

Online Laundry Management System

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Abstract

This study presents the automation of an online laundry management system (OLMS) for laundry organizations. Laundry firms usually have the challenges of keeping detailed records of customers clothing leading to disappointments on the side of customers. Issues arising include customer clothes mix-ups and untimely retrieval of clothes collected in relation to their owners. This system helps the users track progress on their clothing items, fixes date for collection or arranges drop-offs and communicates directly with business operators. Also, customers' information remain available at all times as it is retained within the system. Each customer is assigned a unique ID on registration to avoid contrasting information. The implementation tools include PHP, JavaScript, HTML, MySQL, visual studio, WAMP server and a web browser. This solution brings ease to operating the business and controlling work flow; from managing customer information to managing service requests/orders as well as managing service rendition. The design also has a unique and user friendly interface. This affords the users and providers of the service an opportunity to enjoy seamless operations.

Keywords: laundry management; service rendition; customer information.

1. Introduction

While digital automation allows countries and businesses to produce goods and services at alarming scale, increasing labour productivity and expanding operations at marginal cost, this could minimize the need for manual workers. Recent advances in automation thus have the potential to affect a radical reshaping of work [1].

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The existing systems in our indigenous environment require numerous paper forms, with data stores spread all over the laundry management infrastructure. Information in this type of system is often incomplete, inaccurate, lost in transit during computation and sometimes duplicated [2,3]. Therefore, the business workflow is at low ebb. As multiple copies of the same information exist in the laundry firm data, which would lead to data inconsistencies, problems such as mix-up with customer clothing, loss of customer clothing, late delivery, inability to account for certain customer items, inefficient organization methods (cataloging), insufficient collation of reports for managerial or company use, lack of real-time data back-up in case of mishaps, tend to arise from the existing system and the manual approach. To attend to these issues, Reference [4] introduced a management system concept to laundry system. The aim of this study is to leverage on this to implement a version of the proposed management system to help tackle some of the main issues in laundry system domain. Electronic management systems aid easy retrieval and storage and manipulation of records [5]. A significant part of any laundry operation involves the effective management and timely retrieval of data. This information could include but is not limited to; customer information, clothing records, user information, delivery fee and retrieval option, user scheduling as regards customer details and dealings in service rendered, also the products package waiting list. All of this information must be managed efficiently to minimize loss and maximize available resources in the organization. The use of technology goes a long way in speeding and easing up processes significantly, therefore, technology ought to be used where possible [6]. A laundry management system is a system that manages laundry related services for customers, providing ease of access through sign-up(s) and log-in(s). With this system, if managed properly, all cleaning services are readily available to consumers at all times. A computerized system in managing laundry is one that is to serve the consumer and the service provider well. This online laundry management system is aimed to ease management of laundry firms, automating all operations in the process and making it more efficient. It largely aims at stabilizing, standardizing and consolidating data, ensuring data security, integrity, eliminating inconsistencies.

2. Problem Statement

Till date, most laundry firms in the western part of Africa use the manual means or partial-automation to process their customer service and business information. Therefore, the data is inappropriately managed, and generally, management through manual methods is usually laborious and with many setbacks [7]. In manual method or partial-automation, mode of operation is slow, there is also a needless task of taking and documenting customer record repeatedly which in the long run creates redundancy in the system. Other problems that arise from the use of this manual system include loss of customer clothing, inability to account for misplacements, customer mix-ups and late delivery from failed delivery prompts by employees and unavailability of secured back up in case of file or information loss [4]. Hence, the reason for an online system to facilitate laundry management system.

3. Literature Review

Romans were the first civilization recorded to have employ dry cleaning [8]. Till now, most day-to-day dry-cleaning business still rely heavily on manual labour, especially the manual tagging, cataloging and searching of hundreds of customers' clothing. A typical cleaner's business process consists of tagging the clothes, cleaning the clothes, cataloging and grouping the clean clothes based on the tags assigned to the clothes and the

customer, and searching for customer's clothes, recording customer information over and over again [9]. These manual methods work but are prone to errors such as mix-ups, loss of customer items and delay in delivery. Thus is the reason to automate laundry system for coordination and control so as to improve job delivery. The laundry management system permits business owners to trail large amounts of specific laundry items faster with high efficiency. By automating the business procedures, one can deal with one's time better and make enlightened business decisions [10,11]. By using the laundry management system, it is easy to automatically keep tabs on clothing, linens, rags, and other resources, automating the inventory process and accounting.

3.1. Features of a Laundry Management System

Features expected of a fully functional laundry management system include the following:

a) Point of Sale (POS)

Laundry management system enables you to communicate seamlessly with the customers via messaging systems. It prevents employees from gaining access to sensitive business data. Dry cleaning POS software sets your customized services, garment lists, and price list. The software keeps track of workload to give a fixed delivery rate, does automatic email and short messaging services (SMS) reminders to the customer.

b) Store Management

The laundry management system maintains a database of the employees that display role-oriented tasks to the employees. It also stores and sustains customer information, service preferences, and communication preferences.

c) Home Pickup and Delivery

The auto-routing feature of laundry management system ensures you to make the deliveries and pickups on time. The integration of laundry management system software with google maps renders a best in class navigation service for pickup and delivery.

d) Acquisition and Retention

The laundry management system creates and assigns prepaid packages to consumers to enhance customer loyalty. Commercial laundry software solutions provide personalized customer service to make customers feel valued and know their experience to improve the service. Laundry management system software applies flat percentage discounts to reward all high paying customers.

e) Analytics

With dry cleaning software, you can track the health of the business and comprehend by what percentage the company is progressing. The graphical representation of the business operations in the form of graphs and pie-charts provides better insight into the market. It calculates the customer satisfaction index and compares

business performances based on days, weeks, months, and years.

f) Accounting and Reporting

Laundry management system software ensures automatic payment reconciliation from your bank and different gateways. It keeps track of all the operational and non-operational expenses and creates a customized report with date, order filters, and customers. The system generates accessible accounting reports and creates ledgers to manage and track all the direct and indirect expenses and income.

g) Workplace Management

The laundry management system categorizes garments based on due dates and services. It aids you in apprehending the status of your workplace and minimizes the turnaround time.

h) Multi-store Management

With laundry management system software, you can supervise your store on a single platform. It enables you to monitor how your store is performing in a clarified view and edit price list and garment list as per your business requirement.

i) Hardware

It is possible to integrate various equipment with the dry cleaning software. It could tag printers to barcode the garment and packing sticker for finished orders. Several printers and scanner also incorporated to streamline the workflow.

j) Sales and Marketing

Laundry management system software assists in promotion as well. Sending promotional messages and feature-rich mails at an impressive rate to the customer will ensure retention and engagement.

k) Security

Commercial laundry software solutions avail uncompromised protection to its users. You can oversee employee activities at all times with the extensive activity log. It takes the back up of your business data daily for future references.

3.2. Empirical Review

Reference [12] proposed a system to improve receipt processing and alleviate customer information loss. The research adopted the use of a laundry database management system to track laundry procedures, transaction, inventory and customer information. The system does not include notifying the customers about the laundry process. Reference [4] proposed a management system for laundry services to tackle loss of customer items by

dry cleaners and untimely retrieval of clothes. The method adopted in this research to solve this problem was to develop an application to determine the number of clothes collected from consumers, catalog obtained items, document them in details, notifying both the firm staff and consumer of the documentation and assigning unique identification modes to each user to enable easy tracking and monitoring of clothing. The result obtained was the successful implementation of a mini laundry management system with the exception of cataloging function for customer items, data backup and retrieval. Generally, review shows there are alternating solutions rather than a wholistic/comprehensive one.

4. Materials and Methods

The agile model was adopted in this study. The functional requirements of the system include user registration and log in, cataloging, placing order, receipting and reporting. The implementation tools include PHP (Hypertext Preprocessor), MYSQL (My Structured Query language), HTML (HyperText Mark-up Language), JS(JavaScript), and CSS (Cascading Style Sheet).

4.1. Data Collection

The structure of the customer data is illustrated below:

Table 1: Customer database design.

S/N	FIELD NAME	FORMAT/TYPE	WIDTH
1	Customer ID	Numeric	10
2	Full names	Text	50
3	Phone no	Text	11
4	Email	Text	225
5	Address	Text	225
6	No of clothes brought	Text	225
7	Service Duration	Text	15
8	Service Charge	Text	30

The structure of the staff data is illustrated below:

Table 2: Staff database design.

S/N	FILED NAME	TYPE	WIDTH
1	Surname	Alphabetic	15
2	Other names	Alphabetic	30
3	Department	Alphabetic	15
4	Staff number	Alphanumeric	10
5	Post	Alphabetic	15
6	Date	Alphabetic	10

The structure of Service type data is illustrated below:

Table 3: Service type database design.

S/N	FILED NAME	TYPE	WIDTH
1	Service Type	Text	50
2	Price	Text	50
3	ID	Numeric	10

4.2. Proposed Laundry Management System

The proposed system effects simplicity in the users’ operations. The processes involved in dry cleaning clothes, filling forms regarding order details, and so on are essentially made easy. The users are assured of free flowing processes such that bottlenecks are removed.

The following Figure 1 illustrates major interactions between the Client, Admin and the system model:

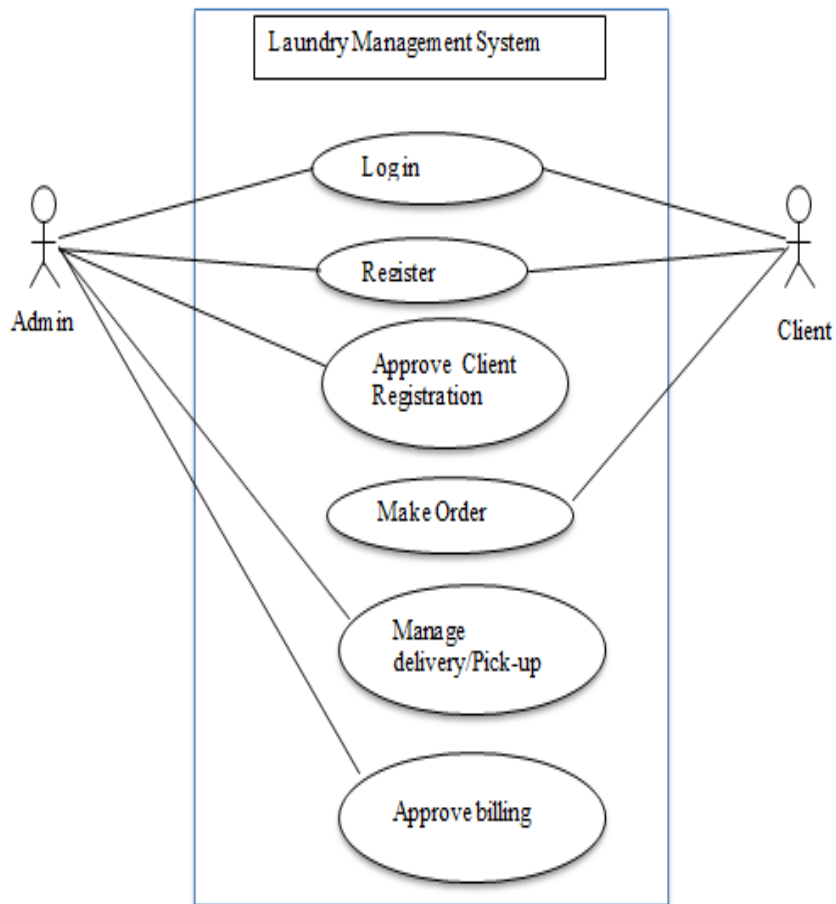


Figure 1: Use case diagram for Admin and Client interaction with the model.

The following Figure 2 shows the sequence diagram for the system:

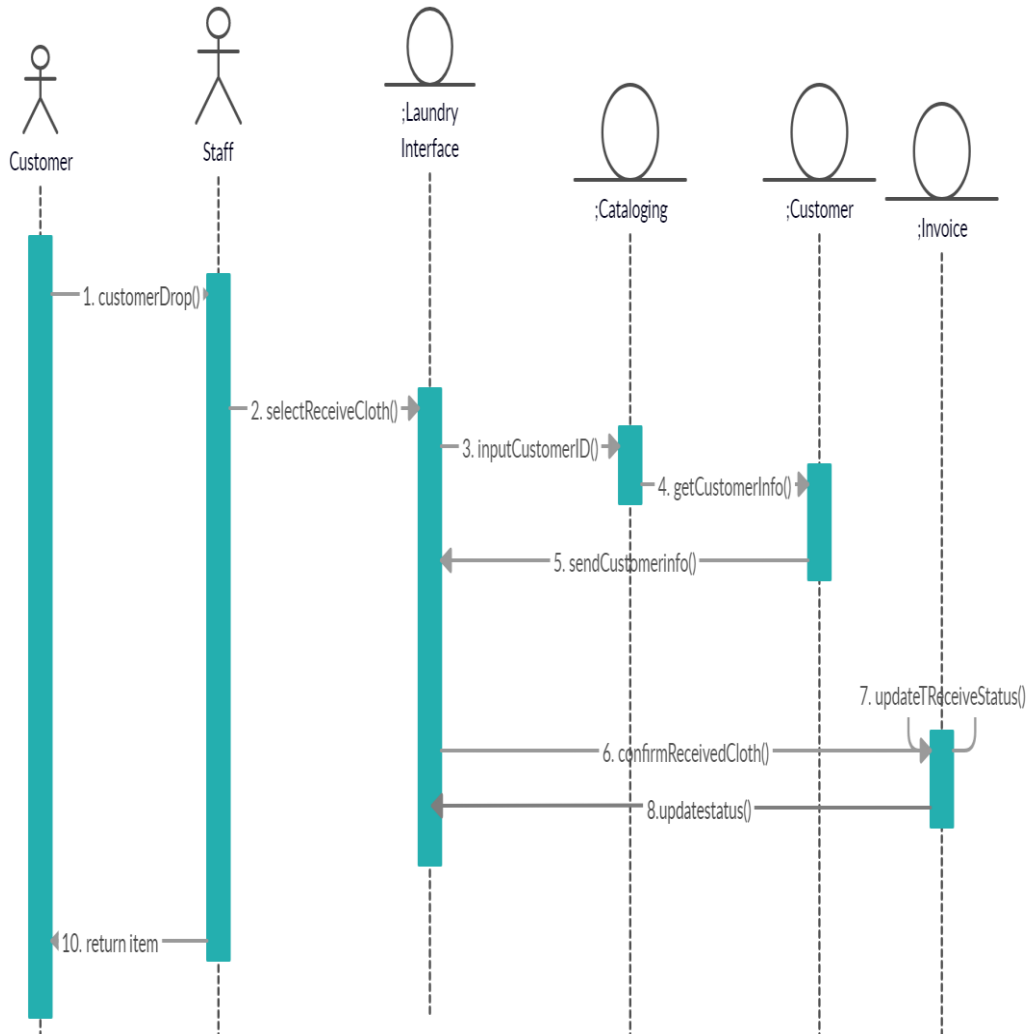


Figure 2: shows the sequence diagram capturing the dynamic aspect of the system.

5. Results and Discussion

The operation of the proposed system is such that members of staff get enrolled into the management system, are given unique staff IDs, and assigned roles and units. Staff members would frequently go through the platform to keep to date with order details and new orders. When a staff member receives an order, he can go ahead to put a call through to the customer or message the customer to notify him of the order alert and to plan pick up or drop off as the customers' phone number appear on every transaction. The consumers, on the other hand, are at liberty to register at will. Customers register through the platform and are automatically issued Customer IDs. On registration, all customer information is stored and pushed to the database for subsequent use by the customer. Customers Log-in after registration and place their orders for the dry-cleaning service, stating pick-up or drop off status, number of items, and the like. On completing all of these services, customers are notified when the order is received by the laundry firm and will be advised to wait until the firm (which should take no time at all) takes action. On completion of the service ordered for, customers are notified promptly to pick up or arrange a delivery. The admin is responsible for updating records such as requests by users to change default addresses, phone numbers and account names. The admin is also responsible for taking actions such as

confirming users on registration for authentication purposes.

5.1. Index Page

The index page provides users with an interface that indicates purpose of the system, giving brief information about the company, contact information and other necessary details. On the top right corner of the page (on the navigation bar), there are two buttons with one (register button) repeated at the center for convenience. These buttons serve as links to two pages: the sign-up page (for new users) and the log-in page (for existing users).

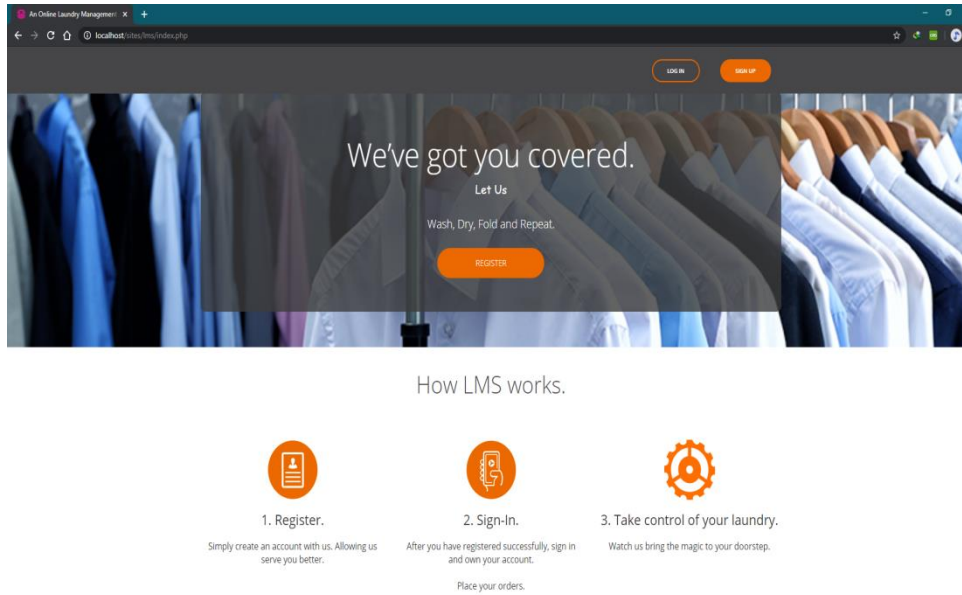


Figure 3: OLMS Index Page.

5.2. Customer Registration Page

The customer registration page is an essential part of the system. It registers customers into the database and recognizes them as users of the system. This is to make the system ready for subsequent use. The registration page requires six easy details from the user. First Name, Last Name, Address, Email, Phone Number, Password. On successful registration, the phone number or email of that user becomes his/her username. In the course of registering, no two users can share the same phone number or email. These are the unique ids. For validation, the customer inputs his details, the system runs a check to see if both the phone number and email address already exists. If successful, he is redirected to the log-in page where he is required to input either the mail or phone number and the password used to register.

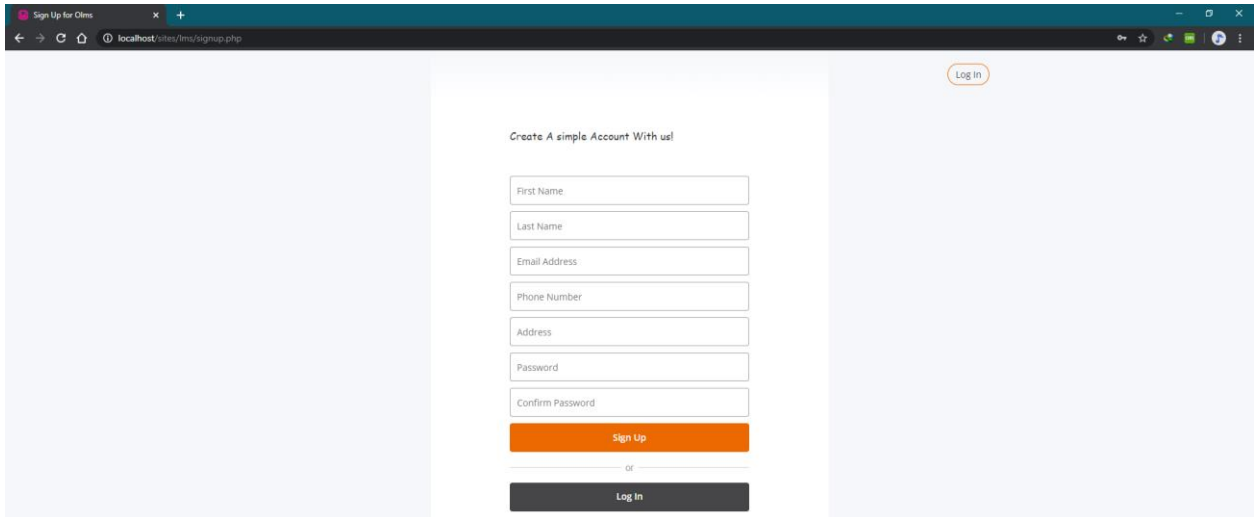


Figure 4: Customer Registration Page.

5.3. User Dashboard

The user dashboard presents itself when a user successfully logs in to the system. This module contains means through which the user can place orders, edit his profile, track or monitor progress on clothing items, schedule pick up or delivery, check order history and contact the laundry firm. It is a simple, user friendly interface designed to ease the transaction process between the users and renderers of the laundry service. In the following Figure 5, the side navigation menu provides users with options that enable them carry out actions on their accounts. The dashboard also provides users with an up-to-date pricing list. The booking section is where the user performs the main transaction. The user selects from a range of items for clothing type, selects the number of units, and selects the service to be rendered (wash, dry, or iron). Users can add or delete rows by clicking the buttons indicated on the page

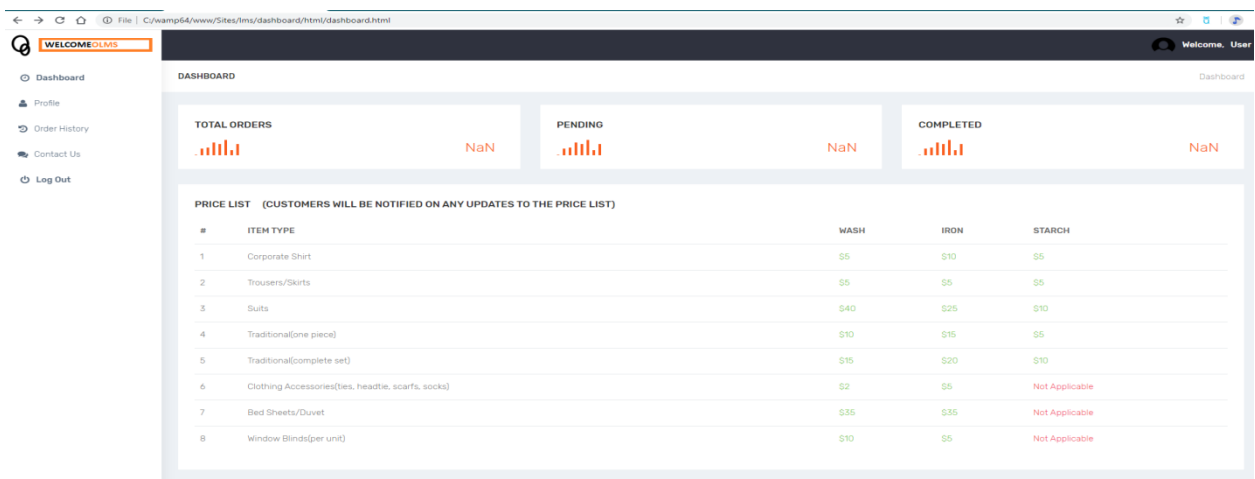


Figure 5: User Dashboard.

6. Conclusion and Recommendation

In recent times, the evolution of technology has brought about constant need for convenience in the way businesses operate. Every consumer of a service wants to be able to consume that service with ease and satisfaction without compromising the quality of such service. With the increase in the number of patronage of laundry firms, the proliferation of online laundry management systems would make life easier. This implementation is a web application for laundry management in a view to providing convenience for users and providers of laundry services. This system is recommended to the adopted or adapted by the indigenous laundry systems upon which usage could bring about improvement.

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