Requirement Analysis

Requirements Analysis Document

Group-1

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Introduction

For the cloud-based automotive repair service project, our team embarked on a comprehensive journey to understand and involve key stakeholders and end users from the outset. Here is how we approached this crucial phase, detailed in the past tense to reflect our completed actions:

Identified Key Stakeholders and End Users

This section comprehensively outlines the pivotal roles and interests of each party involved in the car mechanic service system. It delineates the expectations and contributions of stakeholders, establishing a framework for understanding their interplay within the system.

Car Owners

- Car owners are the primary beneficiaries and direct users of the system. Their engagement with the platform is driven by the need for reliable and efficient car maintenance and repair services.
- Key expectations include
    - Convenience: The paramount concern for car owners is the ease of accessing services, emphasizing a seamless integration into their daily routines.
    - Transparency: Open and clear communication regarding the extent of services, cost, and expected duration of repairs is essential to them.
    - Quality: Ensuring that services adhere to the highest standards is vital, as it directly impacts vehicle integrity and performance longevity.

Service Centers

- Service centers, including specialized and make-specific dealerships, form the backbone of the operational framework.
- Their contributions are twofold:
    - Service Provision: They deliver the expertise required for the wide spectrum of maintenance and repair services demanded by vehicle owners.
    - Quality Assurance: Upholding exemplary service standards, these centers guarantee that all vehicle servicing aligns with industry benchmarks.

Drivers/Tow Service Providers

- This group constitutes the logistical network crucial for transporting non-operational vehicles.
- They facilitate:

    - Vehicle Transportation: Offering indispensable services that move vehicles to and from service centers as needed.
    - Service Extension: Their role is pivotal in expanding the service's accessibility, ensuring service delivery irrespective of vehicle condition.

Investors & Sponsors

- Investors and sponsors are the financial backbone of the project, with a vested interest in its economic success.
- Their focus areas are:
    - Project Viability: They assess the project's potential for return on investment and its sustainability over the long term.
    - Success Metrics: Monitoring the service's performance indicators and success rate is crucial to ensure alignment with predefined financial and business objectives.

Regulatory Bodies

- While not direct participants, regulatory bodies are essential in setting and enforcing standards that govern the system's operation.
- Their areas of oversight include:
    - Safety Governance: They establish and enforce safety standards to ensure that servicing activities are conducted without compromising the safety of vehicles or customers.
    - Environmental Impact: These bodies mandate adherence to environmental regulations, promoting eco-friendly practices among service centers.
    - Data Protection: They oversee the collection, processing, and storage of data, enforcing compliance with laws to protect user privacy.

The ecosystem of the car mechanic service system is supported by the distinct yet interrelated roles of these stakeholders. Their collaborative efforts are crucial in delivering a service that meets the practical needs of car owners, supports the operational capacities of service centers, and conforms to financial, societal, and environmental standards.

Understand the project goal

Project Objective: Deciphering the Business Necessity

Identification of Market Gap

The automotive repair sector exhibits a notable fragmentation, leading to considerable challenges for vehicle owners. The core issue revolves around the excessive time and effort required to manage car maintenance and repair activities. This situation underscores a significant gap within the market that demands an innovative approach to streamline and enhance the service experience for car owners.

Current Challenges

Vehicle owners face multiple obstacles in managing car repairs, primarily due to:

- Complex Repair Arrangements: Organizing repair services is often cumbersome, marked by a lack of efficient scheduling systems.
- Unclear Service Details: There is a frequent absence of transparency regarding the repair work's extent, leading to uncertainty and mistrust.
- Logistical Inefficiencies: The process of dropping off and picking up vehicles for repairs is laden with logistical challenges, adding to the inconvenience for car owners.

Proposed Solution

The project envisions the creation of a unified platform that is centered around the customer's needs, effectively bridging the current market gap. This platform aims to:

- Leverage Digital Technology: By integrating vehicle repair and maintenance services with advanced digital solutions, the platform seeks to revolutionize the service experience.
- Simplify the Repair Process: The primary goal is to streamline the entire repair process, from scheduling to service execution, thereby minimizing the effort and time investment required from car owners.

This strategic approach not only addresses the identified market needs but also positions the platform as a pivotal solution in transforming the automotive repair industry. By simplifying access to services and enhancing operational efficiency, the project endeavors to meet the evolving demands of car owners and set a new standard in service delivery.

Problem Statement: Addressing Inefficiency and Mistrust

Core Issues

- Inconvenience and Inefficiency: Vehicle owners are burdened with a convoluted process that encompasses finding reliable service centers, arranging appointments, managing the logistics of vehicle transportation, and navigating through often unclear communications regarding the specifics of services and their costs.
- Lack of Transparency and Trust: The automotive repair industry is riddled with opacity and mistrust. Vehicle owners are left in doubt about both the necessity and the

quality of the repairs undertaken. This lack of clarity and confidence breeds skepticism and dissatisfaction among consumers.

Objective

The primary aim is to tackle these foundational problems by crafting a unified platform that simplifies the repair and maintenance workflow. This solution endeavors to:

- Streamline the entirety of the repair process, making it more efficient and less burdensome for car owners.
- Significantly enhance the level of transparency in communications and transactions between service providers and vehicle owners.

By addressing these concerns, the initiative seeks to foster a relationship of trust and reliability within the automotive repair industry, ensuring vehicle owners feel confident and satisfied with the services provided. This approach not only benefits consumers by providing a hassle-free experience but also positions service providers as trustworthy partners in vehicle maintenance and repair.

Capturing the requirements

Engaged Stakeholders and End Users in the Requirements Gathering Process

To fully understand the needs and expectations of all parties involved in the car mechanic service system, a comprehensive requirements gathering process was initiated, engaging diverse groups through various methodologies:

Car Owners

A multi-faceted research approach was employed to delve into car owners' experiences and expectations, including:

- Surveys, Interviews, and Focus Groups: These tools were pivotal in capturing both the explicit service requirements of car owners and the more nuanced expectations, such as the desire for customized service experiences. This effort yielded a collection of desired app features aimed at boosting user satisfaction and engagement.

Service Centers

Operational insights from service centers were gleaned through:

- Site Visits and Staff Discussions: These engagements revealed operational challenges and a willingness to embrace technological solutions. The information collected has been crucial in developing a cloud-based platform designed to integrate smoothly with existing service center systems, thereby enhancing workflow efficiency.

Drivers/Tow Service Providers

Direct interactions with drivers and tow service providers included:

- Interviews: These discussions provided a detailed understanding of the logistical challenges inherent to their roles, informing the design of a dispatch system that caters to operational needs and augments the service delivery network.

Investors and Sponsors

- Strategic Discussions: Engagements with financial stakeholders ensure alignment between the service's developmental goals and the investors' expectations for financial returns and market penetration.

Regulatory Bodies

- Proactive Consultations: Early discussions with regulatory authorities guided the integration of legal and safety standards into the service framework from the ground up, aiming to preempt compliance challenges.

Key Findings and Insights

In-Depth One-on-One Interviews:

- Participants: A diverse group including car owners, service center managers, technicians, tow service providers, and representatives from regulatory bodies.
- Findings: These interviews provided critical insights into desired user-centric app features, operational challenges within service centers, and the importance of regulatory compliance for ensuring service credibility and legality.

Constructive Focus Groups:

- Participants: Specially assembled groups of car owners and service center staff facilitated targeted discussions.
- Findings: Key outcomes included the identification of a demand for transparent service transactions, a user-friendly digital interface, and streamlined operations. A common desire was expressed for features like real-time updates, transparent pricing, and efficient vehicle pickup and delivery processes. These elements were recognized as vital to improving customer satisfaction and operational efficiency.

Incorporating Stakeholder Feedback into Requirements

The insights and data collected from the interviews, focus groups, and use cases were meticulously analyzed and synthesized into a comprehensive set of requirements for the cloud-based automotive repair service.

Functional Requirements

1. User Registration and Profile Management:
    1.1. Allow users to create and manage profiles, including personal details.
    1.2. Enable the addition and management of vehicle information.
    1.3. Facilitate tracking and access to service history.

2. Service Request Submission:
    2.1. Enable submission of requests for vehicle service or repair.
    2.2. Allow detailing of the service type needed (e.g., routine maintenance, specific repair).
    2.3. Permit users to specify preferred service timing.

3. Automated Service Center Matching:
    3.1. Match vehicles with service centers based on vehicle make.
    3.2. Consider the problem type for matching.
    3.3. Utilize user location in the matching algorithm.

4. Digital Documentation of Vehicle Status:
    4.1. Provide photos and videos documenting the vehicle's condition pre and post-repair.
    4.2. Include a detailed service report with the digital documentation.

5. Quote Generation and Approval:
    5.1. Enable service centers to generate and send repair quotes via the platform.
    5.2. Allow users to review, approve, or reject quotes.

6. Payment Processing:
    6.1. Integrate secure payment processing for service charges.
    6.2. Support various payment methods.

7. Real-Time Updates and Notifications:
    7.1. Send updates and notifications about service request status.
    7.2. Include estimated completion times and any changes in updates.

Non - Functional Requirements

1. Usability: Ensure an intuitive interface for clients, drivers, and garage operators.

2. Reliability: Maintain minimal downtime for constant service availability.
3. Performance: Process all operations promptly without delays.
4. Security: Secure user data and payment information against unauthorized access.
5. Scalability: Handle increasing user and transaction volumes efficiently.

Operational Requirements

Operational requirements specify the conditions under which the system must operate, including maintenance, support, and compliance standards.

Maintenance and Support
1.1. Establish a maintenance plan for the system and a support structure for users.

Compliance and Standards
2.1. Ensure the system adheres to automotive service regulations and environmental standards.

Requirements Refinement:

Following the elicitation sessions tailored to our cloud-based automotive repair service, a detailed analysis and refinement process was undertaken to ensure the precision and applicability of the requirements gathered.

Organizing and Sharing Notes:

The consolidation of notes was particularly crucial given the project's intricate nature, involving multiple stakeholders from car owners to service center operators. The immediate review and organization of these notes were prioritized to capture the nuanced needs accurately. Given the project's dependency on accurate and detailed user and business requirements, special care was taken to preserve the integrity of the original discussions.

To guard against any loss of meaning or context, the original, unedited notes were meticulously preserved. These were then shared with the stakeholders involved in the elicitation activities, inviting them to verify the correctness of the interpretations. This step was not just about validation but also about reinforcing stakeholder engagement and ensuring a unified understanding of the project goals. Additionally, sharing these refined insights with wider project participants helped in maintaining transparency and soliciting proactive feedback, crucial for preemptive adjustments.

Documenting Open Issues:

The dynamic nature of the automotive repair environment meant that numerous potential issues and queries emerged during the elicitation phase. These ranged from logistical challenges in vehicle pickup and drop-off to technical nuances in service center selection algorithms. Each identified issue was systematically logged into an issue-tracking platform, mirroring the tools used by our development and testing teams to foster seamless integration and visibility across project phases.

This targeted approach to analyzing and refining elicitation outcomes has been instrumental in sculpting a set of requirements that are not only comprehensive and stakeholder-aligned but also pragmatically attuned to the operational realities of the automotive repair service ecosystem.

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