TruckHub:

A Business-to-Business Web Platform for Truck Companies

A Capstone Project Presented to

the Faculty of the School of Business and Information Technology of

La Consolacion College – Bacolod

In Partial Fulfillment of the Requirements for the degree

Bachelor of Science in Information Technology

By:

Gabriel Malanday

Enrik Jhoemar Pacaña

February 2024

CHAPTER I

INTRODUCTION

The truck rental market represents a dynamic and fiercely competitive arena where established giants vie for dominance alongside innovative newcomers. A deep understanding of this landscape proves pivotal for businesses operating within it, enabling them to tailor strategies that ensure relevance and thriving in this environment.

The competitive landscape of the truck rental market is anticipated to maintain its dynamism and challenges in the forthcoming years. Established players will persist in investing in fleet modernization, broadening service offerings, and harnessing technology to uphold their market positions. However, new entrants and disruptive technologies will pose substantial challenges while creating novel opportunities for market expansion (Sejal Akre, 2024).

According to Johari M., Shafie M., Anwar Z., Shamsudin A., (2023), The integration of e-commerce and internet of things (IoT) technology in an online vehicle rental company is a modern method that offers clients convenient rental services and effective fleet management for organizations that rent cars. Customers can use e-commerce to look for and reserve rental cars without going to an actual place and finishing the electronic renting procedure. As a result, manual documentation is no longer necessary, and the experience is easier to use. Using IoT technology makes it possible for the rental car tracking and monitoring in real time, enabling for rental companies to effectively regulate and manage their fleets. This may result in operational enhancements and beneficial feedback and services to the consumers.

Currently, no dedicated online platform in Bacolod and Western Visayas focuses on truck buying, selling, and renting. Existing marketplaces are too broad or fragmented, making transactions inefficient. Traditional methods rely on word-of-mouth, dealerships, or social media, limiting market reach. TruckHub fills this gap by providing a centralized, user-friendly platform with structured memberships, secure payments, and advanced search features tailored for truck businesses and sellers.

Project Description

The TruckHub aims to develop a web platform that facilitates the buying, selling, and renting of trucks online. The platform will cater to both individual sellers and businesses, offering a user-friendly and efficient way to connect with potential customers and renters in Bacolod, Western Visayas, Philippines, and potentially expanding to other regions in the future.

The TruckHub will offer a user-friendly and efficient feature. Sellers can create detailed listings showcasing their trucks' basic specifications, photos, descriptions, and set selling and rental prices. Potential customers and renters can easily search this comprehensive web platform based on various criteria, ensuring they find the perfect truck for their needs while the Customers will be able to register an account using their email address, with a verification code sent to their email to complete the registration process.

The TruckHub facilitates transactions between customers and sellers, streamlining the process of acquiring or renting a truck. This includes features that allow customers to make offers, sellers to accept offers, and secure payment processing within the platform. The platform also facilitates communication between parties to arrange for vehicle handover and any necessary inspections using a chat feature.

To enhance the user experience, TruckHub integrates secure information tools that enable seamless interactions between sellers and customers. This functionality ensures that negotiations, inquiries, and the finalization of sales or rental agreements can be handled efficiently while maintaining data confidentiality.

The platform caters a wide range of truck types are supported, including Construction, Cargo, Heavy Duty, Tanker, Dump, Tow, Tractor, and Other Trucks. To provide flexibility for sellers, TruckHub offers tiered monthly membership plans (Basic, Silver, Gold) that offer varying numbers of truck listings, selling and renting capabilities, and the option for featured listing placements.

Objectives of the Study

The primary objective of the study is to develop a Web Platform for the Truck Businesses.

Specifically, this aims to develop a system with the following features

1. To develop a web platform that features selling and rental for the truck businesses in Bacolod City, Negros Occidental.
2. To develop a platform that supports two types of sellers (enterprise and individual) and two customer actions (buying and renting). The platform will categorize trucks into Construction, Cargo, Heavy Duty, Tanker, Dump, Tow, Tractor, and Other Trucks. Additionally, the platform will offer a tiered monthly membership for truck sellers:
    a) Basic Plan: List up to three trucks with a personalized dashboard; selling only.
    b) Silver Plan: List up to seven trucks with a personalized dashboard; selling and rental options enabled.
    c) Gold Plan: List up to ten trucks with a personalized dashboard; selling and rental options enabled, plus priority product placement on the TruckHub products page.
3. To provide a registration approval for the seller and customer in TruckHub.
    a.) To integrate an email notification for the seller's registration approval and email authentication for the customers.
    b.) To provide a valid business permits upon registration such as: Mayor's permit, Barangay business clearance and BIR.
4. To provide reports such as,
    a.) Generating and uploading of deed of sale for successful transactions.
    b.) Customer feedbacking.
    c.) Sales report for the seller
    d.) Transactions history for both seller and customer
5. To integrate transaction management within the platform using a chat feature.

SIGNIFICANCE OF THE STUDY

Truck buying and selling had more benefits than the traditional way of renting a heavy loaded truck in a business. Interestingly, there have been more efforts at advancing technology than on attempting to understand the needs of a business companies around Bacolod City. The “TruckHub” will focus more on the truck selling and truck renting for business companies that always needs a heavy loaded vehicles for construction, transport and delivery. The study will be significant for the following:

Truck Companies

This platform will be significant to the truck selling and rental companies who are willing to collaborate with us in order to let our platform be a way when other business will buy and rent a truck from a specific company. This will also benefit the platform to promote different companies who are willing to subscribe to the platform “TruckHub”.

Customers

The selling feature will benefit those who are looking for a truck for a lesser cost. Our platform will be posting trucks who are for sale, the seller will pick the best price for each truck company that people offered for a specific truck in the platform.

Researchers

This research will help the researchers understand how the B2B platforms work in today’s era. It also shows the importance of creating solutions that meet the specific needs of truck businesses. It gives researchers a clear example of how technology can improve access to services and make online truck renting a priority.

Future Researchers

This study serves as a foundation to build upon in exploring the convergence of rental and sales functions within a single platform. It provides a framework for understanding the complexities and operational requirements of integrating multiple service models within a digital marketplace.

Scope and Limitations

This section focuses on the limitations and considerations of the study. The components that are being examined are the ones that will support the system's functionality, and the limitations highlight the constraints that are present in those areas.

Scope

This study aims to design and develop the TruckHub which is a web-based platform designed to facilitate the buying, selling, and renting of trucks in Bacolod, Western Visayas, Philippines.

1. The platform's primary target is truck businesses and customers within Bacolod City, with expansion to other regions outside the current project scope.
2. The platform will cater three user roles:

   The Admin, Seller, and Customer. The admin is responsible for managing administrator accounts and approving seller registrations. The Seller (both Individual and Enterprise) manages their account profile, lists truck products for sale or rent, handles customer inquiries, and accesses sales reports and transaction history. Sellers can choose from tiered membership plans (Basic, Silver, Gold), each offering different features and listing limits. During registration, sellers must submit business permits, including a Mayor's Permit, Barangay Business Clearance, and BIR certification. The Customer registers via email verification, browses and filters truck listings, submits inquiries, makes offers, and accesses their transaction history.

3. Core platform's functionalities:
   a) User registration and authentication (including email verification for customers).
   b) Truck listing management (including detailed specifications, photos, descriptions, and pricing for sale and rent).

c) Search and filtering based on various criteria (truck type, price, etc.).
d) Transaction management, including offer submission, acceptance, secure payment processing, and a chat system for buyer/seller communication.
e) Report generation (sales reports, transaction history, customer feedback, deed of sale generation and upload).
f) Email notifications (seller registration status, customer authentication).

4. Truck Categories:

The platform will support the following truck categories: Construction, Cargo, Heavy Duty, Tanker, Dump, Tow, Tractor, and Other Trucks.

Limitations

The limitation of this study should be taken into full consideration when interpreting the results of the conducted interviews. The researchers have identified eight limitations.

1. The platform's initial focus is limited to Bacolod City
2. The platform relies on users to provide accurate truck information, as independent verification is not currently supported.
3. Secure payment processing will be facilitated through chat transactions.
4. The platform connects buyers and sellers for rentals, it does not manage rental contracts, track rental periods, or handle disputes, leaving these responsibilities to the involved parties.
5. Users are expected to have basic computer literacy, though some may require assistance.
6. Integration with external services, such as vehicle history reports and insurance providers, is not within the current project scope.
7. The project is focused solely on the web platform, with no plans for mobile applications at this stage.

Conceptual Framework

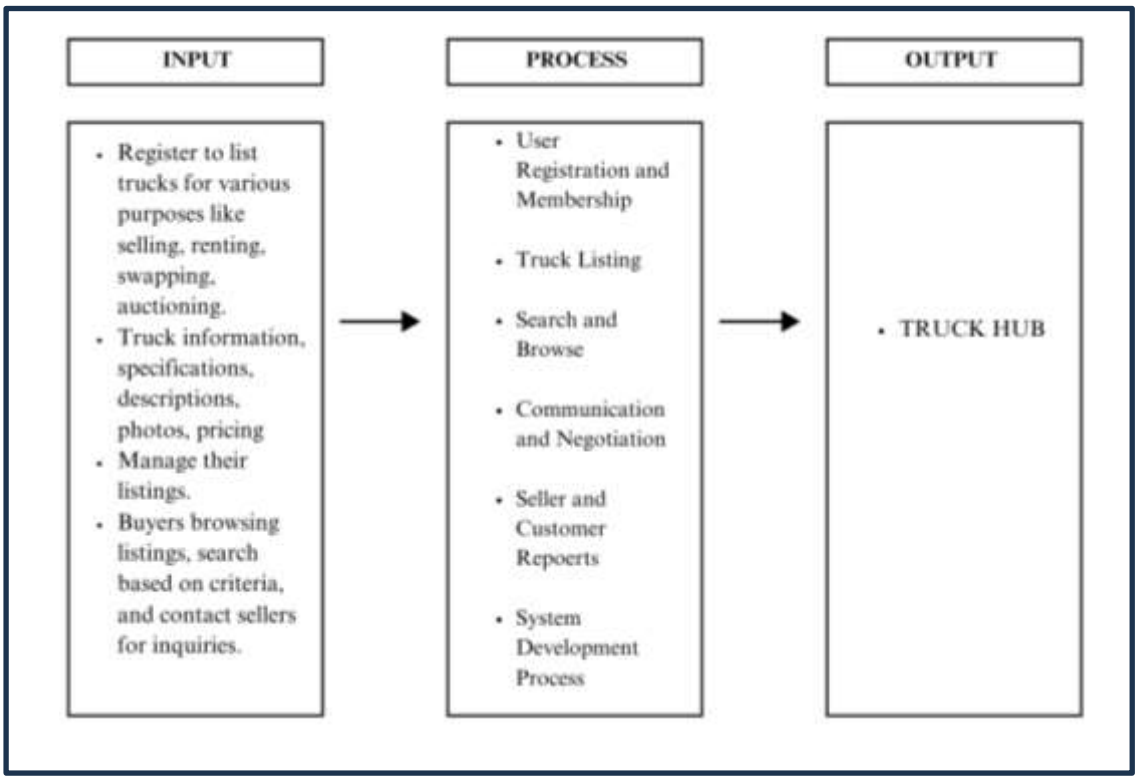


Figure 1.1 Conceptual Framework of the study

Figure 1.1 shows the TruckHub management system, outlining its inputs, processes, and outputs. Researchers gathered data and interviewed key personnel of truck businesses to understand the companies workflow to be developed.

Definition of Terms

The aim is to provide clear and concise explanations of the most important concepts, technical terms and special vocabulary used throughout the study. The purpose of this chapter is to improve reader understanding by establishing a common language and context, ensuring effective communication and interpretation of research objectives, methods and results.

Advertisement

Conceptually**,** defined as a promotional tool used to inform or persuade an audience about a product, service, or opportunity.

Operationally**,** defined as a promotional content created and displayed by users or businesses to showcase trucking-related products.

Application

Conceptually**,** defined as a software program designed to perform a specific task.

Operationally**,** defined as an online form on the TruckHub platform that truck businesses fill out to register for membership.

Browse

Conceptually**,** defined as to casually look through a collection of items

Operationally**,** defined as to use the TruckHub platform search function to view listings of trucks for sale or rent.

Customer

Conceptually**,** defined as a person who purchases goods or services for personal or business reasons.

Operationally**,** defined as a business entity or individual seeking to acquire a truck through selling and buying on the TruckHub platform.

Competitive

Conceptually**,** defined as a marked by the presence of competition.

Operationally**,** defined as refers to the pricing on the TruckHub platform where seller potentially compete for customer by offering lower prices

Components

Conceptually**,** defined as the individual parts that make up a whole

Operationally**,** defined as the individual features of the TruckHub platform like listings, search functions, and communication tools.

Criteria

Conceptually**,** defined as standards on which a judgment or decision is based

Operationally**,** defined as the search filters used on the TruckHub platform to narrow down truck listings

Develop

Conceptually**,** defined as to create or bring something into existence

Operationally**,** defined as to create and program the TruckHub web platform.

Email Notification

Conceptually, defined as a digital message sent to a user's email address.

Operationally: defined as to inform users about account activity, such as password resets, order confirmations, and important updates.

Fetch

Conceptually**,** defined as to retrieve data from a source

Operationally**,** defined as to retrieve data of truck listings and user information from the TruckHub platform database.

Financial Transaction

Conceptually**,** defined as an exchange of money or other assets between parties.

Operationally, defined as an involve payments for truck rentals, purchases, or membership fees.

Functionality

Conceptually**,** defined as the way something works or is designed to work

Operationally**,** defined as the way the TruckHub platform works, including features like listing creation, search, and communication.

Generate

Conceptually**,** defined as the idea of bringing something into existence

Operationally**,** defined as the act of creating something new within the TruckHub platform. This could encompass a variety of actions, depending on the user role.

Inquires

Conceptually**,** defined as a request for information

Operationally**,** defined as a message sent by potential customers or renters through the TruckHub platform to sellers.

Internet of Things (IoT)

Conceptually**,** defined as an interconnection of physical devices embedded with sensors, actuators, and network connectivity.

Operationally, defined as could potentially be used to track the real-time location and condition of trucks, enabling features like GPS tracking, remote diagnostics, and automated maintenance alerts.

Membership

Conceptually, defined as the state of belonging to a group

Operationally, defined as the status granted to truck businesses who register on the TruckHub platform.

Platform

Conceptually, defined as a base or foundation for something

Operationally, defined as the TruckHub website itself.

Register

Conceptually, defined as to sign up for something

Operationally, defined as to create an account on the TruckHub platform

Rent

Conceptually, defined as to pay to use something for a temporary period

Operationally, defined as to pay a temporary fee to use a truck listed on the TruckHub platform.

Reserve

Conceptually, defined as a minimum acceptable price set by a seller in a transaction

Operationally, defined as a minimum price set by a seller on the TruckHub platform that must be met or exceeded during a selling session.

Secure

Conceptually, defined as protected from unauthorized access or damage

Operationally, defined as refers to the security features of the TruckHub platform that protect user data and transactions.

Seller

Conceptually**,** defined as a individual or entity that offers any product, service, or financial asset for purchase.

Operationally**,** defined as a business entity or individual who owns a truck and wishes to sell it or rent it out it off on the TruckHub platform.

Tailored

Conceptually**,** defined as designed to fit a specific purpose or situation

Operationally**,** defined as how the TruckHub platform can be used to find trucks that meet specific needs based on search criteria.

Timeframe

Conceptually**,** defined as a specific period of time

Operationally**,** defined as the duration for which a truck can be rented on the TruckHub platform.

Web platform

Conceptually**,** defined as a software application accessible through a web browser

Operationally**,** defined as the TruckHub website application accessible through a web browser.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

This chapter contains a review of related literature and related studies that contains relevant information related to the current study, which is the development of Collaboration which served as the researchers guide to the development of the system. The related literature presented in this section provided answers to some underlying questions to support the system and the study.

Foreign Related Literature

The literature cited in this chapter tackle the different concept, understanding, and ideas, generalization or conclusions and different development related to study of the truck ecommerce system from the year 2020 up to present and this will serve as the researchers guide in developing the Web Platform. Those that were also included in this chapter helps in familiarizing information that are relevant and like the present study.

User Experience and Design in Online Truck Platforms

According to Smith, A., & Brown, J. (2022), This literature focuses on the importance of user experience (UX) design in online platforms for truck sales and rentals. It provides a detailed analysis of the design elements that contribute to a positive user experience, such as intuitive navigation, responsive design, and comprehensive search functionalities.

Digital Transformation in the Trucking Industry: A Case Study

According to Kumar, N., & Sharma, V. (2020), This literature examines how digital platforms have transformed the trucking industry. It highlights the growing importance of online platforms in streamlining operations such as truck sales, rentals, and auctions. The research emphasizes that digital platforms can significantly reduce transaction costs, increase transparency, and improve market reach for sellers and buyers.

Local Related Literature

The literature and studies cited in this chapter delve into various concepts, understandings, ideas, generalizations, and developments related to the study of business-to-business truck companies. From local Filipino authors perspectives from the year 2020 up to the present, these sources serve as a valuable guide for the thesis project.

E-commerce Trends in the Philippines

From the findings of Marilou Reyes, M. T., & Santos, L. J. (2020), This literature explores the rapid growth of e-commerce in the Philippines, highlighting both opportunities and challenges. It identifies key drivers of e-commerce adoption such as increasing internet penetration, mobile phone usage, and a growing middle class. However, it also points out challenges like logistics infrastructure and trust issues in online transactions.

The findings emphasize the potential for an online platform like Truck Hub to thrive in the Philippine market while also pointing out logistical challenges that need to be addressed.

User Perception of Online Vehicle Marketplaces

Based upon Mendoza, J. P., & Cruz, F. A. (2022), This literature investigates how Filipino users perceive online vehicle marketplaces, focusing on factors such as trust, ease of use, and satisfaction. It finds that while there is a growing acceptance of online transactions, concerns about security and fraud remain significant. Understanding user perception and trust issues is crucial for developing a secure and user-friendly platform like Truck Hub. Implementing robust security measures and user verification can help mitigate these concerns.

Synthesis on Foreign and Local Literature

The foreign-related literature emphasizes the significance of user experience (UX) design and digital transformation in the trucking industry. Smith and Brown (2022) highlight the importance of intuitive navigation, responsive design, and comprehensive search functionalities in online truck platforms, all of which are crucial elements for Truck Hub's success. Similarly, Kumar and Sharma (2020) underscore how digital platforms have revolutionized truck-related operations, offering opportunities to streamline transactions, reduce costs, and enhance transparency. These insights suggest that Truck Hub must prioritize user-friendly design and leverage digital advancements to optimize its functionalities for sellers and buyers.

In the local context, Reyes and Santos (2020) discuss the rapid growth of e-commerce in the Philippines, indicating favorable conditions for platforms like Truck Hub. However, challenges such as logistics infrastructure and trust issues need to be addressed to ensure its success. Furthermore, Mendoza and Cruz's (2022) study reveal Filipino users perceptions of online vehicle marketplaces, emphasizing the importance of trust and security.

Putting these findings together, it's clear that Truck Hub needs to focus on making its design user-friendly to make it easier for people to use and ensure they have a good experience. It's also important for Truck Hub to use new technology and deal with local problems like how goods are moved around and making sure people trust the platform. Truck Hub aims to be a reliable and user-friendly platform for truck-related

transactions, ensuring safety and building trust. Whether buying, renting, swapping, or auctioning trucks, it caters to the needs of both sellers and buyers.

Foreign Related Studies

The foreign related studies that are presented in this section reinforces the main idea behind the development of the system, as well as to give us a view on what to expect while developing such a system.

Online Marketplaces for Vehicle Trading: A Review

According to Smith, J., & Johnson, A. (2020), This study examines various online marketplaces for vehicle trading, including trucks. It delves into the features, functionalities, and effectiveness of existing platforms in facilitating buying, selling, rental, swapping, and auctioning of vehicles. Analyzing user experiences and platform interfaces can provide valuable insights for the design and development of Truck Hub.

This study provides insights into the features and functionalities of existing online marketplaces for vehicle trading, including trucks in Bacolod City.

Trust and Reputation Systems in Online Vehicle Trading Platforms

According to Kim, S., & Park, H. (2020), This research investigates the role of trust and reputation systems in enhancing user trust and confidence in online vehicle trading platforms. It analyzes the mechanisms used to evaluate and display user ratings, reviews, and transaction histories. Implementing robust trust and reputation systems within Truck Hub can foster a secure and transparent environment for buyers, sellers, and renters.

This research examines the role of trust and reputation systems in enhancing user trust and confidence in online truck trading platforms. With Truck Hub users can foster a secure and transparent environment for buyers, sellers, and renters, thereby increasing user engagements on the platform.

Local Related Studies

The local related studies in this section are published books that are reviewed by academic institutions and peers of the authors that have been selected by the researchers for assistance in the development of the system.

Challenges and Opportunities for Online Vehicle Trading Platforms in the Philippines

Based upon Cruz, A., & Garcia, J. (2020), This research investigates the challenges and opportunities faced by online vehicle trading platforms in the Philippines. Examining local market dynamics, regulatory frameworks, and consumer preferences can help Truck Hub anticipate and address potential obstacles while leveraging untapped opportunities for growth and market penetration in the Philippine context.

E-commerce Adoption and Trends in the Philippines: Implications for the Automotive Industry

According to Santos, M., & Reyes, L. (2021), This study explores the adoption of e-commerce in the Philippines, including its impact on the automotive industry. Understanding local e-commerce trends and consumer behavior can provide valuable insights for the development and marketing strategy of Truck Hub, ensuring it meets

the specific needs and preferences of Filipino truck buyers, sellers, renters, and swappers.

Synthesis on Foreign and Local Studies

The foreign studies showed positive impact on the existing online marketplaces for vehicle trading, emphasizing their features and functionalities. These studies examine various platforms, including those relevant to truck trading, providing valuable insights into user experiences and interface design considerations. Similarly, Kim and Park's research underscores the significance of robust trust and reputation mechanisms, which aligns with the goal of Truck Hub to create a secure and transparent environment for all stakeholders.

On the local studies, it delves into the unique challenges and opportunities faced by online vehicle trading platforms in the Philippines, offering invaluable insights into local market dynamics and regulatory frameworks. Meanwhile, Santos and Reyes explore the broader landscape of e-commerce adoption in the Philippines and its implications for the automotive industry, highlighting the need for Truck Hub to tailor its strategies to align with Filipino consumer preferences and behavior.

The perception of these studies provides a solid foundation for the development of Truck Hub, offering guidance on platform features, trust mechanisms, market dynamics, and consumer preferences essential for its success in both local and foreign contexts.

CHAPTER III
SYSTEM DOCUMENTATION

The chapter is about the technicality of the system, the details of technology used and how the project works. This will show the development side of the system and the specifications.

SOFTWARE SPECIFICATIONS

The software used to develop the application are following:

Software	Details	Description
Windows 11	Version 10.0.22631 Build 22631	Windows 11, version 22H2 is a feature update for Windows 11. It includes all features and fixes in previous cumulative updates to Windows 11, version 21H2, the original Windows 11 release version.
Figma	Version 114.4.0	Figma is a vector graphics editor and prototyping tool which is primarily web-based with additional offline features enabled by desktop applications for MacOS and Windows.
Visual Studio Code	Version 1.89.1	Visual Studio Code is a lightweight yet powerful sourcecode editor compatible with Windows, macOS, and Linux.
Xampp	ApacheFriends XAMPP Version 8.2.4.	XAMPP is a free and open-source cross platform web server solution stack package. It is developed by Apache Friends and consists mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.
Microsoft Edge	Version 122.0.2365.80 (Official build) (64-bit)	

Table 3.1 Software Specification

The researchers used the following Hardware Specification to develop the application:

HARDWARE SPECIFICATIONS

Hardware	Specifications	Description
Processor	11th Gen Intel(R) Core (TM) i5-11400H @ 2.70GHz, 2688 Mhz, 6 Core(s), 12 Logical Processor(s)	A central processing unit, often known as a central processor, is the electrical circuitry that processes computer program instructions.
Storage	500GB Hard Disk Drive	Storage holds your apps, operating system, and files.
RAM	24.00 GB	RAM is a computer's short-term memory that it employs to manage all ongoing processes and applications.

Table 3.2 Hardware Specifications

PEOPLEWARE SPECIFICATIONS

Peopleware refers to anything that has to do with the role of the development of the system or use of computer software and hardware. People-ware includes people, groups of people, project teams, business, developers, and end-users.

People-ware	Description
Administrator	The administrator is the one who would be in charge of the system with access to any and all permissions.
Truck Companies	The Truck Companies is the one who create truck listings with specifications, photos, descriptions, and prices. Can subscribe to monthly membership plans for different listing limits.
Buyers	The Buyers is the one who can leverage TruckHub's search tools to find suitable trucks and contact sellers or owners directly through the platform to finalize rentals or purchases.

Table 3.3 Peopleware Specification

Testing Plan

This section provides an overview of a thorough testing strategy to guarantee the system's stability and quality. Functional, acceptance, and performance testing are all part of the process, which analyzes the system from several perspectives. The researchers hope to find and fix possible problems early on by fully testing the project with these methods, making sure the system satisfies every requirement and functions effectively in different scenarios.

Functionality Testing

To ensure the application system operates as it performs as intended, functionality testing is used. To test functionality, the researchers will review the query, text outputs, and core functions reactions as well as the functionality of the pages. It will ensure that the system continues to be operating after being uploaded to a live host.

Functions	**Features**	**Descriptions**
1	User Module	The user is the one who will be using the TruckHub system. There are two types of users: sellers who can register on TruckHub to sell and rent out truck-related products, and customers who can buy or rent trucks and related products.
2	Subscription Module	This module manages user subscriptions within TruckHub, ensuring access to premium features and services for sellers only.
3	Appointment Module	This module allows users to schedule appointments for truck rentals, purchases, or maintenance within the TruckHub system. Appointments can be made by sellers and will appear to the customers dashboard.
4	Transaction Module	This module handles all financial transactions in TruckHub, ensuring secure payments for subscriptions.
5	Reports Module	This module provides analytics and insights into TruckHub's operations, including sellers and customers activity, total revenue (For admin), and trend analysis for types of trucks to identify what is the most bought truck products. For sellers report module it displays all the total

		truck products, recent transactions with customers, sold trucks, and customers reviews

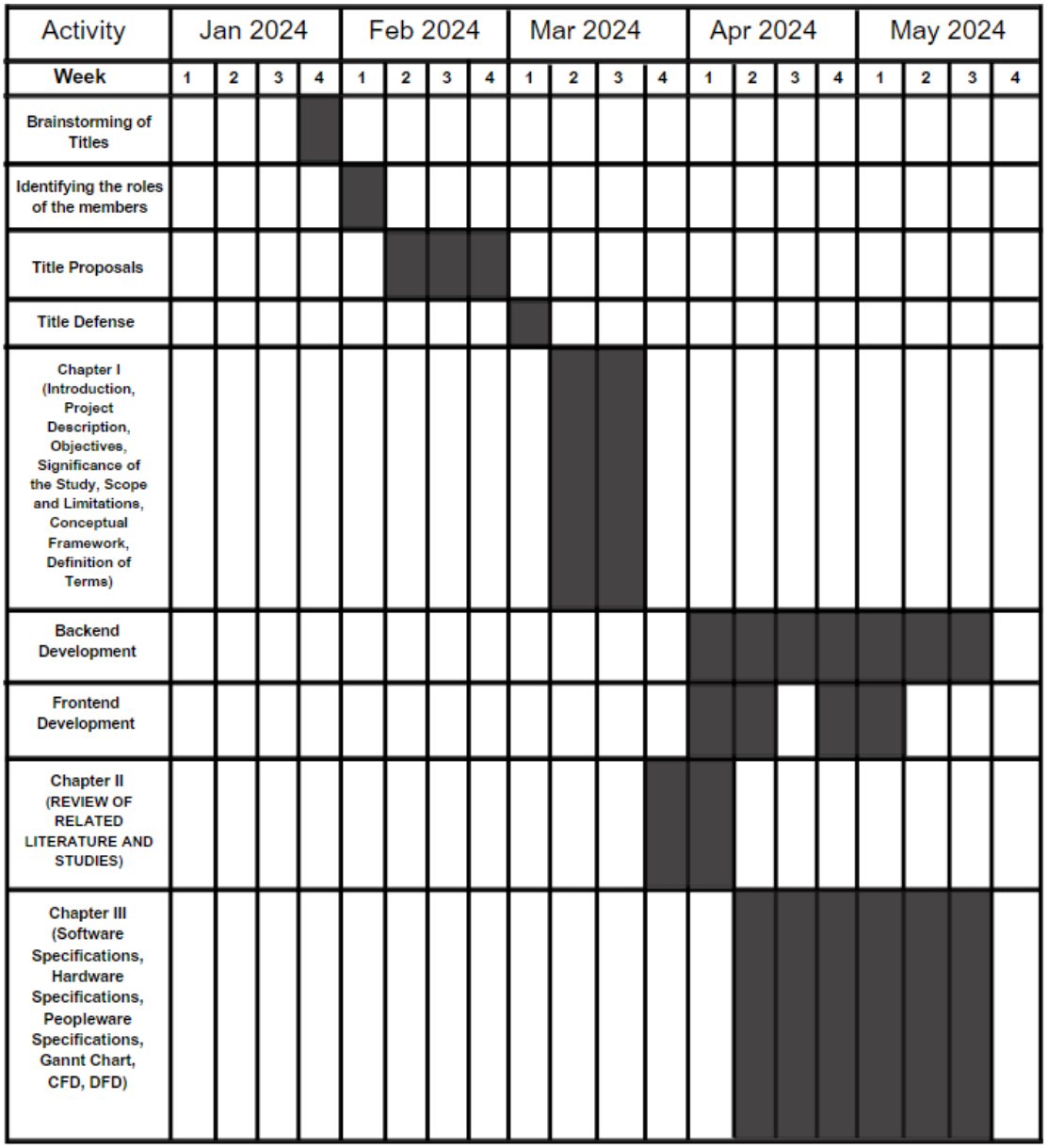
Table 3.4 Functionality Features.

Acceptance Testing

Acceptance testing is crucial to the development of applications because it guarantees that a product fulfills user expectations. It entails writing formal descriptions that show how the software is supposed to function.. These tests often function as the primary functional specification because they provide a user-focused description of the system's functionalities. Depending on the development process being used, acceptance testing may have different roles. Acceptance tests may function as additional layers to current specifications derived from narrative documents or use cases in less agile environments, or they may serve as the primary official documentation of business requirements in agile methodologies. In order to bridge the gap between technical development and user requirements, acceptance testing is still an essential step, regardless of the methodology employed

Gannt Chart

This Gannt chart outlines the development timeline for TruckHub, a web platform facilitating truck buying, selling and renting. The chart visually represents the project phases tasks, and their estimated durations. It severs as a roadmap to monitor progress, identify dependencies, and ensure timely completion of the project.



Activity	June 2024				July 2024				Aug 2024				Sept 2024				Oct 2024			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Revisions of Chapter I (Introduction, Project Description, Objectives, Significance of the Study, Scope and Limitations, Conceptual Framework, Definition of Terms)																				
Backend Development																				
Frontend Development																				
Revisions of Chapter III (Software Specifications, Hardware Specifications, Peopleware Specifications, Gannt Chart, CFD, DFD)																				
Revisions of Chapter IV (Software Specifications, Hardware Specifications, Peopleware Specifications, Gannt Chart, CFD, DFD)																				

Table 3.6 Gantt Chart.

Table 3.6 shows the progress of development of the system and documents from June to October 2024

Activity	Nov 2024				Dec 2024				Jan 2024				Feb 2025				Mar 2025			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Backend Development																				
Frontend Development																				
Revisions of Chapter I (Introduction, Project Description, Objectives, Significance of the Study, Scope and Limitations, Conceptual Framework, Definition of Terms)																				
Revisions of Chapter II (REVIEW OF RELATED LITERATURE AND STUDIES)																				
Revisions of Chapter III (Software Specifications, Hardware Specifications, Peopleware Specifications, Gannt Chart, CFD, DFD)																				
Revisions of Chapter IV (Software Specifications, Hardware Specifications, Peopleware Specifications, Gannt Chart, CFD, DFD)																				
Revisions of Chapter V & VI (PRESENTATION , ANALYSIS, AND INTERPRETATIO N OF DATA, SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATI ONS)																				

Table 3.7 Gantt Chart

Table 3.7 shows the progress of development of the system and documents from November 2024 to March 2025.

CHAPTER IV

RESEARCH METHODOLOGY

This chapter presents the research methodology employed in the development of TruckHub, a Business-to-Business (B2B) web platform for truck companies. It details the systematic approaches, procedures, and techniques applied throughout the study to ensure the successful creation of a user-friendly and functional online platform.

Research Method

The research used a quantitative approach to gather data from the platform's target customer base, focusing on truck buyers, sellers, and renters. To collect this data, printed questionnaires were distributed to potential users, aiming to understand their needs, preferences, and expectations from an online truck marketplace.

Interviews were also conducted with a select group of truck industry including fleet managers, to gather qualitative insights. These interviews provided valuable perspectives on current online truck selling platform such as facebook, and discussed essential requirements, helping to refine the platform's offerings to better meet industry needs.

In developing the system, the developmental method followed an iterative process, incorporating prototyping and user feedback to refine functionalities. The researchers utilized agile development principles, ensuring continuous testing and improvements based on real-world requirements. This method enabled the system to evolve through multiple iterations, addressing user needs while maintaining flexibility in design and implementation. The researchers recognized the need for a structured approach to ensure the successful development of their web-based system. This section details the chosen system development life cycle (SDLC) methodology: the Iterative Model as shown in Figure 4.1 below. The Iterative (SDLC) is a well-established approach to software development that emphasizes incremental progress and continuous feedback throughout the development process. In this methodology development begins with a simple implementation of a subset of software requirements, which is then refined through repeated cycles or iterations. Each iteration involves planning, design, coding, and testing, resulting in a working product that incorporates improvements based on user feedback and testing results. This flexibility allows developers to respond quickly to changing requirements and stakeholder input, making it particularly effective for projects where needs may evolve. Furthermore, the Iterative Model facilitates risk management by identifying potential issues early in the development cycle, thereby reducing the likelihood of costly errors later on. Overall, this approach fosters an

environment of continuous improvement and collaboration, ensuring that the web-based system effectively meets user expectations and requirements.

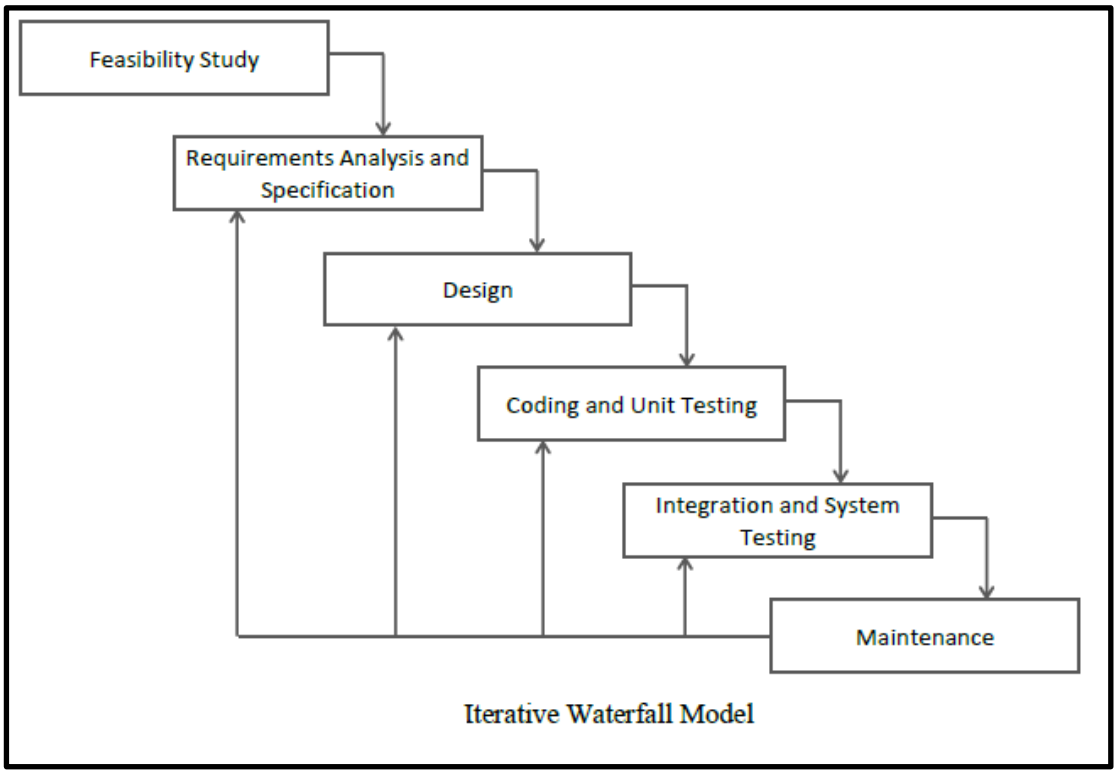


Figure 4.1 Iterative Waterfall Model.

Data Gathering Procedure

The TruckHub project aims to create an online platform that connects truck buyers, sellers, and rental companies in Bacolod, Western Visayas. To support this, we are gathering insights and feedback using survey forms to truck sellers and potential buyers. The information will help us understand market needs and improve the platform. This participation is important, and all data will be kept confidential and used only for this project.

Data Gathering Instrument

This research uses a quantitative approach, focusing on gathering measurable data and conducting statistical analysis to address the research objectives. To achieve this, a survey questionnaire was employed as the primary data gathering instrument, ensuring a structured method for collecting numerical data from respondents.

A predefined rating scale was used in the survey to ensure consistency in interpreting responses from truck sellers and buyers. This scale helps measure their satisfaction with various features of the platform, such as usability, accessibility, and overall effectiveness.

Functionality Testing

Functionality testing was conducted using localhost to verify that the TruckHub platform operates according to specified requirements. This included testing various features such as user registration, product listings, search capabilities, and transaction processes. The goal was to ensure that all functions performed correctly and provided a seamless user experience.

Performance Testing

Performance testing was also implemented to evaluate the responsiveness, speed, and stability of the TruckHub platform under different conditions. This testing aimed to identify how the platform performs under various loads, ensuring it can handle multiple users simultaneously without compromising on speed or functionality. Key performance indicators were monitored to assess the overall efficiency of the platform.

Usability Testing

Usability testing assessed the TruckHub platform’s ease of use, accessibility, and efficiency across key modules. Participants, including sellers and buyers, completed tasks such as registration, subscriptions, appointments, transactions, and report access. Feedback was gathered using a predefined rating scale, confirming that all modules functioned as intended. The results highlighted a seamless user experience while identifying areas for improvement in navigation and interface clarity. These insights help refine TruckHub’s design to enhance usability for all users.

Acceptance Testing

Acceptance testing is a type of software testing that involves evaluating a system or software application to determine whether it meets the specified requirements and is acceptable for delivery to the end user or customer. It is conducted to ensure that the system functions as intended and satisfies the needs of the beneficiary

Respondents of the Study

Respondents The respondents of the study are truck companies and potential truck buyers from Bacolod in Bacolod City, Negros Occidental

Respondents	Numbers
Truck Companies	10
Potential Truck Buyers	30
Total	40

Table 4.1 Number of Survey Respondents.

Organizational Chart

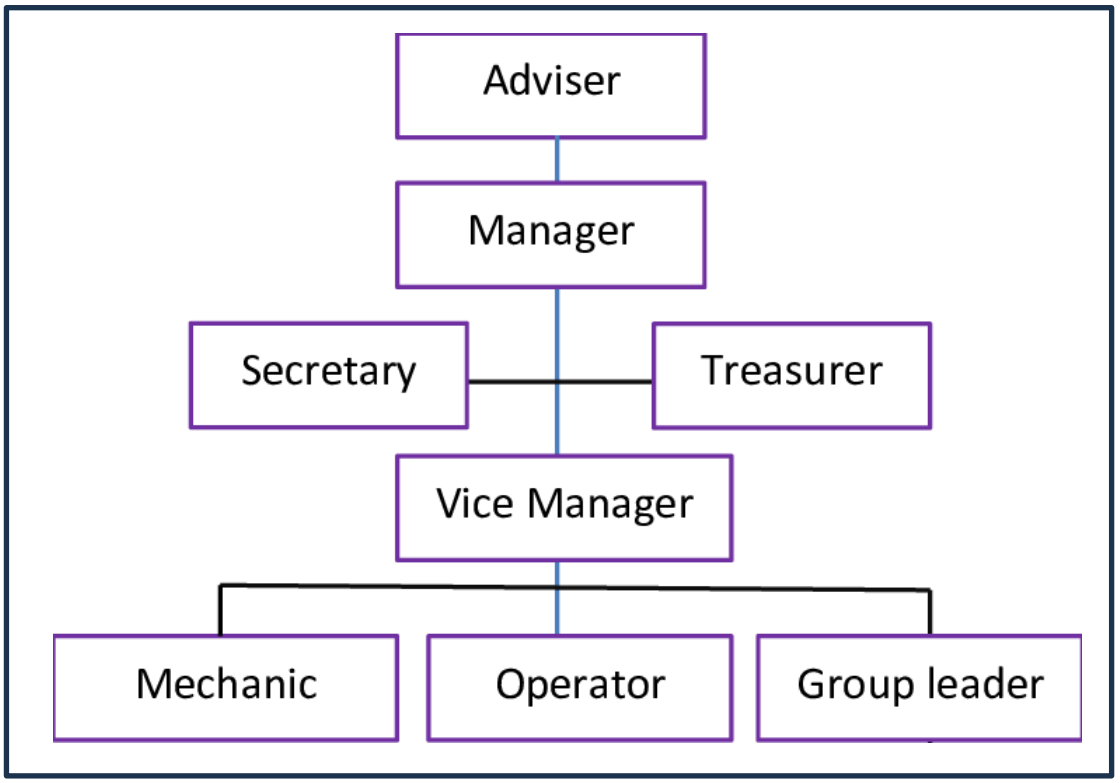


Figure 4.2 Organizational chart

Figure 4.2 shows the chart for the truck company officials showing the hierarchy and positions.

Work Breakdown Structure

Table 4.3 shows the Work Breakdown Structure

Chapter I - Introduction	**Group Members**
Introduction	Pacaña,Malanday
Project Description	Pacaña, Malanday
Statement of Objectives	Pacaña, Malanday
Significance of the Study	Pacaña, Malanday
Scope and Limitations of the Study	Pacaña, Malanday
Definition of Terms	Pacaña, Malanday
Conceptual Framework	Pacaña, Malanday
Chapter II – Review of Related Literature and Studies	
Related Foreign Literature	Pacaña, Malanday
Related Local Literature	Pacaña, Malanday
Synthesis of Local and Foreign Literature	Pacaña, Malanday
Related Foreign Studies	Pacaña, Malanday
Related Local Studies	Pacaña, Malanday
Synthesis on Local and Foreign Studies	Pacaña, Malanday

Chapter III - Technical Background	
Software Specification	Pacaña, Malanday
Hardware Specification	Pacaña, Malanday
Peopleware Specification	Pacaña, Malanday
Program Specification	Pacaña, Malanday
Chapter IV - Research Methodology	
Research Method	Pacaña, Malanday
Data Gathering Procedure	Pacaña, Malanday
Data Gathering Instrument	Pacaña, Malanday
Gantt Chart	Pacaña, Malanday
Cost Benefit Analysis	Pacaña, Malanday
Payback Analysis	Pacaña, Malanday
Context Diagram	Pacaña, Malanday
Data Flow Diagram	Pacaña, Malanday
Decomposition Chart	Pacaña, Malanday

Chapter V - Presentation, Analysis, and Interpretation of Data	
Tables and Charts	Pacaña, Malanday
Chapter VI – Summary of Findings, Conclusion, and Recommendations	
System Development	Pacaña, Malanday

Table 4.2 Work Breakdown Structure.

Table 4.2 shows how development and documentation are distributed between the two researchers.

Cost Benefit Analysis

TruckHub Proposed Budget

Developmental Cost	
System Analyst (150hours@550/hour)	₱ 75,500.00
Programmer (400 hours at ₱200.00/hour)	₱ 80,000.00
Electricity Bill	₱ 8,000.00
Printing of Documents	₱ 5,000.00
Other Expenses	₱ 7,000.00
TOTAL DEVELOPMENTAL COST	**₱ 175,500.00**
Annual Operating Cost	
System Analyst (maintenance) (50hours/year@550/hour)	₱ 21,500.00
Programmers (maintenance) (40hours/year@400/hour)	₱ 15,000.00
Electricity	₱ 7,000.00
Other Expenses	₱ 5,000.00
TOTAL ANNUAL OPERATING COST	**₱ 48,500.00**
SYSYEM TOTAL COST	**₱ 224,000.00**

Table 4.3 Cost Benefit Analysis.

Table 4.3 shows the total developmental cost and annual operating cost of TruckHub proposed budget.

PAYBACK PERIOD ANALYSIS

The payback period can be determined mathematically using payback analysis. The payback period is the length of time needed to use the net income produced by the project or asset to repay the investment.

Cash Flow Description	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Analysis, Design & Implementation	-175,500						
Operating and Maintenance		-48,500	-50,500	-52,500	-54,500	-56,500	-58,500
Discount Factor (11%)	1.00	0.901	0.812	0.731	0.659	0.593	0.535
Time Adjusted Cost (adjusted to pres. Value)	-175,500	-43,694	-40,987	-38,388	-35,901	-33,530	-31,276
Cumulative time-adjusted cost over lifetime	-175,500	-219,194	-260,181	-298,568	-334,469	-377,999	-399,276
Benefits from operation of the system	0	100,000	108,150	130,000	158,000	165,500	188,000
Discounted Factor of 10%	1.00	0.901	0.812	0.731	0.659	0.593	0.535
Time-adjusted benefits (present value)	0	90,000	88,061	95,055	104,079	98,216	100,512
Cumulative time-adjusted timeline benefits	0	90,000	178,151	273,206	377,285	475,502	576,014
Cumulative lifetime time adjusted cost + ben.	-175,500	-129,104	-82,030	-25,362	42,816	107,503	176,739

Table 4.4 Payback Period Analysis.

Table 4.4 shows the where that the investment would be paid back in the 4th year.

Context Flow Diagram of TruckHub

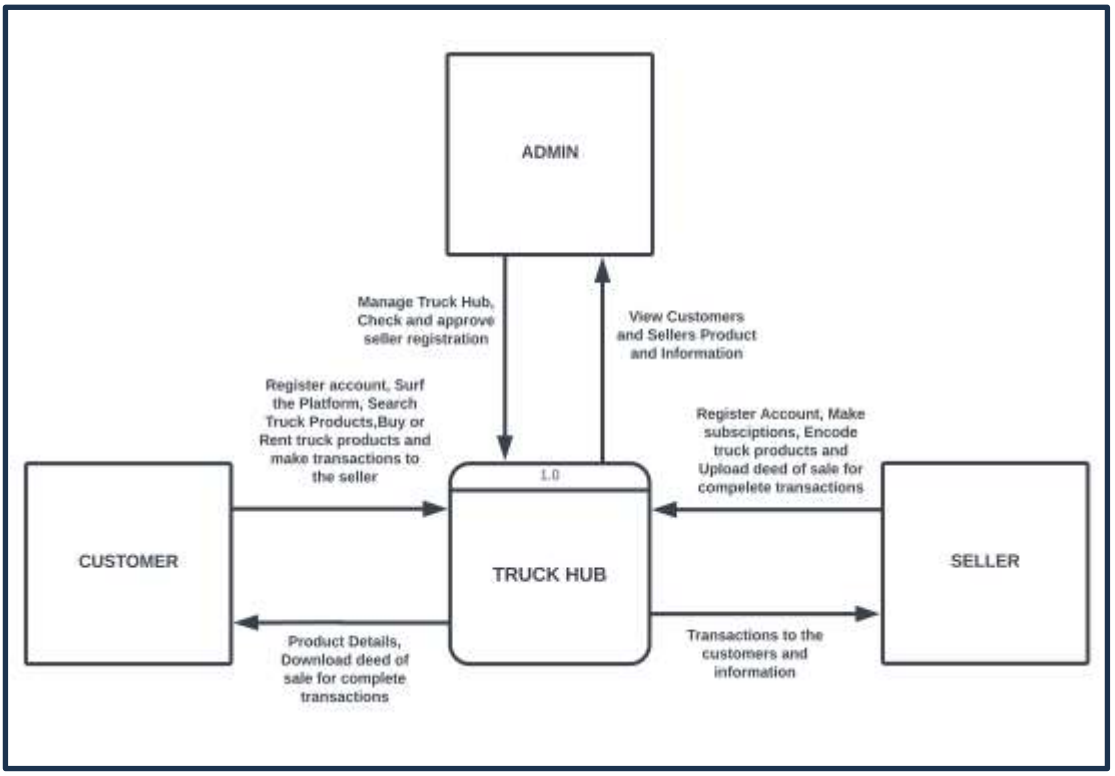


Figure 4.3 Context Flow Diagram.

Figure 4.3 shows the entities that can use the system. It also shows what data is needed and flowing between entities and the system.

Data Flow Diagram for Sellers

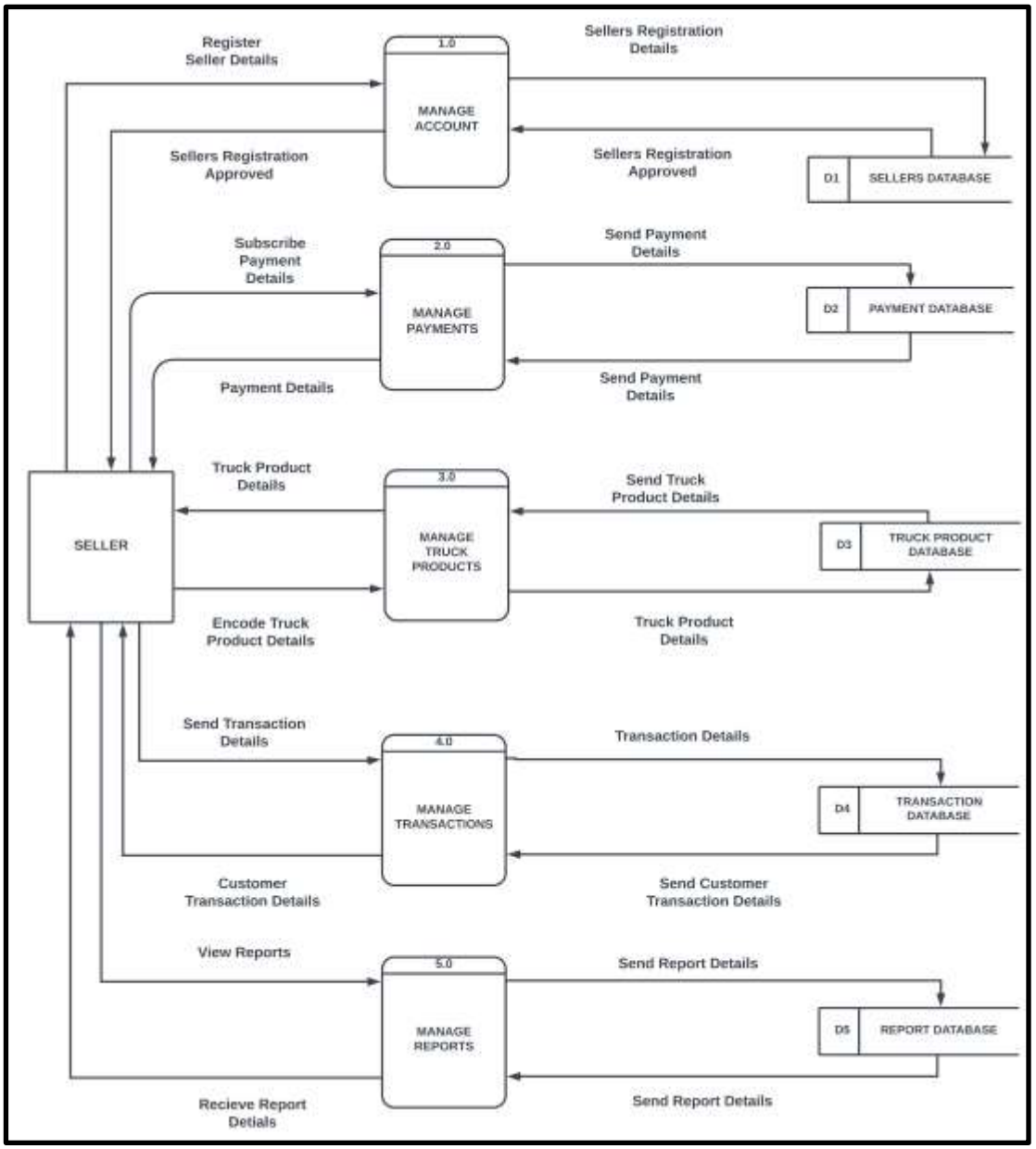


Figure 4.4 Data Flow Diagram of the Sellers

Figure 4.4 shows the Seller functionalities and where the data are stored. Also shows the process and responses of the requests.

Data Flow Diagram for Customers

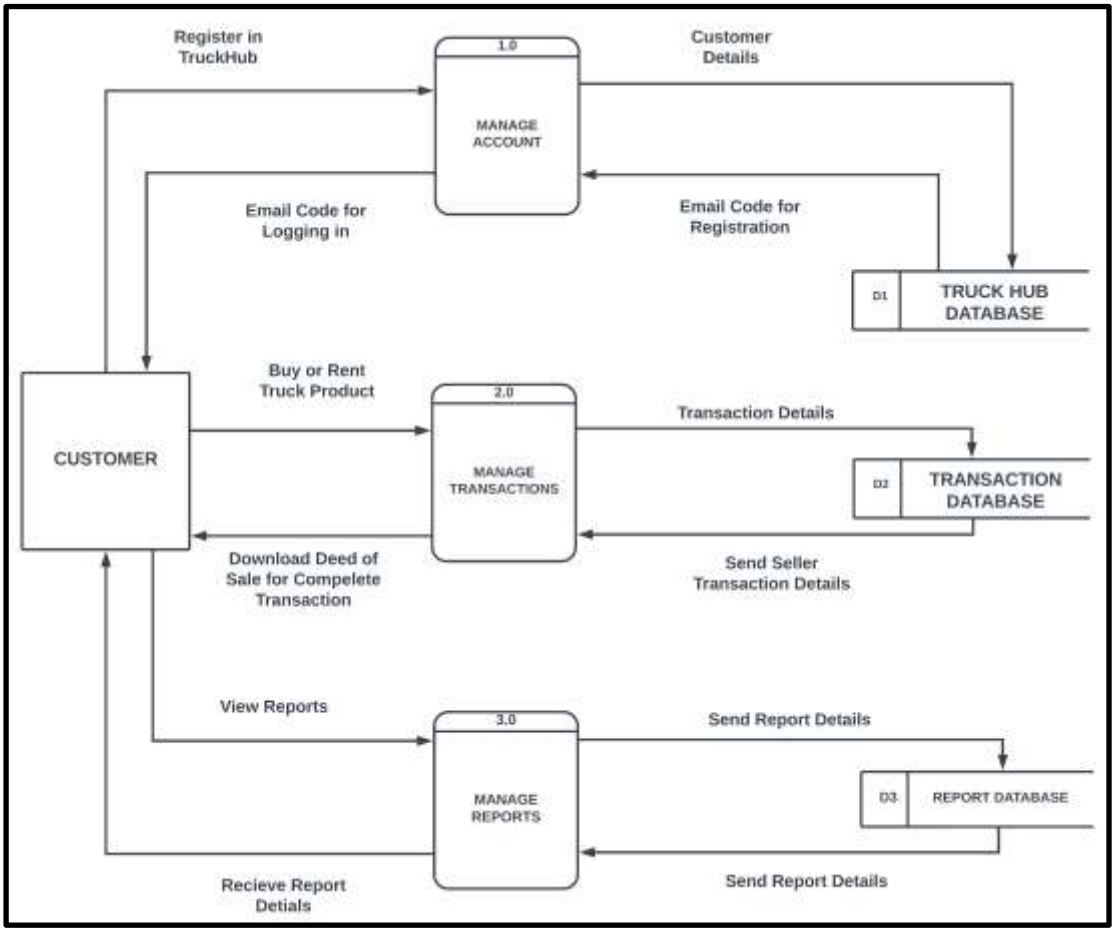


Figure 4.5 Data Flow Diagram of the Customers

Figure 4.5 shows the Customers functionalities and where the data are stored. Also shows the requests and responses of the requests

Data Flow Diagram for Admin

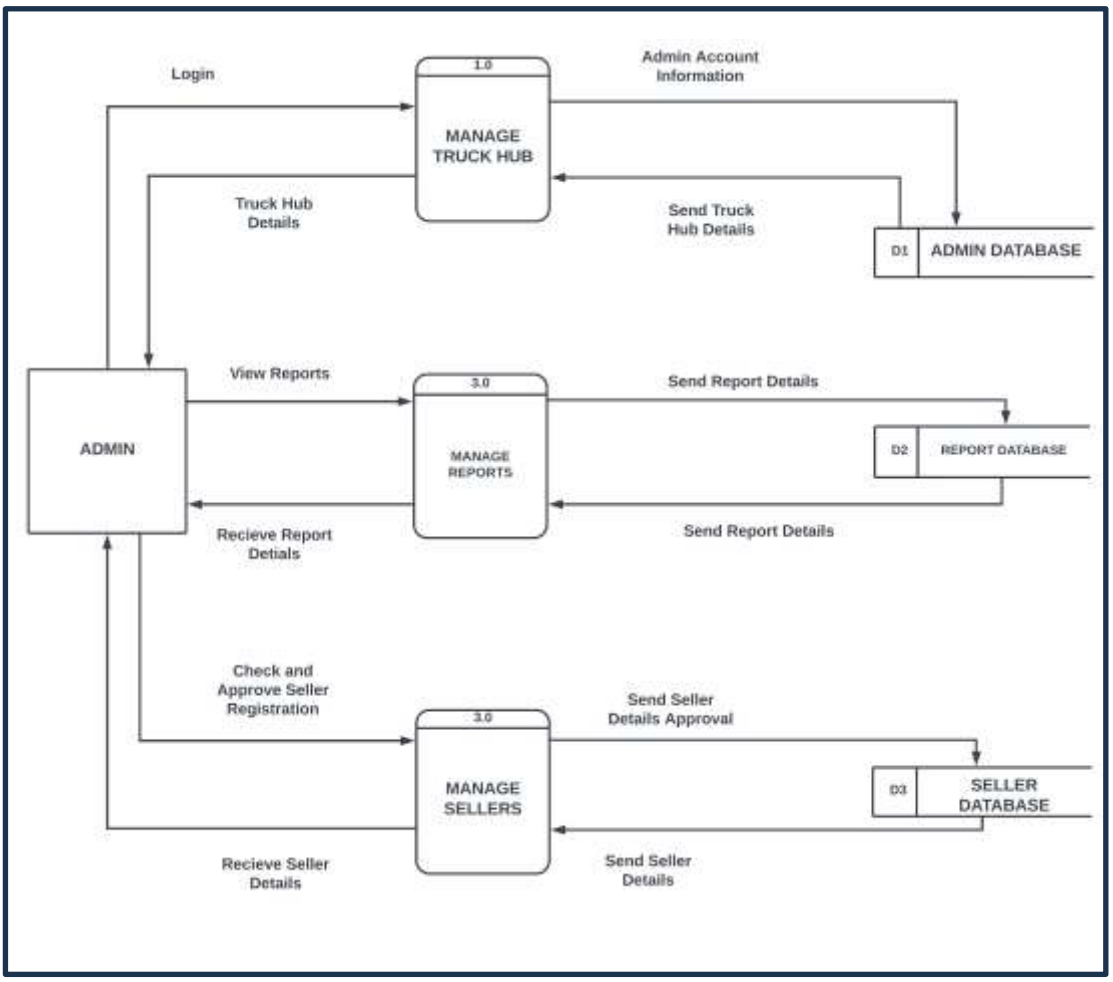


Figure 4.6 Data Flow Diagram of the Admin

Figure 4.6 shows the admin functionalities and where the data are stored. Also shows the requests and responses of the requests

Decomposition Chart

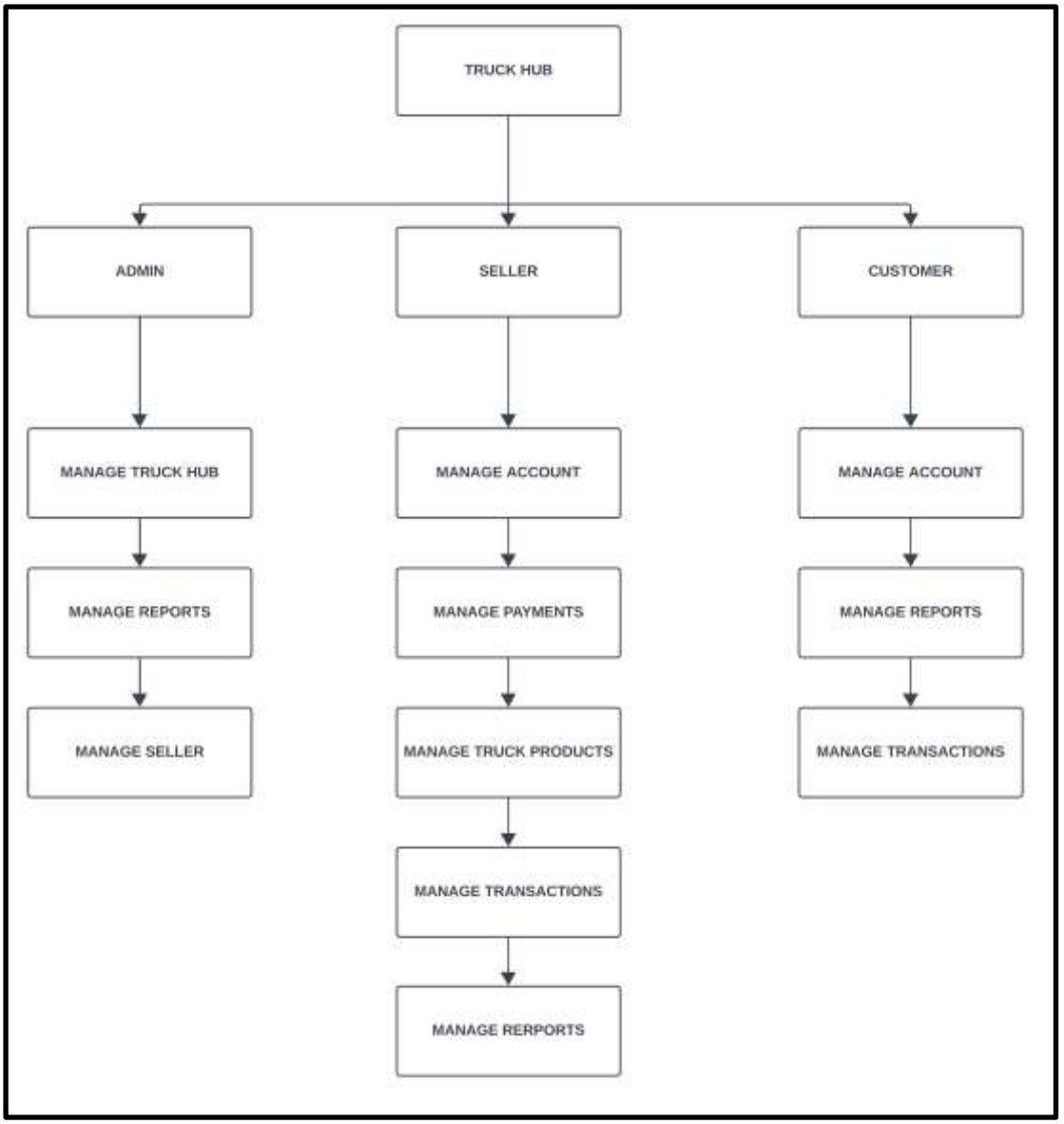


Figure 4.7 shows the Decomposition Chart

Figure 4.7 illustrates the decomposition chart, breaking down the system into its main components and subcomponents to show the hierarchy and flow of processes

Entity Relationship Diagram

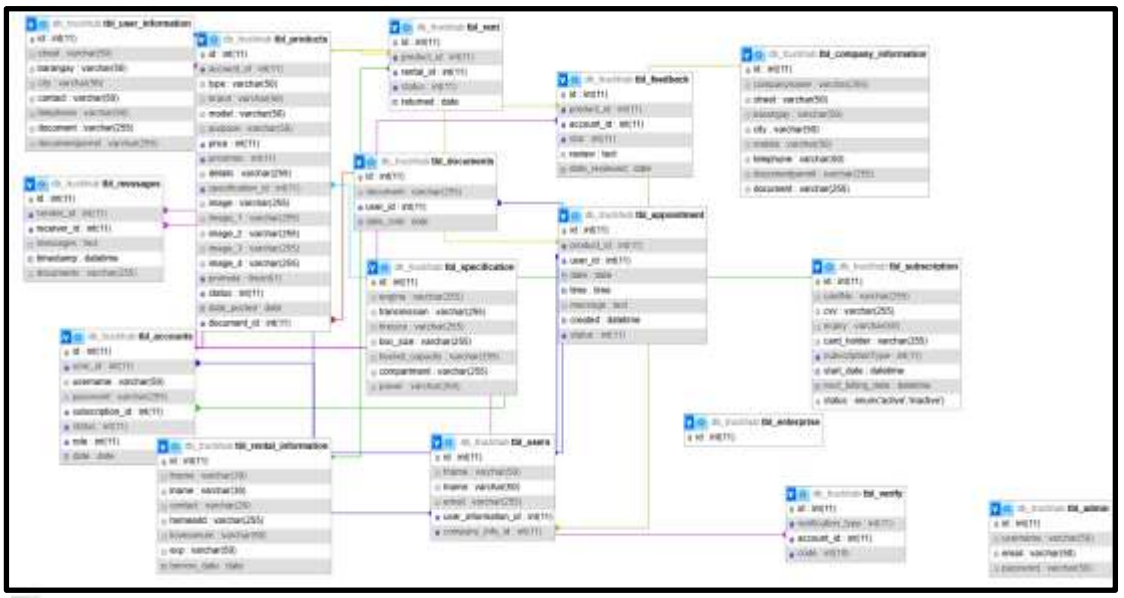


Figure 4.8 shows the Decomposition Chart

Figure 4.8 shows the relationships between each table, with users table and products table acting as central reference points for multiple tables. The only table without a direct relationship is admin table, which is used for administrative roles.

Data Dictionary

Field	Type	Null	Default	Extra	Notes
id	Index(11)	no	Uuid()		Primary key
user_id	Foreign key	no			
username	string	no			
password	string	no			
Subscription_id	Foreign key	yes	null		
status	Index(11)	no	1	1 if on hold 2 if approved 3 if declined	
role	Index(11)	no	1 || 2		

Table 4.5 Accounts Table

Table 4.5 shows the Accounts table, managing user authentication, subscriptions, and roles, with id as the primary key and user id and subscription id as foreign keys to track user status and access levels.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key
fname	string	no			
lname	string	no			
email	string	no			
user_information_id	Foreign key	yes			
company_information_id	Index(11)	yes			

Table 4.6 Users Table

Table 4.6 shows the Users table, storing user details with id as the primary key, and user information id and company information id as foreign keys linking to additional user and company data.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key

street	string	no			
barangay	string	no			
city	string	no			
contact	string	no			
telephone	string	no			

Table 4.7 Users Information Table

Table 4.7 shows the User Information table, storing user address and contact details, with id as the primary key and fields for street, barangay, city, contact, and telephone information.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key
companyname	string	no			
street	string	no			
barangay	string	no			
city	string	no			
contact	string	no			
telephone	string	no			
documentpermit	img	no			
document	img	no			

Table 4.8 Company Information Table

Table 4.8 shows the Company Information table, storing company details with id as the primary key, including fields for name, address, contact information, and required document permits.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key
accountid	Foreign key (11)	no			
type	string	no			
brand	string	no			
model	string	no			
purpose	string	no			
price	string	no			
details	string	no			
image	img	no			
image_1	img	no			
image_2	img	no			
image_3	img	no			
image_4	img	no			
promote	bool	no	0		

Table 4.9 Product Information Table

Table 4.9 shows the Product Information table, storing product details with id as the primary key and account id as a foreign key, including fields for type, brand, model, purpose, price, description, multiple images, and a promotion status indicator.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key
product_id	Foreign key (11)	no			
rental_id	Foreign key (11)	no			
status	string	no			

Table 4.10 Rental Information Table

Table 4.10 shows the Rental Information table, storing rental transaction details with id as the primary key and product id and rental id as foreign keys, including a status field to track the rental process.

Field	Type	Null	Default	Extra	Notes
id	index(11)	no	Uuid()		Primary key
fname	string	no			
lname	string	no			
contact	string	no			
homeadd	string	no			
licensenum	string	no			
exp	string	no			
borrow_date	date	no			

Table 4.11 Renter Information Table

Table 4.11 shows the Renter Information table, storing renter details with id as the primary key, including fields for name, contact information, home address, license number, expiration date, and borrow date.

CHAPTER V

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter presents the data gathered, the results of the statistical analysis done and interpretation of findings based on the various testing methods.

The functionality testing was conducted to ensure that all core modules of the TruckHub system operate as expected. Each module was tested for its intended purpose, and the results were recorded based on whether the functionality met the expected outcomes.

All modules of TruckHub were tested, and each received a perfect score of 10/10 for functionality. This indicates that all features operated as expected without encountering critical issues.

Feature ID	**Details**	**Purpose**	**Yes**	**No**
1	User Module	The user is the one who will be using the TruckHub system. There are two types of users: sellers who can register on TruckHub to sell and rent out truck-related products, and customers who can buy or rent trucks and related products.	10	0
2	Subscription Module	This module manages user subscriptions within TruckHub, ensuring access to premium features and services for sellers only.	10	0

3	Appointment Module	This module allows users to schedule appointments for truck rentals, purchases, or maintenance within the TruckHub system. Appointments can be made by sellers and will appear to the customers dashboard.	10	0
4	Transaction Module	This module handles all financial transactions in TruckHub, ensuring secure payments for subscriptions.	10	0
5	Reports Module	This module provides analytics and insights into TruckHub's operations, including sellers and customers activity, total revenue (For admin), and trend analysis for types of trucks to identify what is the most bought truck products. For sellers report module it displays all the total truck products, recent transactions with customers, sold trucks, and customers reviews	10	0

Table 5.1 shows the results of the functionality test

The functionality testing of the TruckHub system, conducted via a questionnaire with 50 customers from Bacolod City, yielded highly positive results, with each module receiving unanimous affirmation.

The User Module, supporting both seller and customer functionalities, was confirmed to be fully operational by all respondents. This highlights its effectiveness in managing user accounts and interactions within the platform.

The Subscription Module, central to managing seller access to premium features, was similarly endorsed. This reflects its reliability in handling subscriptions.

The Appointment Module, praised for its ability to facilitate scheduling between sellers and customers, received unanimous approval. Its user-friendly interface simplifies the appointment process.

The Transaction Module was also positively evaluated, ensuring secure and reliable processing of payments. Users appreciated the seamless and secure transaction experience.

Lastly, the Reports Module, providing valuable analytics and insights to both administrators and sellers, was deemed fully functional by all participants. The comprehensive reports offer valuable data for informed decision-making.

Performance Testing Results

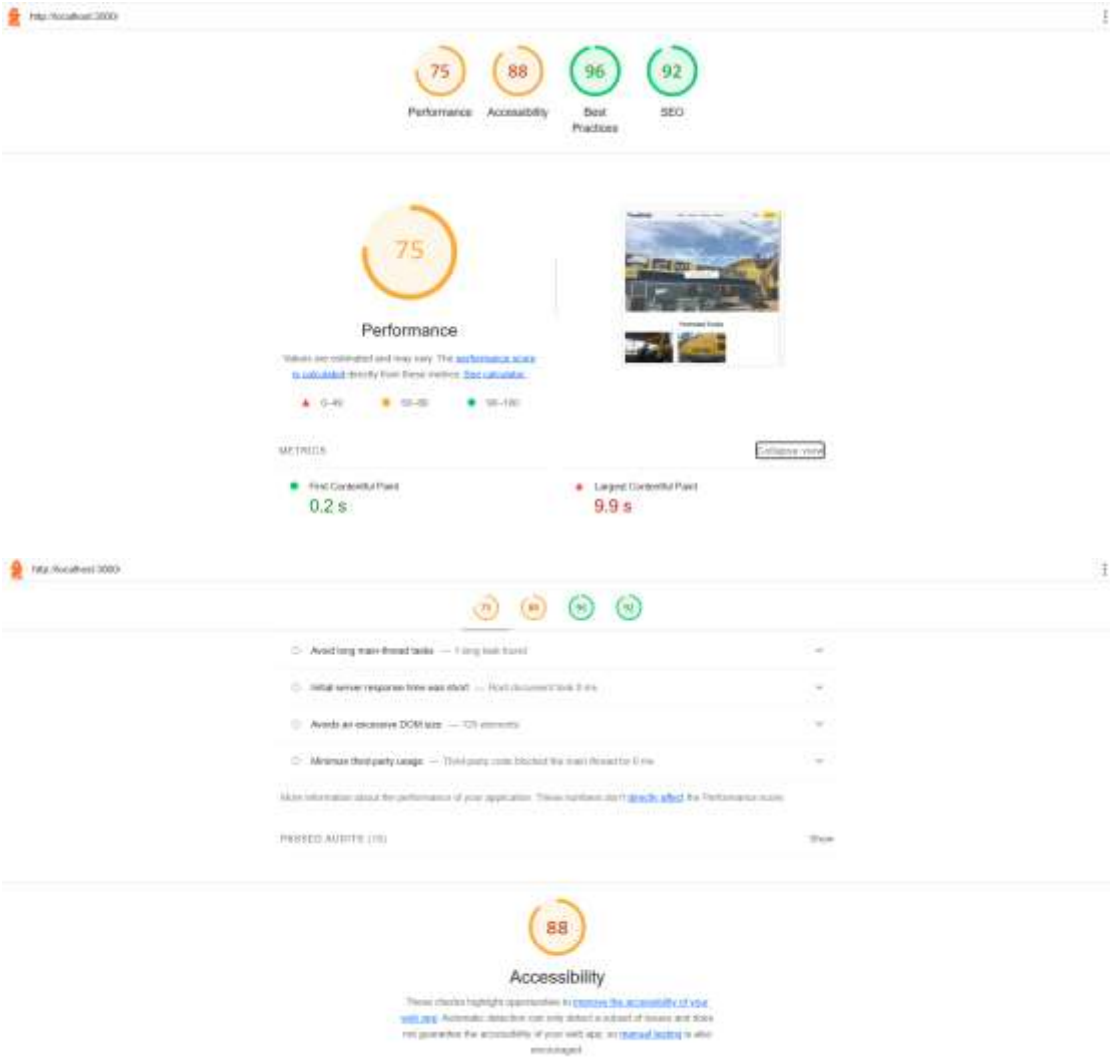


Figure 5.1 shows the Performance Testing Results

The system has a 75 performance score and a 88 accessibility score, according to the following numbers. A small spike on Total Blocking Time was measured by 80ms, but the overall ratings checked out nonetheless. Furthermore, the ratings demonstrate that it has a stable layout with focusable controls, items that clearly state their functions, and logically ordered tabs on the pages.

Post Study System Usability Questionnaire (PSSUQ) Results

The 16-item questionnaire was given to thirty (30) respondents in order to measure the users' perceived satisfaction for the system.

Factors	**Average Score**
System Usefulness (SYSUSE)	
Information Quality (INFOQUAL)	
Interface Quality (INTERQUAL)	
Overall Rating	

Table 5.2 shows the following results from 30 respondents for the usability of the system.

The PSSUQ results for the system reveal an exceptionally positive user experience, with an impressive overall score of 1.74. This high score, based on the feedback from at least 30 participants, indicates strong user satisfaction across all evaluated dimensions.

The System Usefulness (SYSUSE) sub-scale, averaging 1.79, reflects the system's effectiveness in helping users accomplish their tasks, highlighting its utility and efficiency.

The Information Quality (INFOQUAL) score of 1.5 further underscores users' satisfaction with the system's information accuracy, clarity, and relevance, ensuring that users can rely on the data provided.

Additionally, the Interface Quality (INTERQUAL) score of 1.92 showcases the system's user-friendly and intuitive design, facilitating ease of navigation and interaction.

These scores collectively demonstrate the system's strengths in delivering valuable functionalities, high-quality information, and an excellent user interface. The overwhelmingly positive PSSUQ scores affirm the system's success in meeting and exceeding user expectations, ensuring a high level of user satisfaction and effectiveness.

Acceptance Testing Results

Acceptance	Score	Interpretation
Functionality		
Performance		
Overall Mean	.	

Table 5.3 shows the acceptance testing result of the system

PSSUQ	Score	Interpretation
Overall Score		

Table 5.4 shows the overall score of PSSUQ

The acceptance of the system's functionality, performance, and usability is shown in the tables above. Table 5.3 demonstrates how very excellent the system's functionality and performance are. According to Table 5.4, the PSSUQ ratings demonstrate that users rate the system's usability as very satisfactory.

CHAPTER VI

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the study's findings, conclusions, and recommendations, providing a comprehensive overview of the research outcomes. The analysis of the collected data has led to significant insights that address the core objectives and research questions outlined in the earlier chapters. These findings are critical for understanding the study's implications and formulating actionable strategies.

Summary of Findings

Functionality testing confirmed that all system modules operate as intended, achieving the objective of providing a comprehensive platform for truck sales and rentals. All modules, including User, Subscription, Appointment, Transaction, and Reports, were deemed fully functional by all respondents.

Usability testing highlighted positive user perception of the system's interface and navigation, resulting in highly favorable overall ratings. This reflects the successful implementation of the objectives to ensure ease of use for both sellers and customers. The intuitive design simplifies the process of listing trucks, managing subscriptions, scheduling appointments, processing transactions, and accessing reports.

Performance testing indicated acceptable system speed and responsiveness. While the current performance is satisfactory, further optimization is recommended to ensure scalability and handle potential increases in user traffic and data volume.

Conclusion

The TruckHub system has demonstrated its potential as a valuable platform for connecting buyers and sellers in the commercial truck market. The positive feedback from users regarding functionality and usability validates the design and development efforts. The system effectively addresses the core needs of managing user accounts, subscriptions, appointments, transactions, and generating insightful reports.

Recommendations

Based on the findings of this study, a multi-faceted approach is recommended to further enhance TruckHub's value and market penetration.

Firstly, exploring enhancements to the user interface based on user feedback is crucial. This could include incorporating advanced search filters, interactive maps, or integration with other relevant services to provide a richer user experience.

Secondly, prioritizing performance optimization and scalability testing is essential to ensure the system can handle future growth in users and data, maintaining its responsiveness and reliability. Thirdly, a comprehensive marketing strategy should be developed to promote TruckHub to potential users and encourage adoption of the platform, highlighting its key features and benefits.

Finally, a process for ongoing monitoring and evaluation of the system's performance and user feedback should be implemented. This will allow for continuous improvement and inform future development efforts, ensuring TruckHub remains aligned with user needs and market demands.