# 1. Introduction

## In today's fast-paced world, efficient and reliable delivery services are crucial for both businesses and individuals. A Courier System is needed to streamline the logistics and delivery process, ensuring that parcels and documents reach their destinations on time and securely. Many existing courier services suffer from inefficiencies, such as delays, lack of real-time tracking, and poor communication between senders, couriers, and recipients. This system aims to address these challenges by providing an automated and optimized platform for managing deliveries.

## System Functions and Interaction with Other Systems

## The Courier System will perform the following key functions:

## Order Placement: Users (customers or businesses) can request a pickup and delivery service via the web or mobile app.

## Order Processing & Assignment: The system assigns couriers based on factors such as proximity, availability, and delivery priority.

## Real-Time Tracking: Both senders and recipients can track the package location in real-time using GPS.

## Notifications & Alerts: Customers receive updates about the order status, estimated delivery time, and any delays.

## Payment Processing: Integration with online payment gateways allows customers to pay for delivery services.

## Courier Management: The system helps manage couriers by tracking their performance, workload, and efficiency.

## Integration with Other Systems:

## E-commerce platforms: Automate order fulfillment for online stores.

## Warehouse & Inventory Management Systems: Synchronize stock and delivery operations.

## Customer Relationship Management (CRM) systems: Enhance customer experience with order history and support

## Business & Strategic Objectives

## Implementing a Courier System aligns with key business goals and strategic objectives, such as:

## Improved Efficiency: Reduces manual effort, optimizes route planning, and minimizes delivery time.

## Enhanced Customer Satisfaction: Real-time tracking, faster deliveries, and reliable service boost customer trust and retention.

## Cost Reduction: Automating order processing and dispatch reduces operational costs and human errors.

## Scalability & Business Growth: The system can handle increasing delivery volumes as the business expands.

## Competitive Advantage: Businesses using an efficient courier system can outperform competitors with faster, more reliable, and cost-effective deliveries.

# 2. User Requirements

## 1. Customers (Users) Requirements

* **Place Delivery Requests**: Users should be able to create a new delivery request by entering details such as pickup and drop-off locations, package type, and delivery time.
* **Track Orders in Real-Time**: Customers need real-time GPS tracking to monitor the location of their parcels.
* **Receive Notifications & Alerts**: Users should get SMS/email/app notifications about order confirmation, courier assignment, and delivery status updates.
* **Flexible Payment Options**: Customers should have the option to pay via **cash, credit/debit cards, or online wallets**.
* **Rate & Review Service**: After a delivery, users should be able to rate the courier and provide feedback.
* **Cancel Orders**: Users should have the option to cancel a delivery request before the courier picks up the parcel.
* **View Order History**: Customers need access to their past deliveries, including receipts and tracking details.

## 2. Couriers (Delivery Agents) Requirements

* **Receive Delivery Requests**: Couriers should get delivery assignments based on their location and availability.
* **Accept or Reject Orders**: A courier should have the ability to accept or reject a delivery request.
* **View Delivery Details**: They need access to package details, pickup/drop-off locations, and customer contact information.
* **Update Delivery Status**: Couriers should be able to update statuses such as **"Picked Up", "In Transit", and "Delivered"**.
* **Route Optimization**: The system should suggest **the fastest delivery route** based on real-time traffic conditions.
* **Earnings Dashboard**: Couriers should be able to track their completed deliveries and earnings.

## 3. Administrators (Business Owners) Requirements

* **Manage Users & Couriers**: Admins should be able to register, remove, and manage customers and couriers.
* **Monitor Deliveries**: Admins need a dashboard showing all active, completed, and pending deliveries.
* **Generate Reports & Analytics**: The system should provide data on **daily deliveries, revenue, courier performance, and user feedback**.
* **Handle Disputes & Complaints**: Admins should have access to customer complaints and be able to take appropriate actions.
* **Manage Pricing & Promotions**: Ability to set delivery charges, discounts, and promotional offers.

# 3. Functional Requirements

## 1. Package Order Creation

* Description: Allows customers to create new delivery orders
* Inputs: Sender info, recipient info, package details, pickup/delivery addresses
* Source: Customer input via web/mobile interface
* Pre-condition: Customer is logged in
* Post-condition: New order created in system
* Output: Order confirmation with tracking number

## 2. Delivery Tracking

* Description: Provides real-time package tracking
* Inputs: Tracking number or customer credentials
* Source: System database and courier updates
* Pre-condition: Valid tracking number exists
* Post-condition: Tracking history displayed
* Output: Current status with location and estimated delivery

## 3. Status Update

* Description: Allows couriers to update delivery status
* Inputs: New status (Picked Up, In Transit, Delivered)
* Source: Courier mobile application
* Pre-condition: Valid order exists and courier is authenticated
* Post-condition: Order status updated in system
* Output: Status update confirmation and customer notification

## 4. Cost Calculation

* Description: Automatically calculates shipping costs
* Inputs: Package weight, dimensions, delivery distance
* Source: System calculation based on business rules
* Pre-condition: Package details provided
* Post-condition: Calculated cost associated with order
* Output: Displayed shipping cost to customer

## 5. Delivery Report Generation

* Description: Generates performance reports for administrators
* Inputs: Date range, report type (delivery times, success rates)
* Source: System database
* Pre-condition: Admin privileges
* Post-condition: Report generated
* Output: PDF/Excel report with analytics

# 4. Non-Functional Requirements

## 4.1 Performance

* System should handle 100 concurrent users with response time <2s
* Location updates within 30 seconds
* Support 500+ concurrent drivers

## 4.2 Reliability

* 99.5% uptime during business hours (8AM-10PM)
* 99.9% system uptime
* Offline functionality for 50+ deliveries

## 4.3 Security

* All user data encrypted, passwords hashed
* Multi-factor authentication
* Encrypted data transmission

## 4.4 Compliance

* Architecture should support 50% growth in users without redesign
* DOT electronic logging compliance
* 7-year audit trail retention

## 4.5 Usability

* Mobile-responsive interface accessible to non-technical users
* Mobile responsive interface
* English/Spanish/French language support