**CHAPTER ONE - INTRODUCTION**

**1.1 Background**

In Ethiopia, particularly in cities like Dire Dawa, the demand for reliable and efficient car rental services is increasing due to urbanization, business expansion, and tourism growth. However, the majority of car rental businesses operate manually, which leads to inefficiencies, customer dissatisfaction, and missed revenue opportunities. The **Car Rental Management System** (CRMS) proposed in this document aims to automate and modernize operations, providing seamless services to both businesses and customers.

**1.2 Statement of the Problem**

Car rental businesses in Dire Dawa face challenges such as:

1. **Manual Processes**: Booking, vehicle management, and billing are conducted manually, leading to errors and inefficiencies.
2. **Customer Inaccessibility**: Lack of an online platform restricts customers from easily accessing rental services.
3. **Ineffective Fleet Management**: Businesses struggle to monitor vehicle availability, usage, and maintenance.
4. **Revenue Loss**: Inability to utilize advanced tools for pricing, scheduling, and reporting results in decreased profitability.

**1.3 Problem of Existing System**

The current manual system suffers from:

1. **Data Inaccuracy**: Handwritten logs and records are prone to human error.
2. **Limited Tracking**: No centralized system for tracking vehicle locations and maintenance schedules.
3. **Customer Frustration**: Delays in response and lack of transparency result in customer dissatisfaction.
4. **Poor Decision-Making**: Absence of data analytics leads to ineffective decision-making.

**1.4 Objective**

**1.4.1 General Objectives**

To design and implement a **Car Rental Management System** that improves the operational efficiency, customer satisfaction, and revenue generation of car rental businesses in Dire Dawa.

**1.4.2 Specific Objectives**

* To provide an automated system for booking and reservations.
* To track fleet availability, vehicle usage, and maintenance schedules.
* To integrate a secure payment system for seamless transactions.
* To generate data-driven reports for performance analysis and decision-making.
* To develop a user-friendly interface for customers and administrators.

**1.5 Scope and Limitation**

**1.5.1 Scope**

* The system will cover fleet management, reservations, billing, and reporting.
* Both web and mobile-based interfaces will be developed.
* Integration with Ethiopian payment gateways like Telebirr and CBE.
* Deployment for small to medium-sized car rental businesses in Dire Dawa.

**1.5.2 Limitation**

* Limited to the car rental businesses operating within Dire Dawa.
* Internet dependency for accessing online services.
* Budget constraints for advanced features like GPS tracking.

**1.6 Significant of the Projects**

The Car Rental Management System will:

* **Increase Efficiency**: Automate booking, billing, and reporting processes.
* **Enhance Customer Experience**: Provide a seamless platform for online reservations and payments.
* **Improve Resource Utilization**: Streamline fleet usage, ensuring maximum profitability.
* **Facilitate Scalability**: Lay the groundwork for future system enhancements and expansion.

**1.7 Benefit and Beneficiaries**

**Beneficiaries:**

* Car rental business owners in Dire Dawa.
* Customers seeking easy and accessible rental services.
* Administrative staff managing operations.

**Benefits:**

1. **For Businesses**:
   * Reduced manual workload and errors.
   * Increased revenue through optimized operations.
2. **For Customers**:
   * Improved access to vehicle availability and online bookings.
3. **For Administrators**:
   * Efficient fleet tracking and automated reporting tools.

**1.8 Methodology**

**1.8.1 Data Collection Methodology**

* **Primary Data**:
  + Surveys and interviews with car rental businesses and customers.
* **Secondary Data**:
  + Analysis of existing systems and global best practices.

**1.8.2 Development Methodology**

The system will be developed using the **Agile Development Methodology**. This approach ensures:

* Incremental system updates.
* Continuous feedback from stakeholders.
* Flexibility to accommodate changes during development.

**1.8.3 System Development Tool**

* **Programming Languages**: Java (Spring Boot) for backend, React.js for frontend.
* **Database**: MySQL for secure data management.
* **Tools**: Visual Studio Code, IntelliJ IDEA, and GitHub.
* **Deployment**: AWS or a local server.

**1.9 Feasibility Study**

**1.9.1 Economic Feasibility**

* **Cost Estimation**: The development and deployment cost will be manageable within a set budget.
* **Return on Investment**: Improved efficiency and revenue generation will ensure quick recovery of costs.

**1.9.2 Technical Feasibility**

* The system will use widely adopted technologies like Java, React, and MySQL, which are reliable and cost-effective.

**1.9.3 Operational Feasibility**

* The system will be user-friendly, requiring minimal training for staff and customers.
* Integration with local payment gateways ensures smooth operations.

**1.10 Project Plan**

**1.10.1 Work Schedule**

|  |  |  |
| --- | --- | --- |
| **Phase** | **Task** | **Duration** |
| Planning | Requirements gathering | 2 weeks |
| Design | System architecture and UI design | 2 weeks |
| Development | Backend and frontend development | 6 weeks |
| Testing | Unit and user testing | 3 weeks |
| Deployment | Final deployment and training | 2 weeks |

**1.10.2 Project Budget**

|  |  |
| --- | --- |
| **Item** | **Estimated cost(ETB)** |
| Development tools | 20,000 |
| Server hosting | 15,000 |
| Training and Support | 10,000 |
| Miscellaneous Expenses | 10,000 |
| Total | 55,000 |