Groom Master: A Web-Based Pet Grooming Appointment Scheduling & Inventory Manager

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ABSTRACT

Groom Master is a web-based application that centralizes appointment scheduling, client management, and inventory tracking for pet grooming businesses. It allows pet owners to book services online while enabling administrators and groomers to manage appointments, grooming schedules, and supplies efficiently. Developed using the Agile SDLC, the system was iteratively refined based on user feedback. Evaluation followed ISO 25010 standards for functionality, reliability, usability, and maintainability. Built with PHP**,** MySQL**,** HTML5**,** CSS3, and JavaScript**,** GroomMaster offers a responsive interface accessible across devices, enhancing productivity, reducing scheduling conflicts, and improving overall service quality for small to medium-sized grooming businesses.

Keywords: Pet Grooming System, Web Application, Appointment Scheduling, Inventory Management, Agile SDLC, ISO 25010, PHP, MySQL, JavaScript, HTML5, CSS3, Responsive Design

INTRODUCTION

The pet care industry has experienced consistent growth over the past decade, driven by increasing pet ownership and the perception of pets as integral family members. This change in perspective has fueled demand for a variety of services, including grooming, boarding, veterinary care, and wellness programs. Among these, pet grooming plays a vital role not only in maintaining animal hygiene and health but also in satisfying owners' expectations for quality care.

Scope

This study focuses on the design, development, and evaluation of GroomMaster, a web-based application specifically intended for pet grooming businesses.

- Appointment Scheduling Module – Allows customers to book, reschedule, or cancel grooming appointments online. It provides real-time slot availability, automated booking confirmations, and reminders to minimize missed appointments and scheduling conflicts.
- Inventory Management Module – Tracks the availability, usage, and replenishment of grooming supplies such as shampoos, conditioners, disinfectants, grooming tools, and other consumables. It includes low-stock alerts to assist in timely restocking and prevent service interruptions.
- Customer Management Module – Maintains a database of clients and their pets, including service history, grooming preferences, and contact details, to enable personalized service delivery and efficient record-keeping.

LIMITATION

- Business Coverage – Groom Master is developed for small to medium-sized pet grooming shops and may require additional customization to suit large-scale or multi-branch businesses.

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- Service Scope – The system is designed for pet grooming services only. Veterinary, boarding, or pet retail services are not included in the current functionality.
- Platform Restriction – Groom Master is accessible only via web browsers and requires an active internet connection. Offline use is not supported in this version.
- Integration – The system does not integrate with third-party payment gateways, accounting software, or social media platforms. All payments are assumed to be processed separately by the business.
- Inventory Tracking – Inventory data relies on manual entry by staff; the system does not include barcode scanning or automated stock detection hardware.
- Security Scope – While the system includes basic authentication and access control, advanced security measures such as multi-factor authentication or encrypted backups are not implemented in this version.

THEORETICAL FRAMEWORK

Technology Acceptance Model (TAM)

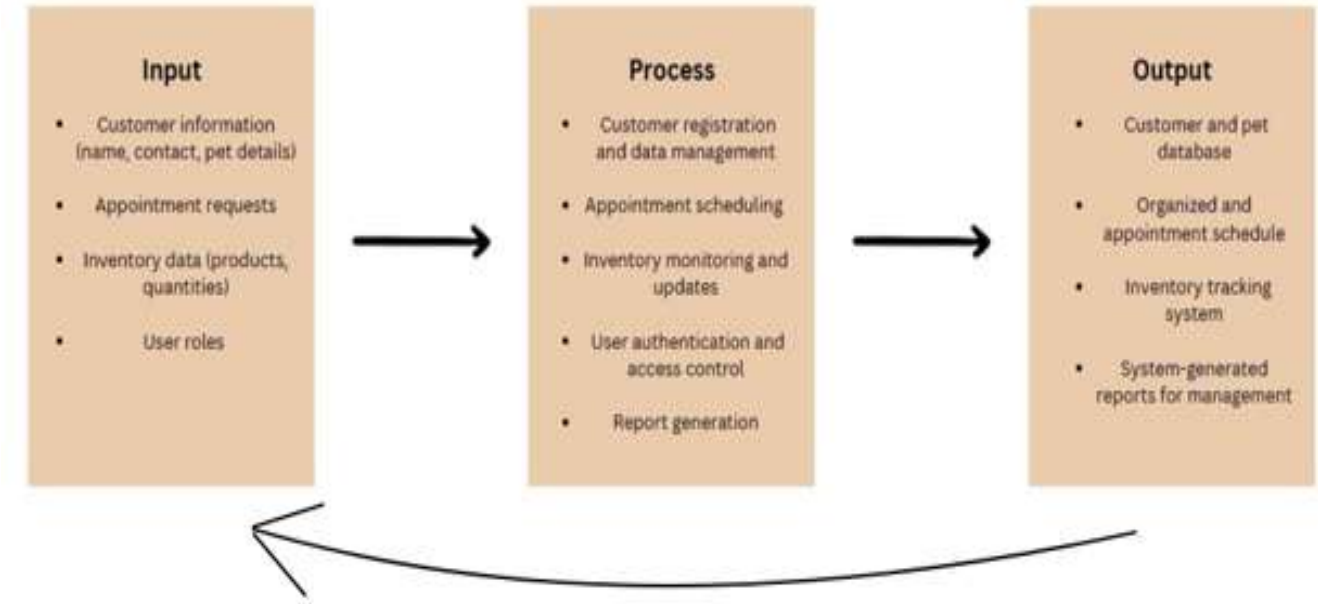
Proposed by Davis in 1989, the **Technology Acceptance Model (TAM)** explains how users come to accept and use a technology. It emphasizes two key factors that influence user adoption: **perceived usefulness**, which refers to the degree to which a user believes that using a system will enhance their job performance, and **perceived ease of use**, which refers to the degree to which a user believes that the system will be free of effort to operate.

Systems Theory

Originally developed by Ludwig von Bertalanffy, Systems Theory views an organization as a set of interrelated components working toward a common goal. In a grooming business, operations such as scheduling, inventory management, and customer service are interconnected. GroomMaster aligns with Systems Theory by integrating these components into one platform. The system ensures that a change or update in one module directly supports or influences other modules leading to more coordinated and efficient operations.

CONCEPTUAL FRAMEWORK

The researchers used the IPO Model to describe the framework of the study. This diagram focuses on how the inputs are being processed to generate results. It is composed of the input or the requirements needed, the processes or procedures, the output or desired result, and feedback.



The IPO (Input-Process-Output) model for the Pet Grooming Appointment Scheduling and Inventory Management System is a structured framework that illustrates how data flows through the system to support its essential functions. It is divided into three key components: Input**,** Process, and Output**.**

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Significance Of The Study

Developing an appointment scheduling and inventory management system specifically tailored for pet grooming businesses offers substantial advantages to a wide range of stakeholders. For business owners and managers, it refined operations by automating essential tasks such as appointment bookings, service tracking, and supply monitoring, thereby reducing human error and increasing overall efficiency. For staff members, including groomers and receptionists, the system provides a structured workflow, improves communication, and helps avoid scheduling conflicts, allowing them to focus more on delivering quality services.

REVIEW OF RELATED LITERATURE

Foreign Literatures

Zhao et al. (2017) stated that web-based scheduling systems significantly improve operational efficiency and minimize administrative workload in service industries. This finding directly supports Groom Master's objective of simplifying pet grooming appointments, ensuring that business owners can handle bookings effectively without being overwhelmed by manual scheduling. Bagheri et al. (2022) emphasized that internet-based appointment systems enhance accessibility and improve customer satisfaction by allowing users to book services at their convenience. This aligns with GroomMaster's core feature of enabling pet owners to schedule grooming sessions anytime, improving client experience and loyalty. MotoPress (2024) highlights leading pet care software such as PetPocketbook, MoeGo, and Paw Partner, showcasing how modern platforms streamline appointment scheduling, client management, and operations.

Foreign Studies

Mahfouz et al. (2023) evaluated patient satisfaction with a web-based appointment system and found that users valued its convenience and time-saving benefits. This mirrors GroomMaster's commitment to providing hassle-free booking options for pet owners, saving them time and effort. Ostadmohammadi et al. (2025) examined stakeholder experiences with electronic scheduling platforms and concluded that usability and system efficiency are critical for success. These factors guided GroomMaster's design to ensure a user-friendly experience for both clients and business owners. Betancor (2025) found that online scheduling systems lower no-show rates (1.8% vs. 5.9%) compared to offline bookings, proving that automated booking features enhance attendance. GroomMaster integrates similar scheduling and reminder functionalities to reduce missed grooming appointments.

Local Literatures

Quimba and Calizo (2019) identified the challenges and opportunities in digital technology adoption among Philippine businesses, highlighting the need for user-friendly platforms. GroomMaster addresses this by offering a simple, accessible digital solution specifically tailored for local pet grooming businesses. Philippine Institute for Development Studies (2019) reported that Filipino SMEs often struggle with adapting to digital tools due to cost and complexity. GroomMaster counters these challenges by providing an affordable, efficient, and easy-to-use system for grooming service providers. Antivola (2023) emphasized that digital adoption is essential for MSMEs to remain competitive in today's market. This insight reinforces GroomMaster's role as a vital tool for helping grooming businesses stay ahead by embracing digital operations. Atienza et al. (2024) found that implementing digital solutions leads to significant improvements in business productivity and growth for micro and small enterprises. This supports GroomMaster's potential to enhance operational efficiency and increase profitability in the grooming industry.

Synthesis

The reviewed literature and studies collectively affirm the relevance and necessity of GroomMaster, a web-based pet grooming appointment scheduling and inventory management system. Foreign literature highlights how digital scheduling platforms enhance efficiency, reduce workload, and improve customer satisfaction (Zhao et al., 2017; Bagheri et al., 2022; MotoPress, 2024; Cao et al., 2011), while foreign studies confirm their

effectiveness in increasing user satisfaction, reducing no-show rates, and ensuring usability (Mahfouz et al., 2023; Ostadmohammadi et al., 2025; Betancor, 2025).

METHODOLOGY OF THE STUDY

Research Design

This study employed a developmental research design, focusing on the creation and evaluation of a web-based application. Developmental research is suitable for projects aiming to produce and refine technology-based solutions. The process involved analyzing the current appointment scheduling and inventory management practices of selected pet grooming businesses, designing a prototype system based on identified needs, and

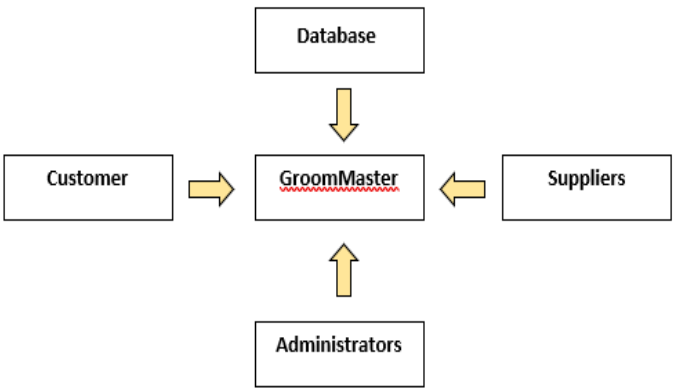
evaluating its usability and effectiveness.

Data Collection

Pre-development phase: Researchers gathered baseline information from pet grooming shop owners and staff through structured interviews and observation checklists. This phase identified operational challenges such as booking conflicts, inventory shortages, and time-consuming manual record-keeping.

System Development Life Cycle

The Agile Software Development Lifecycle (Agile SDLC) is a flexible and iterative approach to software development that emphasizes collaboration, customer feedback, and rapid delivery of functional software.



The Agile SDLC process used in the project emphasized iterative development, stakeholder collaboration, and continuous feedback. Requirements for the grooming shop system were gathered early through interviews and observations, leading to prototypes featuring core functions like booking, inventory, and user management. Each sprint involved user testing and feedback, which improved modules such as pet profiles, scheduling, and data handling. Later sprints added advanced features like automated reminders, inventory alerts, and customizable reports, developed with active input from groomers and receptionists. Final stages focused on performance optimization, documentation, and user acceptance testing, with continuous integration and code reviews ensuring quality and stability.

Database Design

A database plan is the method involved with sorting out information as per a database model. Appropriately planned databases are not difficult to keep up with, further develop information consistency, and are cost-effective as far as disk storage space. Database plan outlines are utilized to decide how best to store, administer, and access data.

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GroomMaster (System/Application)

- This is likely the central application or platform offering the service.
- It connects directly to Administrators, indicating they manage or control it.

Administrators

- They are the central authority in this system.
- Connected to all other entities, showing they play a key role in:
- Managing Customers
- Managing Suppliers
- Interfacing with the Database
- Operating or configuring GroomMaster

Customer

- End-users or clients of the system.
- Likely access services offered through GroomMaster but are indirectly managed via Administrators.

Suppliers

- These are likely service providers (e.g., pet groomers, product vendors, etc.).
- Administrators manage relationships or interactions with them.

Database

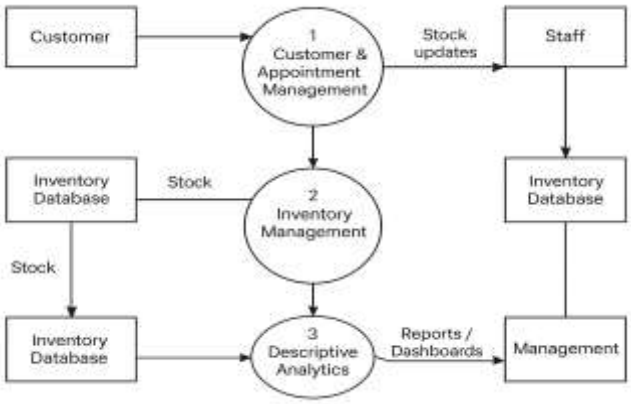
tores all system data.

Administrators have direct access, indicating they manage data operations such as:

- Customer profiles
- Supplier records
- App configurations
- Transaction logs

Data Flow Diagram (Level 1 DFD)

CUSTOMER starts the process



The Customer provides: Personal information,Pet details,Appointment requests

Data flows to → Process 1: Customer & Appointment Management

PROCESS 1: Customer & Appointment Management

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This process: Saves customer info, Schedules appointments, Confirms bookings, Updates appointment status from staff.

Data flows to → Customer Database (stores personal/pet info)

Appointment Database (stores grooming schedules)

Also connects with → STAFF

STAFF provides service updates

The Staff: Accesses customer appointments, Updates service status (e.g., done, canceled)

This info goes back to Process 1: Customer & Appointment Management, where:

The status is recorded in the Appointment Database

Grooming history is stored in the Customer Database

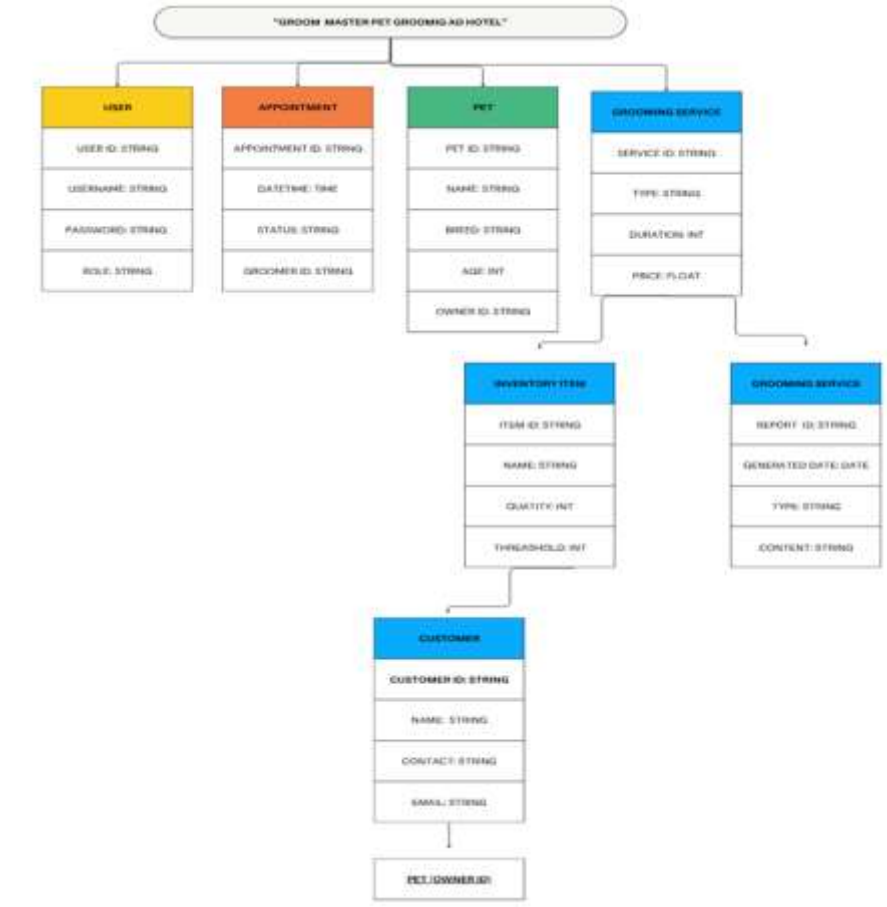
INVENTORY MANAGER updates stocks

The Inventory Manager: Logs item usage (e.g., shampoo used) Inputs stock deliveries or changes Data flows to → Process 2: Inventory Management

PROCESS 2: Inventory Management This process: Records incoming/outgoing stock, Checks stock levels, Sends low stock alerts if needed Data flows to → Inventory Database

PROCESS 3: Descriptive

Entity-Relationship Diagram (ERD)



The system's data model for GroomMaster defines key classes that support user management, scheduling, inventory, and reporting. The User class represents all system users (administrators, receptionists, groomers) with roles controlling access. Customer and Pet classes store owner and pet details, linked through a one-to-many relationship. The Appointment class manages bookings, connecting pets, services, and assigned groomers. Grooming Service standardizes service types, durations, and prices, while Inventory Item tracks supplies and triggers restock alerts. The Report class stores analytics on customer activity, service frequency, and inventory usage. Together, these classes create an integrated structure for managing operations in a pet grooming business.

Use Case Diagram

The main interactions between the two main user types in the system—the client and the administrator—are shown in the use case diagram. The client has the ability to input pet information and schedule appointments. However, the administrator has more access to system features, such as the ability to examine reports and manage user data. This ER diagram supports the design of user access restrictions and database data linkages by clearly defining the roles and responsibilities of each user type.

Respondents Of The Study

The study involved 100 respondents divided equally into two groups: 50 users and 50 technical experts. The user group, composed of marketing analysts, staff, and business owners, evaluated the system's usability, functionality, and user satisfaction. The technical group, made up of IT professionals such as developers and system analysts, assessed system performance, reliability, maintainability, and security. Respondents were selected through simple random sampling, with the sample size determined using **Slovin's Formula**:

$$n = \frac{N}{(1 + Ne^2)}$$

Development And Evaluation Procedure

The development of GroomMaster**,** a web-based pet grooming scheduling and inventory system, utilized several tools to ensure functionality and reliability. HTML, CSS, JavaScript, and Bootstrap were used for frontend development—structuring content, enhancing design, enabling interactivity, and ensuring responsiveness across devices. PHP handled backend logic, including authentication, scheduling, inventory management, and reporting. MySQL managed data storage for users, appointments, inventory, and services, providing secure and efficient access. XAMPP served as the local development environment, integrating Apache, MySQL, and PHP for real-time testing and debugging.

Data Analysis Plan

The evaluation of the GroomMaster system uses the ISO 25010 Software Quality Model and selected aspects of the PASS Theory of Intelligence to assess software quality and user interaction. ISO 25010 provides the main evaluation framework, focusing on functional suitability, usability, reliability, maintainability, and performance efficiency**.** The PASS Theory adds a cognitive dimension, examining users' planning, attention, and information

processing during interaction with the system. User feedback was gathered through a 5-point Likert Scale survey measuring satisfaction with ISO 25010 attributes. The collected data were analyzed using descriptive statistics—including frequency counts, percentages, means, and standard deviations—to summarize user perceptions and identify areas for improvement. This approach offers an objective yet accessible evaluation of GroomMaster's functionality, usability, and overall performance.

The System

Groom Master is a web-based management system developed to streamline pet grooming business operations by integrating two essential features: appointment scheduling and inventory management. It allows pet owners to book grooming services online with ease, while giving business owners and staff tools to manage client records, monitor service history, and track product inventory in real time. The system is designed to reduce manual workload, eliminate booking conflicts, and improve overall service efficiency. Built with a user-friendly interface and responsive design, GroomMaster supports both desktop and mobile devices to ensure accessibility and convenience for users.

Assessment: Summary Of Respondents on the System

Statistical Tools

1. Weighted Mean

$$\underline{x} = \frac{\Sigma(f \cdot n)}{N}$$

Where:

$\underline{x}$ = Weighted Mean
Σ = Summation
f = Weighted Point
n = sample size or number of samples
N = population size

2. Frequency Percentage

$$P = \frac{f}{p} \times 100$$

Where:

P = Percentage
f = number of respondents in a grade level
p = population size

3. Likert Scale

Weighted Point	Scale	Difference	Verbal Interpretation
4	4.00 – 3.01	1.00	Strongly Agree
3	3.00 – 2.01	0.99	Agree
2	2.00 – 1.01	0.99	Disagree
1	1.00 – 0.99	0.01	Strongly Disagree

Ethical Considerations

This study upholds strict ethical standards by treating all data provided by respondents with confidentiality and integrity. Personal information is kept secure and is not shared or revealed without the individual's explicit consent. Participation in the research is entirely voluntary, and respondents have the right to withdraw at any stage without facing any negative consequences. Strong data protection protocols are in place to guard against unauthorized access or misuse. Furthermore, all results are presented truthfully and transparently, ensuring that the analysis remains free from manipulation or bias, thereby maintaining the study's overall reliability and trustworthiness.

Summary

The capstone project, GroomMaster**,** is a web-based system developed to enhance the operational efficiency of pet grooming businesses by integrating two essential features: appointment scheduling and inventory management**.** It allows pet owners to book services online, while enabling staff to manage bookings, monitor grooming histories, and track grooming supplies in real time. The system was evaluated using the ISO 25010 software quality standards, focusing on key attributes such as functionality, usability, reliability, maintainability, and performance efficiency. Feedback from respondents, gathered through Likert-scaled surveys, indicated a "Very Satisfactory" rating across all evaluated criteria. Ethical considerations were strictly followed throughout the research process, ensuring data confidentiality, voluntary participation, and honest reporting. Overall, GroomMaster effectively addresses the common challenges in pet grooming service management by offering a reliable, secure, and user-friendly solution.

CONCLUSION

The development and implementation of GroomMaster successfully addressed the key operational challenges faced by pet grooming businesses, particularly in managing client appointments and inventory. By providing an accessible and user-friendly platform, the system streamlined the booking process for customers while enabling business owners and staff to efficiently monitor schedules, client records, and product supplies. Evaluation based on the ISO 25010 standards confirmed that the system met essential software quality attributes, receiving high marks for functionality, usability, and reliability. With positive feedback from users and strong performance during testing, GroomMaster demonstrates its potential as a practical and scalable solution for improving service delivery in the pet grooming industry.

RECOMMENDATION

For future improvement, it is recommended that GroomMaster include the following enhancements:

- Integration of online payment systems such as GCash or PayPal for easier transaction processing.
- Multi-branch support for grooming businesses operating in multiple locations.

These recommendations aim to further enhance GroomMaster’s usability and scalability for broader implementation in the pet grooming industry.

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