Transport Management System Using GPS Tracking

1st *Prof.Sham Bhimade*
Computer Science & Enginering
SKN Sinhgad College of
Engineering, Korti,Pandharpur.
Pandharpur,India
sham.bhimade@sknscoe.ac.in

2nd *Shankar Chavan*
Computer Science & Enginering
SKN Sinhgad College of
Engineering, Korti,Pandharpur.
Pandharpur, India
shankarchavan5102000@gmail.com

3rd*Prasad Chinchkar*
Computer Science & Enginering
SKN Sinhgad College of
Engineering, Korti,Pandharpur.
Pandharpur,India
chinchkarprasad@gmail.com

4th *Suyesh Lokare*
Computer Science & Enginering
SKN Sinhgad College of
Engineering, Korti,Pandharpur.
Pandharpur,India
prasadkashid9131@gmail.com

Prasad Kashid
Computer Science & Enginering
SKN Sinhgad College of
Engineering, Korti,Pandharpur.
Pandharpur,India
prasadkashid9131@gmail.com

Abstract: Goal of this project is to develop a transport management system that will help organizations automate their transport operations. This method will allow them to manage their various tasks and activities. The key motive of the transport management system is to assist organizations to minimize the risks related to their transport operations. It's built on an android platform that may be utilized by various organizations to manage their various transport operations. The main objective of the transport management system is to permit users to manage their various transport activities. The importance of transport management is immense. It involves various techniques and tools that are required to deliver a successful project. This technique will help the users in improving their planning and scheduling, reducing their time and energy, and making their work more efficient. The primary objective of the Transport Management System is to provide a centralized platform for planning, executing, and monitoring transportation activities. The system encompasses modules for fleet management, route planning, load optimization, real-time tracking, and *reporting, among others. By integrating these functionalities, the* TMS enables organizations to effectively manage their transportation processes from end to end.

Keywords— Tracking, Vehicle Info, Driver Info, Fuel, Shipment.

I. INTRODUCTION

In today's developed and interconnected business world, effective management of transportation operations is crucial for organizations to ensure productive movement of goods and services. To meet this demand, Transportation Management Systems (TMS) have emerged as complete software solutions designed to streamline and optimize transportation processes. A transportation management system or TMS is a category of software that helps in planning and implementing the physical movement of goods. It can be used by all members of the supply chain from manufacturers to providers and third-party logistics providers (3PLs) – virtually any party that wants to coordinate shipments. A Transportation Management System slaves as a centralized platform that enables organizations to plan, execute, and monitor their transportation activities in a more efficient and cost-effective manner. It leverages advanced technologies and algorithms to automate and optimize various aspects of transportation, ranging from route planning and load optimization to real-time tracking and reporting.

Transportation Management System plays a important role in enabling organizations to effectively manage their transportation operations. With its different functionalities and capabilities, a TMS provides the tools and wisdom necessary to optimize routes, track shipments, manage carriers, and make informed decisions.

II. LITERATURE REVIEW

1. PAPER TITLE: "Web Based Public Transport Management System: A Prototype PSV Tracking System for Nairobi City.

AUTHOR NAME: Emmanuel Okello Otieno, Moses Murimi Ngigi2.

DESCRIPTION: The solution uses GPS, web GIS and GPRS technologies for real time transmission of coor- dinates from the tracking device to the central database server and finally rendering on the web page OpenGTS (Open GPS Tracking System) platform for tracking was adopted and customize to the needs of public transport in Nairobi with help of this we can use public transport effectively.

2. PAPER TITLE: "GPS based tracking Framework for walking pedestrian".

AUTHOR NAME: Mantoro, Teddy and Ayu, Media Anugerah and Borovac, Amir (2011).

DESCRIPTION: :This paper discusses challenges faced by GPS-based tracking systems for walking pedes- trians, including connectivity, map size, and accuracy issues. The aim is to optimize connectivity, reduce map size, and measure location accuracy. The proposed framework utilizes GPS for positioning, GPRS and SMS for data transmission, and Google Maps for displaying locations. This app is available on various platforms such as Windows Mobile, Android, iOS.

3. PAPER TITLE: "A Vehicular Cloud-Based Framework for the Intelligent Transport Management of Big Cities"

AUTHOR NAME: Rodolfo I. Meneguette

DESCRIPTION: An intelligent transport system (ITS) is designed to improve vehicle operations, manage traffic.it also usage VANETs system in which roadside devises are connected with vehicles. every vehicle is equipped with sensors which can connect to VANET system. With the help of this we can reduce accidents .

4.PAPER TITLE:" Design and Implementation of Transportation Management System"

AUTHOR NAME: I. Ashour, M. Zorkany, Mu Shiple

DESCRIPTION: the GPS and GPRS systems are used to monitor the vehicles and we collect the information. This data is then analysed to estimate arrival times. We can populate this data to each station. It will help to define no of stations, buses units. This technology also usages neural network algorithms to predict arrival times.

III. MOTIVATION

1. To build Android Based Application for Transport Management System using GPS Tracking and Vehicle Management.

2. Transport Management System reduces the paper work as well as owner work, as he get all the information regarding The Vehicle and Manage it in easy and Efficient way.

IV. PROPOSED WORK

YRG often Contain highly contain transportation data, which are periodically distributed among transport providers, goods Supplier. Furthermore, Transport Management information must be regularly updated and shared. Along with this we need strong availability, fast access and the appropriate encryption of the App.

There are currently several approaches regarding Transport Management System. We Present transportation app for Management of the Transportation Vehicles. we are developing application which is useful for transport Agency. In YRG we will Manage all the information of vehicles, Shipments, Fuel Management, Income and Expenses and Real Time Location of the vehicles

The Admin will Login to the system using valid ID and Password and has full access of the app. The user will add vehicle, Manage vehicle and Add driver. The admin can add various vehicles. The vehicles module contain the all the

information like Registered Number, vehicle Registration date etc . Each and every vehicle has its separate information regarding the from which location the goods is going to Delivered Each vehicle has it's real time location.

V. EASE OF USE

Enhanced Customer Service: TMS improves customer service by providing real-time transparency and tracking capabilities. It enables organizations to accurately track and communicate the status of shipments to customers, reducing query and improving transparency. The ability to proactively address delays or issues, as well as provide accurate delivery time estimates, leads to higher customer satisfaction and loyalty.

Improved Operational Efficiency: A TMS streamlines and automates various transportation processes, leading to improved operational efficiency. It reduces manual tasks, such as manual data entry, paperwork, and phone calls, by centralizing and automating processes like order management, route planning, load optimization, and scheduling. This efficiency improvement leads to time savings, reduced errors, and increased productivity.

Increased Visibility and Control: TMS provides real-time visibility into transportation operations, including vehicle locations, shipment status, and delivery performance. This clarity allows organizations to have better control over their transportation processes and enables proactive management of exceptions and unforeseen events. It improves coordination among stakeholders, such as shippers, carriers, and customers, leading to smoother operations and reduced disruptions.

Better Planning and Decision-Making: TMS provides powerful planning and decision-making tools. It offers advanced algorithms and optimization capabilities to help organizations plan optimal routes, allocate resources efficiently, and make informed decisions.

VI. USING THE TEMPLATE

A Transport Management System (TMS) is a comprehensive software solution designed to streamline and optimize various aspects of transportation operations within an organization. It is a technology-based system that provides a centralized platform for planning, executing, and monitoring transportation activities. A TMS typically includes a range of modules and functionalities that enable efficient management of transportation processes.

Sometimes known as a transportation management solution or transportation management software, a TMS provides visibility into day-to-day transportation operations, trade compliance information and documentation, and ensuring the timely delivery of freight and goods. Transportation management systems also streamline the shipping process and make it easier for businesses to manage and optimize their transportation operations, whether they are by land, air, or sea.

FIGURE 1. Transport Management Processes

Route Optimization: TMS providers use advanced algorithms and software tools to optimize transportation routes. They consider factors such as distance, traffic conditions, delivery time windows, and cost-efficiency to plan the most optimal routes for transporting goods.

Shipment Tracking and Visibility: TMS providers offer real-time tracking capabilities, utilizing GPS technology or other tracking systems. This enables organizations to have visibility into the status and location of their shipments, facilitating proactive management, and improved customer communication.

Analytics and Reporting: TMS providers generate reports and provide analytical insights into transportation performance metrics. This helps organizations to identify trends, and make data-driven decisions to optimize transportation processes.

Models of Transport Management System

Public Transport: Public transport refers to transportation services available for use by the general public. It includes buses, trams, subways, trains, and other modes of transportation that are operated on scheduled routes and are accessible to anyone.

Personal Transport: Personal transport refers to individual means of transportation used for personal commuting and travel. This includes private cars, motorcycles, bicycles, and walking..

Freight Transport: Freight transport focuses on the movement of goods and cargo. It includes various modes such as trucks, trains, ships, and planes that specialize in transporting goods in bulk or in containers.

Key Benefits of Transport Management System

A TMS and modern transportation management in general provides many benefits to businesses. Some of the top benefits are:

- Reduced costs for the business and the end customer.
- Simplification of supply chain processes across geographies, modes, and carriers
- Automation of business operations for Faster and more accurate billing and Documentation
- Improvement in visibility and security, Especially in transit
- Time savings fewer manual steps result in fewer delays and faster delivery times

VII. METHODOLOGY

The system has a different segment to process a specific task which is the modules. This will help the system to developed easily and makes it more user-friendly. Below Architecture is pictorial representation of working of Android application.

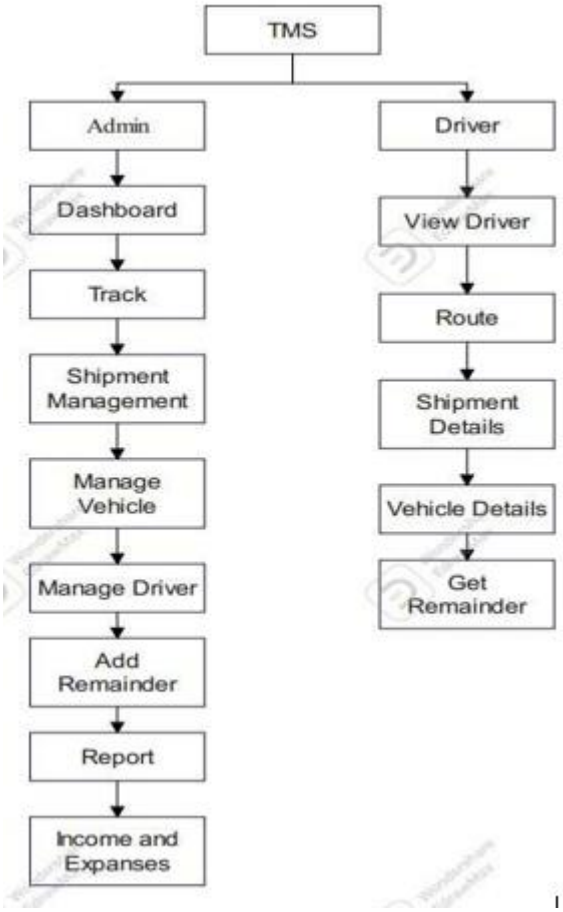

FIGURE. System Architecture

VIII. FIGURES AND TABLES

It will help to monitor all the vehicles and keep track of all shipments from one portal. we can also keep track of income and expenses. Before this it need to be maintained in paper diaries format which was difficult to maintain and time consuming task. With this system now we can generate reports and make analysis. According to the analysis of Transport Management System related theories, new Transport management system solution should include aspects as follow

1.The System Effectively Calculated Estimated Travel time and provide accurate direction to driver.

2. Customers could track their shipments using the provided tracking number and receive status updates

3. The system generated financial reports, enabling better financial management and analysis.

FIGURE 4. Dashboard

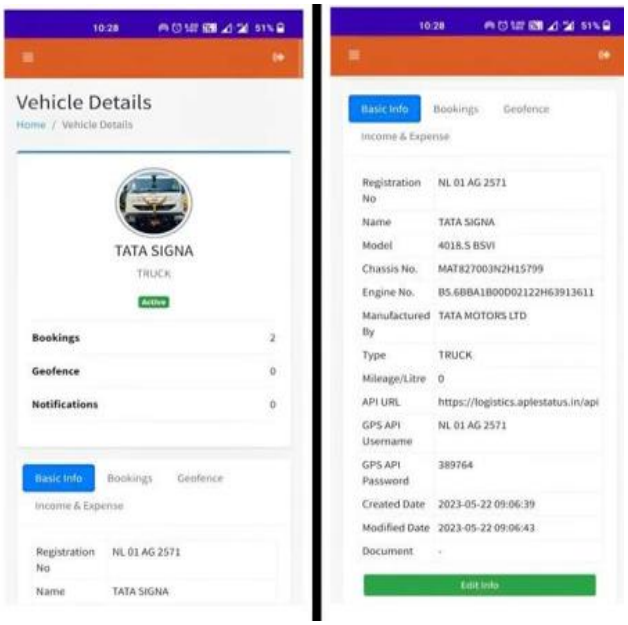

Figure: Vehicle Module

IX. ACKNOWLEDGMENT

The existing Transport Management System of the Agency is completely manual. The system is based on paper works and communications between the owner of the system and driver of the vehicle. The proposed application will develop to overcome these limitations. Transportation Management System provides management of vehicles and keeps track of every shipment of every vehicle in the Agency from one place to another place. Along with this it also keeps records of maintenance of each vehicle. Transportation Management System also helps the owner and driver of the vehicle with full knowledge through Android application

At present, transport is one of the key branches playing a crucial role in the development of the economy. The Transportation Management System keeps track of the vehicles and also maintains record of the vehicles in the agency. Our application will help the transport agency those have least number of vehicle as well as those who has large Number of Vehicle. In future we can add different vehicle that the agency will use. In future we can make this app more efficient and profitable by using various technology like machine learning and Internet of things (IOT).

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