Application for the Management of Logistics System

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Abstract:

This paper covers the constructive management of logistics related problems through the development of logistics application. Our project is focused on developing an android application for logistics with the main objective of achieving a successful management system for the same that is concerned with getting the right product, in the right quality, in the right condition, at the right place, at the right time, to the right customer and at the right price. In today's world of competitive business environment, getting the correct products to the right place at the right time via the most-cost effective manner is paramount for any successful business. One of the most important aspects of any successful business is Logistics. Effective organization of logistics is of paramount importance in any small scale or large scale business. It includes transportation, shipping, receiving, storage and managing every corners of supply chain. In consideration of the smooth operation and address the ever-changing support, the development of logistic mobile app comes into the picture.

Key Words: *Android Application, Logistics Management, Business*

1. Introduction:

There are certain concepts in the transport and logistics domain: logistics, transport, transportation etc. There are certain a number of different studies on programs and disciplines such as: transport economics, transport logistics, logistics management, etc. All of these conceptual topics are often related to the content of the plan, planning,

organization, management and control of the movement of human, material, informational and financial flows. However, when it comes to actual practice, those conceptual titles are often misused and correlated. Hence there is an important task to perfectly define these concepts. The Logistics hold a major contributor to any business globally. Logistics bear the management of goods and materials transportation and involve various processes including, warehousing, material handling, supply chain management and the like.

Any Logistics app primarily has the following features:

1. Create a warehouse and hub database.
2. Add vehicles and drivers.
3. Create a shipment booking form.
4. Enable notifications for tracking shipments.
5. Build a logistics dashboard.
6. Build a separate dashboard for individual or small scale shipments.
7. Create a scheduler to book meetings.

Our project is primarily concentrated on the three main modules which include the Customer Panel, the Driver Panel and the Admin Panel. The Customer panel consists of registration, booking features and payment options. The Driver Panel consists of login, shipper details, and update location feature. Finally the Admin Panel consists of driver monitoring dashboard feature; add vehicles and drivers feature and vehicle management option.

This application helps logistics professionals achieve their business process from tracking inventory and to shipments. It also helps any individual user by providing transport facilities for their goods from one place to another place. For any business officials or an individual user, this app provides a platform to collaborate with better tracking and shipment facilities.

2. Previous Work:

Using previous work on the concept as a source of inspiration. In their research paper, the system had a comprehensive logistics management app where the vendor or the supplier can register and provide the details of the customer and the shipping details. Once registered the system searches and hires the nearest transport service in the vicinity. The system forwards the customer details and also calculates the optimal path for the delivery. The system tracks the delivery and also collects and analyses the customer feedback.

3. Literature Review:

Logistics and supply chain management have always been at the frontline of industrial innovations. There are numerous technology revolutions that have been tested and are successfully applied to increase efficiency of processes, reduce costs, or improve the relationships among different actors, such as buyers, sellers, retailers and carriers. The perspective of this paper on technology adoption in logistics is split into certain number of fragments: namely warehouse management, goods

distribution, warehouse efficiency. This research paper attempts to answer the following research related questions: i) how the interest in this topic changed in the last ten years from the point of view of scientific literature; ii) what are the main approaches and methodologies used in addressing this issue; iii) what are the most applied innovative technologies in the logistics field. [**1**]

Logistics concept encloses a complex set of activities which require a collection of metrics to measure performance adequately. The performance metrics used should be administered and maintained as a system, so they provide the decision makers with a well-balanced picture of the logistics process. Such processes are often in practices; however, measurement systems are not formally managed or evaluated. The result is a performance measurement "system" where the interrelations between the different metrics are unknown, with frequent duplication, and undetectable Omission. [**2**]

The scope of the logistics field has widened bringing new challenges for researchers and managers, but the broader scope was envisioned from its formation. Improvements in information technology and the just-in-time philosophy are the principal drivers for realizing the potential of boundary-spanning channel management. [4]

The study identified the concept of transport and logistics companies in the Baltic States as the concept is treated in business. The results of the research have shown that the concept of transport and logistics have differentiation in understanding. This article was deduced with the purpose of giving a definition to the transport and logistics on the basis of the results of the scientific literature analysis and qualitative research. The logistics service providers and the multi-actor Supply Chains are treated as real pioneers of the interfaces and represent a radical innovation on the managerial, strategically and operational plan. **[6]**

4. PROPOSED SYSTEM

The chosen technologies for the development of this application are Android Application Development, Firebase for real-time database. The programming languages used is JAVA, XML and Firebase as backend.

The three panels are: Admin, Customer and Driver Panels.

1. Admin Panel contains the following features:
    1. Login
    2. Add Trucks
    3. Add Drivers
    4. View Truck Location Updates

2. Driver Panel contains the following features:
    1. Login
    2. View Booking Details
    3. Update Location

3. Customer Panel contains the following features:
    1. Registration

2. Login
3. View Trucks
4. Book Trucks
5. Location Update

4.0 Design of Proposed System:

4.1 Splash Screen: Splash Screen runs for 5 seconds or 5000ms. It contains the logo, app name and powered by message along with year at the bottom [Powered by UP2-G69].

4.1.1 Logo:

4.2 Choice Page:

The choice page consists of three button namely, ADMIN, DRIVER, USER/CUSTOMER. The user end actor should select their role accordingly.

4.3 Admin

4.3.1 Admin Login: Admin Login page has a logo and welcome message saying, "Welcome Admin SignIn to Continue". It has two input fields, username and password. Admin has direct login feature. The username and password is inbuilt and had access only to the admin.

Username: UP2G69

Password: admin123

4.3.2 Admin Dashboard: This page contains four button options namely: Vehicles [A], Bookings [C], Track [E] and Rate and Review [D].

4.3.2.1 Vehicles: On clicking the Vehicles button[A], it navigates to Vehicle Management page.

4.3.2.1.1 Vehicle Management: It contains the list of all trucks added previously by the admin. Every truck details include vehicle number, permit numbers and assigned driver id. On the top right of the page, there is an option to add new truck. On clicking that button it navigates to Add Vehicle page.

4.3.2.1.1.1 Add Vehicle: It provides two input fields namely, Permit No. and Driver Id. Which the driver have to manually enter and hit on the add button below. On clicking the add button a new truck will be added.

4.3.2.1.1.2 [Navigation can be achieved between Admin Dashboard and Add Vehicle pages]

4.3.2.2 Bookings: On clicking Booking Button[C], it navigates to Bookings page.

4.3.2.2.1 Bookings: It contains the list of booking from the customer. Admin will manually allocate the driver to the orders. On clicking the Add Driver button it navigates to Add Driver page.

4.3.2.2.2 Add Driver Page: It provides three input fields namely, Name, Driver Id, phone number. On clicking add, if

driver added successfully the toast message pops up.

4.3.2.2.3 [Navigation can be achieved between Admin Dashboard and Add Driver pages]

4.3.3 Track: On clicking Track Button [E], it navigates to Track page.

4.3.3.1 Track Page: Location updated by the driver is listed with truck number in this page.

4.3.3.1.1 [Navigation can be achieved between Admin Dashboard and Location Update]

4.3.4 Rate and Reviews: On clicking Rates Button[D], it navigates to Rates and Reviews page.

4.3.4.1 Rates and Reviews: It contains the reviews given by customers.

4.4 Driver

4.4.1 Driver Login: Driver Login page has a logo and welcome message saying, "Welcome Driver SignIn to Continue". It has two input fields, username and password. Driver Login credentials are assigned by admin.

4.4.2 Driver Dashboard: This page contains two button options namely: Bookings and Update Location.

4.4.2.1 . Bookings: On clicking Booking Button[C], it navigates to Orders page.

4.4.2.1.1 Orders: Driver can view Booked Items in this page.

4.4.2.2 . Location: On clicking Track Button, it navigates to Update Location page.

4.4.2.2.1 Update Location: Driver have to manually enter the current location here.

4.5 Customer

4.5.1 Customer Login: Driver Login page has a logo and welcome message saying, "Welcome SignIn to Continue". It has two input fields, username and password. If customer is a new user, there is an option to register ie., Sign-Up option.

4.5.2 Customer Sign-Up: It provides four input fields namely, username, contact number, email and password.

4.5.3 Customer Dashboard: This page contains four button options namely: Bookings, Track, Pay and Rate and Review. On the right top it contains log-out button.

4.5.3.1 Bookings: On clicking Booking Button[C], it navigates to Bookings Details page.

4.5.3.1.1 Booking Details Page: It contains 3 input fields namely, To, From and Weight in Kgs/Tons.

4.5.3.1.1.1 To and From: It is a drop down menu which contains a list places where the boarding and shipping services are provided.

4.5.3.1.1.2 Weight: Customer have to enter estimated approximate weight, in

kilograms or tons, of the good to be shipped.

4.5.3.1.2 [Navigation can be achieved between Customer Dashboard and Booking Details pages]

4.5.3.1.2.1 Book Button: On clicking this button[C] toast message pops up if the booking is successful.

4.5.3.2 Track: On clicking Track Button[E], it navigates to Location Update page.

4.5.3.2.1 Update Location: It contains the updated location by the driver

4.5.3.2.2 [Navigation can be achieved between Customer Dashboard and Update Location pages]

4.5.3.3 Pay Button: On clicking this button[B] it takes to Bank Details page.

4.5.3.3.1 Bank Details: It contains certain banking information like, Name, Bank Name, Account Number, IFSE code and Phone Number.

4.5.3.3.2 [Navigation can be achieved between Customer Dashboard and Bank Details pages]

4.5.3.4 Rate and Reviews: On clicking Rates Button[D], it navigates to Rates and Reviews page.

4.5.3.4.1 Rate and Reviews: Customer has to enter the rate in number out of 5.

4.5.3.4.2 [Navigation can be achieved between Customer Dashboard and Rates and Review pages]

5 Software and Hardware Requirements:

5.1 Software:

5.1.1 Android Studio:

Advantages of Android Development: It is an open-source Operating System that possesses a vast community for support. It is enhanced with a feature called fragmentation that means the application can run two activities on a single screen. Releasing the Android application in the Google play store is easier compared to other platforms.

Fundamentals of Android Development: Activities: An application that has a visible and alluring user interface is implemented via an activity. When one select an application from the Home screen or application launcher, an activity is started. **Services**: It can be used as a service for any application that needs longer persistence of long time such as network monitor or update checking application**. Content providers:** It can serve as a database server. It conspires a content provider's job is by managing access to persisted data, such as the contacts on a phone. **Broadcast receivers:** One can launch an Android Application to process a specific element of data or respond to an event, such as

receiving a text message, notifications, pop-up alerts etc.

5.1.2 JAVA Environment

5.1.3 Firebase Server

Firebase is the Real-time Backend for an application. It provides –Real-time database, Authentication, Cloud Messaging, Storage, Hosting, Remote Configuration, Test Lab, Crash Reporting

5.1.4 Adobe Xd:

Adobe XD was used to design logos, buttons and background. It provides features to develop drawables that are necessary to develop backgrounds that could fit in to the screen of any size. ldpi, mdpi, udpi, xhdpi, xxhdpi and xxhdpi are the set of sizes that is used to achieve flexibility and portability in implementing user interface background.

5.2 Languages:

5.2.1 JAVA

5.2.2 XML

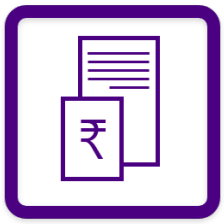
6. Conclusion:

In this paper, we presented a basic version of a logistics management system and a low cost development of application. We went through all the features that were included in our application. Through the design of this system we acquired much knowledge of logistics business.

Through this application we have touched all the necessary features that is required in any application to be called as a logistics management app. This is a miniature version of a flexible logistics management system. It provides platform for all three actors to perform their role efficiently and consistently. This application can be used in shipment business which has a small scale number of trucks and employees.

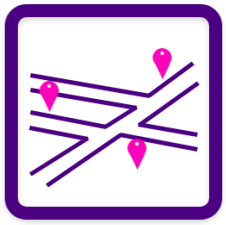
BUTTONS:

[A] 

[B] 

[C] 

[D] 

[E] 

[A] Vehicles/ Add Trucks Button

[B] Payment Button

[C] Bookings Button

[D] Rate and Reviews Button

[E] Track Button

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