, Laundry Management, Smart Application, Mobile Application, Delivery Service.

I. INTRODUCTION

In the fast-paced world we live in, convenience is paramount. They are introducing our innovative Smart Laundry Application, a revolutionary solution designed to transform how individuals handle their laundry needs. Inspired by the seamless experience of food delivery apps like Swiggy and Zomato, our platform combines user-friendly features that provide a hassle-free laundry service that leads to a modern lifestyle. Nowadays, most laundry services use traditional ways to manage a business, which is a manual system for management. Laundry Management System and Laundry's on-demand mobile Application are meant to help users and laundry business owners manage and monitor their orders in a simple way. It's not only for users to check the status of orders, select the laundry services as per their needs, freedom to select the delivery option and select the type of clothes to wash as per their needs without any limits, but also for the laundry business owners to receiving orders from customers, billing inventory and managing the shipment. Our Smart Laundry Application tends to provide a good, healthy, hygienic, time and effort-saving Application. Where students can wash their clothes using local launderers, which are listed in the Application. Through this, surely, the laundry business income will increase, and the job opportunities will also increase in a way that we are providing the customers with a seamless pickup and delivery service. They can also track their monthly and yearly expense through the Profile module we are providing.

II. PROBLEM STATMENT

Students nowadays do not have sufficient time to do their basic duties, which include Laundry. The development of information technology and mobile technologies has led to the advancement of the laundry business from coinage to the Application level. Most of the developed Laundry Businesses have their independent Applications/Websites. So, through this step, we stand forth to develop a single independent application that is common for all laundry businesses. All the users can access it from their place's specific laundry services as they wish.

III. LITERATURE REVIEW

This research delves into developing and assessing the innovative One Source Smart Laundry System, a cutting-edge mobile app aimed at revolutionizing the laundry management experience for clients and proprietors.[1] Employing the agile Rapid Application Development (RAD) approach, this study strongly emphasizes leveraging user feedback, adaptability, and flexibility during the software development journey. Additionally, the study gives valuable insights into the future maintenance and optimization of the Application.

This study delves into the potential and viability of a mobile application that allows self-service laundry users to pre-book machines. Focused on the self-service laundry industry in Lisbon, Portugal, the goal is to resolve the time inefficiency associated with this service. The author takes a multidimensional approach to examine the data thoroughly.[2] Overall, this research provides insights into a mobile application to address the issues of time waste for self-service laundry users in Portugal.

The laundry care industry in India undergoes a significant transformation, driven by the increasing number of working women and the increase of on-demand app-based laundry services. Startups in online Laundry are addressing the market gap by offering comprehensive solutions and leveraging technology to provide door-to-door laundry services, route optimization, and mapping

locations. The fragmented nature of the industry, with 98(%) of establishments being micro- sized laundries, presents challenges in standardization and quality control and opportunities for modernization.[3] The research, conducted in the Chennai region, gathered

primary data from 80 customers utilizing Laundromat dry cleaning services. Overall, the research sheds light on the evolving landscape of the laundry care industry and the need for improvement to address standardization, quality, and customer experience.

Introduces the Laundry Aggregator System, which acts as a mediator between customers and laundry vendors, akin to popular food aggregator systems like Swiggy and Zomato. The system offers a convenient interface for customers to book laundry services from various vendors, streamlining the whole process from ordering to delivery.[4] The methodology section outlines the architecture of the proposed system and other options. It also explains the tracking and notification features available to customers and laundry vendors throughout the process. The conclusion underscores the main objective of the proposed system, emphasizing to create employment opportunities and mentioning additional features such as live GPS tracking, cash on delivery, and reasonable pricing of services.

The market study comprehensively analyzes the feasibility and demand for an online laundry application in the Lebanese market. The report begins with an introduction outlining the following: identifying the target market for a startup mobile application and assessing its demand in Lebanese society.[5] The abstract gives an overview of the methodology, which involved collecting consumer data through online and offline questionnaires from a sample of 541 individuals aged between

18 and 65. The methodology utilized quantitative methods to analyze the relationship between many factors. The report emphasizes the need to focus on M/F to decrease the gender gap in housework tasks and highlights the potential for the online laundry service to transform the Lebanese laundry sector.

It tells how people access information and communication in their daily lives. Internet of Things technology helps to create electronic devices that are connected to each other, reducing the function of humans by sending data.[6] This algorithm shows how the fuzzy algorithm will show how users are paying for Laundry by weight, humanity, and color. So, the owners don't need to calculate manually and repeatedly.

Titled LaundryMama: Revolutionizing Laundry Management through Mobile App, this paper introduces a groundbreaking concept in handling laundry tasks. The authors delve into the struggles experienced by traditional laundry services, including issues with order tracking, misplaced documents, and limited customer scheduling options.[7] Their proposed laundry management system and on-demand mobile app aim to humanize the laundry experience and address these challenges head-on. The authors also delve into the rigorous testing and evaluation of the system's performance. Ultimately, the paper emphasizes the numerous advantages that implementing the LaundryMama system can bring to a laundry business, such as heightened efficiency, convenience, and customer satisfaction.

This research delves into the exciting functionalities of a mobile laundry app that could completely transform how we do Laundry. The authors stress the crucial role of adapting business processes to meet customers' ever-changing needs in today's society. They also highlight the significant influence of technology on our daily lives and how smartphones can potentially revolutionize traditional services into digital ones.[8] Through extensive research, they have devised a tool to assess an individual's desire for such a mobile app. In their conclusion, the authors stress the significance of mobile applications in streamlining business operations across various industries. They also express their intent to explore the impact of these apps further, specifically in Saudi Arabia.

The Online Food Ordering System, described in [9], revolutionizes how customers order food by harnessing the power of the internet. This innovative system allows users to order online from various restaurants and mess services easily. The system's key components include:

- A dynamic database management system.
- A reliable feedback mechanism.
- A recommendation system that utilizes user ratings.

This next-generation platform uses the IoT and Android devices to facilitate the seamless wireless ordering of food. Overall, the paper presents a comprehensive solution to the traditional queuing system and provides a user-friendly platform for customers to order food online.

The paper provided contains a comprehensive literature review on the advancement of mobile applications in laundry services and its connected fields.[10] The critical areas of focus include:

- Incorporating Personality into Mobile App Development
- Exploring the Link Between Mobile App Development and Logistics in Life (LIL)
- Location-based services, allows users to locate closest shop.

With mobile phones, we can easily do many tasks online. Technology makes us lazy and shows how digital things control our lives. During the pandemic, meeting in person can be dangerous. That makes regular laundry services hard to use.[11] To help with this, an app called "Superdry" offers contact-free laundry services. It saves time for customers and unemployed wash-men. It also keeps everyone safer.

Doing Laundry is something many people need help with. While places like laundromats exist, they can get very busy. This makes it hard for some, like stay-at-home parents without cars, to get their Laundry done. Right now, there aren't very many options to get Laundry picked up from homes and brought back clean.[12] This paper looks at apps people use now for laundry delivery. The goal is to find better ways to make Laundry easier and save customers time.

IronMan provides a handy steaming ironing service right to your door. The system introduces an internet-connected laundry service e-commerce model that combines a user-friendly Android app and website. Using machine learning ensures effective logistics and order handling to allow customers easy access to laundry services from home.[13] This project reflects the growing trend of online shopping and tackles common problems like incorrect orders with innovative solutions like image recognition and location monitoring for smooth customer experiences.

The laundry service offers a convenient way for customers to drop off their clothes and pick them up later. However, over time, visiting the Laundry has become less practical, especially for busy people. This app about Laundry using Internet of Things technology aims to solve this problem by sending notifications, automatic processing, and tracking progress using smartphones. This makes it suitable for city customers who have little free time.[14] The app uses a Naive Bayes algorithm to prioritize clothes based on weight, distance, and moisture levels. This streamlines the laundry process for both customers and laundry workers.

Cities everywhere are working to go digital to deal with problems like healthcare in city areas. Smart home devices collect a lot of information, helping experts study city services. This paper suggests a way to use smart home information to learn what people normally do each day for healthcare. By looking at changes in energy use, experts can see strange things that may mean health problems.[15] The model looks at how much electricity different appliances use over time, both in short periods and long periods, to see what people usually do. It uses real information from homes in the U.K. to test how accurately it can predict energy use schedules.

A. COMPETITOR ANALYSIS

Compared to all other stand-alone laundry applications, this smart laundry application will improve the laundry business community across the town, and its profit margin will surely increase. They are viewed by a large set of customers as having done their service offline before. Like big-scale laundry services doing their business online before, this will also improve their profit that their business is computerized. This will make those businesses more visible among the people around their location, even if they are small-scale businesses.

IV. PROPOSED SYSTEM

Since there are stand-alone applications available for large-scale laundry businesses, this Application tends to help small-scale laundry businesses reach a wide range of audiences to make their profit reach an extent they did not even imagine before.

SYSTEM ARCHITECTURE

This Smart Laundry Application has two architectures: one client-side and another service-provider-side. The user side will be a mobile app and the service provider side will be a web app, and both of them are connected through the database. The service provider-side application won't be visible to the users and vice versa. The Delivery and pickup service will be provided using API, and the payment method will also be provided using API, which will redirect the users with an implicit intent to the specific payment app they desire to pay. If they do not pick up the delivery service, they are free to pay with cash, too.

Client-Side Architecture

The client-side architecture of the Smart Laundry Application is a mobile application where users can easily access it, and reach out the full benefits of the application.

Service-Provider Side Architecture

The service-provider side of the Smart Laundry Application is a web application designed to optimize laundry operations and streamline service delivery. Key components include:

- 1) Dashboard for Service Providers:
 - Features a user-friendly dashboard for service providers to manage incoming orders, update service statuses, and view analytics.
- 2) Order Management System:
 - Handles the reception and organization of laundry orders.
 - Allows service providers to update the status of orders, manage schedules, and confirm deliveries.

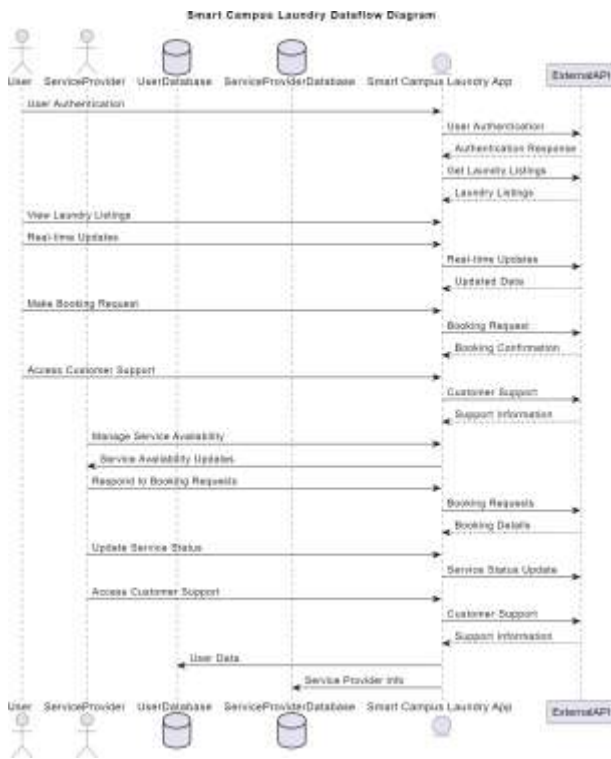


Fig. 1: Data-flow Diagram for the 'Smart Campus Laundry' Mobile Application

In the user module, the users will view the laundry services around them, and every Laundry service will contain a separate product list, which will have separate product list according to their prices and the type of services they are providing, like cloth washing, ironing, dry cleaning, soft toy washing, sneakers clean, etc., Which is shown in [Fig.1].

On the service provider side, they will have to accept the request module dashboard to track the income that have been generated through this Smart Laundry Application and the real-time tracking facility service that is provided to users from their side, etc.

As we are getting a new application for this field, it's way too hard to implement a real-time database for this Application. So, in order to meet this requirement, we are using API to fetch the information from the laundry services.

V. TECHNOLOGIES USED

This Laundry Application Comprise of the new technologies which are mentioned below:

A. React Native

React Native is an open-source mobile application developing framework created by Meta Platforms, Inc. It is used to develop applications for

- Android,
- Android TV,
- iOS,
- macOS,
- tvOS,
- Web,
- Windows
- UWP

which enables developers to use the React framework along with native platform.

B. Firebase

Firebase is a cloud computing and development platform from Google. It helps users build and grow apps and games. Firebase offers a variety of services:

- Real-time Database
- Hosting
- Authentication etc.,

IV. Conclusion

Gone are the days of standalone apps for each laundry shop. Introducing the smart laundry app that seamlessly connects all local laundries, revolutionizing the laundry experience! It's not just about convenience; it's about empowering the community. Busy individuals, especially students, can now easily access laundry services with centralized access and door-to-door delivery. The app

streamlines the laundry process, eliminating hassles and freeing up time. Moreover, it fosters community interaction and enhances service delivery, paving the way for a more user-friendly and connected society.

This app is designed to make laundry easier, especially for busy students and professionals. It gives users easy access to laundry services, making it more convenient than traditional methods. The app also offers door-to-door delivery and online payments, which align with the fast-paced lifestyles of its users. By streamlining the laundry process, the app not only simplifies this often-dreaded task but also brings people together. It's a platform that connects users with laundry services and fosters a feeling of community. This platform's cooperative approach not only simplifies laundry tasks, but it also promotes a more connected and accessible society.

In the future, technology will seamlessly blend into our everyday lives. This smart laundry app showcases how digital tools can revamp everyday tasks, like laundry, into something extraordinary. It combines ease of use, convenience, and community involvement to make laundry more than a chore. Instead, it becomes a step towards creating a more streamlined and connected society. Ultimately, the smart laundry app isn't simply a technological innovation; it's a driving force for positive social transformation. It paves the path towards a more efficient and cohesive society where convenience and harmony prevail.

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