**ONLINE**

**SALON MANAGEMENT SYSTEM**

**DEPARTMENT OF MANAGEMENT SCIENCE**

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**REG NO: BBIT/705J/2020**

**DATE: MARCH, 2024**

# DECLARATION

I hereby declare that this project is my original work done under the supervision of Mr.

Odhiambo of Technical University of Mombasa and has not been presented for the award of any

degree, diploma or certificate in any other University or Institution or for any other award.

Declaration by Student

Student’s Name: Esther Mwongeli

Sign \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Declaration by Supervisor,

I confirm that the work reported in this project was carried out by the candidate under my

supervision.

Supervisor’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sign \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# DEDICATION

To my Heavenly Father for His love, for providing all my needs, and for guiding me through this course. His presence has remained my strength and motivation in everything that I do in life. I also would like to extend my deepest appreciation to my wonderful family who have been my source of inspiration throughout this process.  
  
I would like to express my appreciation to my supervisor, Mr. Odhiambo, who has given me a lot of time, advice, and directions in helping me complete this project on time.

At last, I would also like to thank my fellow classmates, boyfriend and friends, for their companionship and collective attitude. These accomplishments have been made memorable and worthwhile because of camaraderie and support received from others.

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On a final note, I owe the deepest thanks to all my friends and my classmates, who helped me so much during the study. I want to show deep gratitude to my family members, who always encouraged me and supported me both psychologically and financially during the period of my research. It is important to thank them for the provision of essential materials needed in doing this study.  
  
 My profound gratitude goes to Almighty God for providing me with the strength and merits needed to complete this research in the most successful manner.

# ABSTRACT

In today's fast-paced world, convenience is key, especially when it comes to personal grooming. Introducing Smart Salon, an all-in-one online salon booking and management system revolutionizing the beauty industry. With Smart Salon, clients can effortlessly schedule appointments from the comfort of their homes or on the go, eliminating the hassle of long wait times or phone calls. Our platform boasts a sleek and intuitive interface, allowing users to browse through a diverse range of services, select preferred stylists based on their expertise and availability, and book appointments with just a few clicks. Not only does Smart Salon enhance the booking experience for clients, but it also streamlines operations for salon owners and staff. Salon managers can easily manage their schedules, track appointments, allocate resources, and optimize staff productivity with our comprehensive management tools. Furthermore, our system provides automated reminders and notifications to keep clients informed about their appointments, reducing no-shows and last-minute cancellations. With Smart Salon, salon owners can also efficiently manage inventory, track customer preferences, and analyze business performance through detailed reports and analytics. Whether it's a haircut, manicure, or spa treatment, Smart Salon ensures a seamless and enjoyable experience for both clients and salon professionals alike, empowering businesses to thrive in the digital age of beauty services.

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# LIST OF ABBREVIATIONS

1. **OSBMS**: Online Salon Booking and Management System
2. **BBIT**: Bachelor of Business Information Technology
3. **UI**: User Interface
4. **UX**: User Experience
5. **API**: Application Programming Interface
6. **CRM**: Customer Relationship Management
7. **POS**: Point of Sale
8. **SMS**: Short Message Service
9. **SQL**: Structured Query Language
10. **HTML**: Hypertext Markup Language
11. **CSS**: Cascading Style Sheets
12. **JS**: JavaScript
13. **DBMS**: Database Management System
14. **HTTP**: Hypertext Transfer Protocol
15. **HTTPS**: Hypertext Transfer Protocol Secure
16. **URL**: Uniform Resource Locator
17. **TLS**: Transport Layer Security
18. **CRUD**: Create, Read, Update, Delete

**DEFINITION OF TERMS**

1. **Smart Salon:** A salon equipped with technology-driven solutions for managing appointments, customer data, and various salon operations efficiently.
2. **Intelligent Booking System:** A software system that uses algorithms and artificial intelligence to optimize appointment scheduling, considering factors such as stylist availability, customer preferences, and peak hours.
3. **Management System:** A comprehensive software platform designed to streamline various aspects of salon management, including appointment scheduling, staff management, inventory tracking, and customer relationship management (CRM).
4. **Automated Reminders:** Automated notifications are sent to customers to remind them of upcoming appointments, reducing no-shows and missed appointments.
5. **Customer Experience Enhancement:** Implementation of features and services aimed at improving the overall customer experience, such as personalized recommendations, loyalty programs, and feedback mechanisms.
6. **Revenue Optimization:** Strategies and tools employed to maximize salon revenue, including up selling services, optimizing pricing, and analyzing customer data to identify trends and opportunities.
7. **Data Analytic:** Collecting, analyzing, and interpreting data to gain insights into salon operations, customer behavior, and market trends, enabling informed decision-making and business growth.
8. **User Interface (UI) and User Experience (UX):** The design and functionality of the software interface, focused on providing a seamless and intuitive experience for both salon staff and customers.
9. **Integration:** The process of connecting the smart salon system with other software platforms or third-party services, such as payment gateways, accounting software, or marketing tools, to enhance functionality and interoperability.
10. **Security and Privacy:** Measures implemented to protect sensitive salon and customer data from unauthorized access, ensuring compliance with data protection regulations and building trust with customers.

# CHAPTER ONE

## INTRODUCTION

## 1.1 BACKGROUND TO THE STUDY

The beauty and wellness industry is experiencing exponential growth worldwide, with an increasing number of individuals seeking salon services for grooming, relaxation, and self-care. In response to this demand, salon owners continually strive to optimize their operations and enhance the client experience. However, traditional salon management practices often rely on manual processes for appointment scheduling, client record-keeping, and staff management, leading to inefficiencies and operational challenges. The advent of digital technologies and the widespread adoption of internet-based services have transformed various sectors, including the beauty industry. Online booking systems have emerged as a convenient solution to streamline salon operations and improve accessibility for both salon owners and clients. By transitioning from traditional paper-based methods to digital platforms, salons can automate appointment management, minimize scheduling conflicts, and provide clients with real-time availability and service options.

1. **Research issue**

Despite the potential benefits of online salon booking systems, there remains a need for tailored solutions that address the unique requirements and challenges faced by salon owners and clients. Existing research primarily focuses on general-purpose appointment scheduling software, often overlooking the specific needs of the beauty and wellness industry. Therefore, the research issue addressed in this study revolves around developing a specialized online salon booking and management system, referred to as "Smart Salon," to cater to the distinct requirements of salon businesses and their clientele.

The research aims to investigate:

1. The key features and functionalities required in an online salon booking and management system to optimize salon operations and enhance the client experience.
2. The design and implementation considerations for developing a user-friendly and efficient platform that addresses the specific needs of salon owners, staff, and clients.
3. The potential impact of adopting Smart Salon on salon efficiency, client satisfaction, and business growth.
4. **Reference basis for the research**

The research draws upon a combination of theoretical frameworks, industry best practices, and empirical studies to inform the development of Smart Salon and its underlying principles. Key reference sources include:

1. Industry reports and case studies examining the challenges and opportunities in the beauty and wellness sector, as well as emerging trends in online booking and salon management solutions.
2. Interviews and surveys with salon owners, staff members, and clients to gain insights into their pain points, preferences, and expectations regarding salon booking and management systems.
3. Comparative analysis of existing online booking platforms and salon management software to identify gaps in functionality and usability and inform the design of Smart Salon's features and user interface.

### 1.2 PROBLEM STATEMENT

The existing manual salon booking and management systems often result in inefficiencies, such as double bookings, appointment conflicts, and difficulty in managing client records. Additionally, clients may experience inconvenience scheduling appointments due to limited access to real-time availability and preferences. These challenges highlight the need for a modern, automated solution that streamlines salon operations and enhances the booking experience for both salon owners and clients.

### 1.3 OBJECTIVES

#### 1.3.0 MAIN OBJECTIVES

The primary objective is to develop an online salon booking and management system, named "Smart Salon," to address the inefficiencies and challenges associated with traditional salon management practices

#### 1.3.1 OTHER OBJECTIVES

1. Designing a user-friendly interface for salon owners to manage appointments, staff schedules, and client records.
2. Implementing a secure authentication system to ensure data privacy and access control.
3. Creating a seamless booking experience for clients, allowing them to view available appointments, select services, and choose preferred staff members.
4. Incorporating features for automated notifications, reminders, and feedback collection to enhance communication and customer engagement.
5. Evaluating the system's usability, reliability, and performance through testing and feedback analysis.

### 1.4 Significance of the study

The successful implementation of the Smart Salon Management System will have several significant implications, including:

1. Improved operational efficiency, reducing wait times and increasing customer satisfaction.
2. Enhanced customer experience through personalized service delivery and automated reminders.
3. Increased revenue opportunities through optimized booking and up selling strategies.
4. Empowerment of salon owners with data-driven insights for informed decision-making and business growth.

# CHAPTER 2:REVIEW OF RELATED LITERATURE

## 2.1 Introduction

In the modern, inundated, and complicated landscape of the beauty and wellness industry, technologies have introduced what one may call a revolutionary shift, which deeply has hit and changed the approach and the way salons run and their base interacts with their clients. With the rise of fast-paced and customized services alongside constantly changing customer needs, salon owners likely have to switch to digital solutions if they want to remain competitive and meet the clients` new expectations. Chapter Two takes up the choose-to-beginning of the survey of the existing literature which is related to the development and the implementation of the smart salon online booking and management system. This chapter is essential and primarily aims at setting the initial atmosphere and immersing the reader in previous work as well as the climatic environment of this empirical adventure. It contains not only the material accumulated over previous research but also the gaps left in the knowledge and the keen frame of previous theoretical and empirical works to which this research stands.

### 2.1.1Evolution of Salon Management Systems

The progress of digitization within the salon industry has had a gradual but steady progression in where point of sale from an antiquated paper-based to a developed online platform. Initially, the leading studies by generals such as Smith (2010) praised the advantages of digitalization, explaining the possibility of giving a new perspective on administrative tasks, effective resource allocation, and bringing customer engagement to a new level. Yet, these did bring the point of the feasibility of technological solutions to the table, but denied the individuality of the salon market, therefore the tailored systems of management based on the features of the individual salons also deserve to be researched. The studies from the recent future, however, took it a step further by looking into the intro-layer of salon management where cloud-based databases, mobile apps, and CRM tools for proper communication between the clients and Understanding the core of the service are clients` needs and hobbies - is the fundamental of any online appointment taking and salon management application. Johnson et al., 2018 and Park 2019 have contributed greatly to the exposure of the array of variables that lead customers to make a booking decision ranging from service availability, pricing, user interface design, and customer reviews among others. Investigations in this space have certainly illuminated and validated the fact that user experience is the core player in determining habits while booking. Thus, the technologies that are coming up should be rather intuitive, effortless, and seamless to use, for catering to the complex needs of increasingly smarter travelers. However, although the understanding of a customer in service industries has brought a lot to the perception of preferences and behavior on a bigger scale, the research in salon booking could be a gap in the dynamics of its behavior. This research aims to collapse the gap between the cause of the decision to book online and the creation of more tailored and useful online systems for the salon sector by providing enlightenment on the factors enhancing the decision. saloon staff were explored. On the one hand, there are several achievements in salon management systems, and this gives us hope that the existing systems would be able to drive the emerging technologies for delivering real transformative salon experiences for owners as well as their customers. However, on the other hand, there is a glaring absence of literature on the effectiveness of current salon management systems in tapping into these new technologies for a revolutionizing salon experience.

### 2.1.2 Customer Preferences and Behavior in Salon Booking

Understanding the core of the service clients` needs and hobbies - is the fundamental of any online appointment-taking and salon management application. Johnson et al., 2018 and Park 2019 have contributed greatly to exposure to the array of variables that lead customers to make a booking decision ranging from service availability, pricing, user interface design, and customer reviews among others. Investigations in this space have certainly illuminated and validated the fact that user experience is the core player in determining habits while booking. Thus, the technologies that are coming up should be rather intuitive, effortless, and seamless to use, for catering to the complex needs of increasingly smarter travelers. However, although the understanding of a customer in service industries has brought a lot to the perception of preferences and behavior on a bigger scale, the research in salon booking could be a gap in the dynamics of its behavior. This research aims to collapse the gap between the cause of the decision to book online and the creation of more tailored and useful online systems for the salon sector by providing enlightenment on the factors enhancing the decision.

### 2.1.3 Technological Innovations in Salon Management

Artificial intelligence (AI), machine learning, and data analytics have recently led to a massive transition in salon management techniques, leaving spots for growth utilizing their capabilities and creating new opportunities for enhanced customer relations. The recent research carried out by Chen and Wang (2021) and Gupta et al. (2022) was focused on the ability of AI scheduling systems to provide optimal solutions to the problems of resource allocation, long waiting times, and offering personalized service to customer preferences. These technological innovations could do wonders for salon owners who wish to accomplish a handful of goals on their own using an offer, be it the process of their business process, revenue maximization, or a long-term relationship with the clientele. Furthermore, although scholars are very keen on the theoretical side of hampering salon management with AI-driven systems, there is not much information available in the field of practical application and empirical validation. Through integration of theory and practice the study plan focuses on the problem of technology usage by salon owners which might not be fully understood and even missed at times. So the task of the study is to bring those two parties together and provide salon owners with concrete recommendations to achieve more using technology as a tool.

### 2.1.4Implications of External Factors on Salon Operations

The ability of hair salons to continue business in the face of external disruptions, such as the COVID-19 pandemic, is another fundamental research topic of our time. The studies by Lee et al. (2020) and Garcia et al. (2021) have illustrated the speedy adoption of digital solutions such as online bookings, virtual consultations, and contactless payments by salons who are being faced with stringent safety measures and changing customers' choices. These technological adaptations have not only enabled salons to survive the challenges of the pandemic but also paved the way for a more agile and resilient industry ecosystem. Besides, before this research started, the literature provided sufficient information on how salons had responded to the disruptions from external factors in the short term. However, there is still a research gap that focuses on the long-term consequences of such transformations on salon operations and customer engagement strategies. The goal of this study is to investigate the long-term influence of external disturbance on business management in the salon industry and to offer recommendations for cultivating sustainability and resilience in the face of uncertainty.

## 2.2 Research Objectives

### 2.2.1Designing a User-Friendly Interface for Salon Owners

This subsection explores studies focusing on the design principles and usability factors crucial in developing user-friendly interfaces for salon management systems. It examines the literature on interface design best practices, user experience (UX) research, and case studies of successful implementations in similar service industries.

### 2.2.2 Implementing a Secure Authentication System

Here, we delve into research related to secure authentication systems and data privacy measures in online service platforms. This section discusses authentication protocols, encryption techniques, and regulatory frameworks such as GDPR (General Data Protection Regulation) and HIPAA (Health Insurance Portability and Accountability Act) applicable to salon management systems.

### 2.2.3 Creating a Seamless Booking Experience for Clients

This subsection reviews the literature on customer booking behaviors, user interface design, and booking system functionalities. It explores studies investigating the effectiveness of various booking features, such as real-time availability updates, service selection interfaces, and staff preference options, in enhancing the booking experience for salon clients.

### 2.2.4 Incorporating Features for Automated Notifications and Feedback Collection

In this section, we examine research on automated communication systems and feedback mechanisms in service industries. It discusses the role of automated notifications in appointment reminders, service updates, and feedback collection processes, drawing insights from studies on customer engagement and satisfaction.

### 2.2.5 Evaluating Usability, Reliability, and Performance

This subsection reviews the literature on usability testing methodologies, reliability analysis techniques, and performance evaluation frameworks applicable to online booking and management systems. It explores studies on usability metrics, reliability indicators, and performance benchmarks used to assess the effectiveness and efficiency of such systems.

## 2.3 Related Studies

### 2.3.1 Web-Based Data Management System for Salon NadeeLalani

ABSTRACT Salon NadeeLalani is one of the famous beauty care centers situated in a crowded village area. Salon NadeeLalani provides a variety of services for ladies' beauty care such as all types of ladies' beauty care, Bridle care as well as ladies'/gents' haircuts. A large number of customers visit Salon Nadeelalani for their beauty and cultural needs every day. Salon NadeeLalani follows a manual paper-based data management system to maintain their records. Since the current data management system time time-consuming to store/retrieve data and also sometimes does not seem accurate, Salon NadeLalani is concerned about using a web-based Data Management System as a solution. This Salon Data Management System comes with customer data management, staff data management, salon master data management, inventory management, appointment handling, message handling, promotions reminders, and reports generation. The proposed Salon Data Management System was developed using PHP (Hypertext Preprocessor) which is a free and open source scripting language. MySQL is used as the database management system. For the analysis and design of the system, Unified Modeling Language (UML) was used. Since the proposed system is running online Apache web server is used as a processing server. Brackets were used as the main development tool of the system. JavaScript, JQuery, HTML, and CSS are other technologies used for system development. Moreover, the system is featured with a set of non-functional requirements such as security, usability, Maintainability, Accuracy, and backups. By using the system, productivity throughout the process will be increased via features such as informative dashboards, quick search facilities, and reporting. Easy access to data will be efficient the managerial tasks like decision-making and future marketing planning.

https://dl.ucsc.cmb.ac.lk/jspui/handle/123456789/4010

### 2.3.2 Web-Based Salon Management System for Salon Dilu

The hair and beauty industry is one of the most expanding businesses in Sri Lanka. Salon Dilu is a lady's hair and beauty service provider which was established in 2006. The company started on a small scale but since its fast-growing success now it has become a leading salon in the area. Salon Dilu offers its clients a full range of hair care services, beauty treatments, and bridal services. At present all these business tasks are done manually. Due to these manual procedures, management has faced a lot of inconveniences like scheduling conflicts, payment handling issues, and contact managing issues. To overcome these issues and increase efficiency, the management has decided to develop and implement a salon management system with an online appointment scheduling facility. This system is developed to manage customer appointments and payment handling. In addition, the system is capable of customer registrations, customer profile handling, payment calculation and receipts handling, sending email alerts, managing service information, employee performance management, and managing reports. The system is developed based on open-source technologies. Mainly Model View Controller (MVC) architecture and Object Oriented techniques were used. The system is implemented based on the Co-design framework and PHP is used as the main programming language. MySQL is used as the database management system. Apache web server is used as the processing server. JavaScript and jQuery have been used as the client-side script in languages. Bootstrap has been used as the frontend framework which contains the HTML and CSS. The system was thoroughly tested by using a multi-stage testing process which included unit testing, integration testing, system testing, and acceptance testing. The system fulfills all user requirements as expected.

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### 2.3.3WEB-BASED CLIENT HANDLING SYSTEM FOR SALON GAYATHRI

Gayathri Salon is a beauty salon that handles all activities of its salon manually. They have three premises, one is in Nugegoda and the other two are in Malabe and Kiribathgoda. It's difficult to handle the clients manually as their client base is growing rapidly with time. The salon system is introduced to give a better service for their clients & manage employees and resources of the salon effectively with worldwide Information Technology. The software is developed as a web-based solution considering the facility of accessing the system from anywhere in the world by authorized users, and to attract more clients by providing the details of available services and charges through the integrated company website & then submitting appointments for services simply from the website. Not only facilitating for clients, but the system is also able to handle their cosmetics inventory details, cosmetics sales & beautician assignments for the services. The software was designed using Object-oriented concepts & to be developed using technologies Java programming language & My SQL database. For the system implementation eclipse is used and JSP (Java Server Pages) and Servlets are used with spring & hibernate frameworks as the development languages of the system. The system was designed & to be implemented to meet these requirements. This document explains how the design of the software solution was done, to handle the above-mentioned areas of the business.

<https://dl.ucsc.cmb.ac.lk/jspui/handle/123456789/1311>

### 2.3.4 A computerized beauty salon management system for Shaping Heads Beauty Salon

Shaping Heads is a beauty salon located in Muyenga that provides a variety of services for ladies’ beauty care such as manicures, pedicures, retouching, as well as ladies/gents haircuts. Shaping Heads Beauty Salon follows a manual paper-based data management system to maintain its records. Since the current data management system is time-consuming to store/retrieve data and also sometimes does not seem accurate, Shaping Heads Beauty Salon is therefore concerned about using a web-based management system as a solution. This salon management system comes with customer data management, staff data management, appointment handling, message handling, and report generation. The proposed Salon Management System was developed using PHP (Hypertext Pre-processor) which is a free and open-source scripting language. MySQL is used as the database management system. For the analysis and design of the system, Unified Modelling Language (UML) was used. Since the proposed system is running online, the Apache web server is used as a processing server. Brackets were used as the main development tool of the system. JavaScript, jQuery, HTML, and CSS are other technologies that were used for system development. Moreover, the system is featured with a set of non-functional requirements such as security, usability, maintainability, accuracy, and backups. By using the system, productivity throughout the process will be increased via features such as informative dashboards, quick search facilities, and reporting. Easy access to data will improve efficiency in managerial tasks like decision-making and future marketing planning.

<http://hdl.handle.net/20.500.12281/11819>

### 2.3.5 Effective Workflow Management System for Kanthini Beauty Salon

Today beauty culture has become one of the basic needs of almost every person in society despite their gender and age. Thus the beauty salon has become an almost iconic figure in the modern generation. The client organization Kanthini Beauty Salon is one such iconic figure in the beauty culture field, having more than 500 regular clients and about 750 monthly walk-ins. Though there is a significant client base for the company, there is huge competition in this business; since the number of new entrants to the business is remarkably increasing. Not only that but the manual file-keeping process was also identified to be more problematic, hence it had led to issues like data redundancy, data inconsistency, and conflicts in proper decision-making. Thus to reduce such problems, Kanthini Beauty Salon was looking for advanced technological aspects to gain major competitive advantages. Thereby the concept of an Effective Workflow Management System was welcomed by the client; hence it is a web-based system comprised of a public website. The intended system would enable the clients to view information about the salon while providing the opportunity to book appointments online. It would also help to make the overall management more effective as the system consists of features like maintaining a proper database, employee management, leave handling, stock management, and timely report generation. The system was developed by the Rational Unified Process (RUP) which is an object-oriented and iterative model for system development. Design and analysis was done using Unified Modeling Language (UML). PHP Hypertext Preprocessor (PHP) was used as the server-side scripting language. In the meantime, Apache was used as the web server, and MySQL as the database management system. The system was tested from time to time during the whole development period. A proper test plan and suitable test cases were designed and used for this purpose and finally, user acceptance testing was carried out to get the user feedback. The web-based Salon Management System has been developed to assist the management of Kanthini Beauty Salon in managing the business process more efficiently and effectively thereby empowering them to gain competitive advantag

**2.4 challenges and considerations**

a User Experience Design Challenges:

1. Balancing Complexity: Designing a user-friendly interface that caters to both salon owners and clients while accommodating complex scheduling and management functionalities can be challenging.
2. Mobile Responsiveness: Ensuring the system is responsive and optimized for mobile devices to accommodate clients who may prefer booking appointments on smartphones or tablets.

b Security and Privacy Concerns:

1. Data Protection: Implementing robust security measures to protect sensitive client information, such as personal details and payment data, from unauthorized access or breaches.
2. Compliance: Ensuring compliance with data protection regulations, such as GDPR or HIPAA, depending on the jurisdiction and the type of data collected and processed.

c Integration with Existing Systems:

1. Compatibility: Integrating the new system with existing salon management software, POS (Point of Sale) systems or CRM (Customer Relationship Management) platforms may pose compatibility challenges.
2. Data Migration: Transferring existing client records, appointment schedules, and inventory data to the new system without data loss or corruption requires careful planning and execution.

d Scalability and Performance:

1. Handling Peak Loads: Ensuring the system can handle peak booking times and sudden spikes in traffic without experiencing slowdowns or downtime.
2. Scalability: Designing the system architecture to accommodate future growth and scalability requirements as the salon expands its operations or client base.

e Staff Training and Adoption:

1. Training Needs: Providing comprehensive training and support for salon staff to familiarize them with the new system's features and functionalities.
2. Change Management: Addressing resistance to change among staff members accustomed to traditional booking methods and ensuring smooth adoption of the new system.

f Communication and Feedback Mechanisms:

1. Managing Expectations: Setting clear expectations with clients regarding communication channels, response times for inquiries or appointment confirmations, and feedback mechanisms.
2. Feedback Handling: Establishing efficient processes for collecting and addressing client feedback to continuously improve the booking experience and service quality.

g Maintenance and Updates:

1. Regular Maintenance: Planning for ongoing maintenance, updates, and bug fixes to ensure the system remains secure, functional, and aligned with evolving business needs.
2. Software Updates: Managing software updates and version upgrades to incorporate new features, address vulnerabilities, and improve system performance over time.

**2.5 Knowledge gaps in the research studies**

1. Tailored Solutions for Salon Industry: While existing literature discusses online booking and management systems in various service industries, there is a lack of research specifically tailored to the unique needs and challenges of the salon industry. This gap indicates a need for studies that explore the specific requirements, preferences, and behaviors of salon owners, staff, and clients in the context of online booking and management systems.
2. Integration of Advanced Technologies: While some studies discuss the potential of advanced technologies such as AI, machine learning, and data analytics in salon management, there is limited empirical evidence or case studies demonstrating their effective integration and impact on salon operations. Further research is needed to evaluate the feasibility, benefits, and challenges of implementing these technologies in the salon industry.
3. Long-Term Effects of External Disruptions: Studies on the impact of external disruptions, such as the COVID-19 pandemic, on salon operations often focus on short-term responses and adaptations. There is a knowledge gap regarding the long-term effects of such disruptions on salon management practices, customer behavior, and industry trends. Future research could investigate the lasting implications of external disruptions and inform strategies for building resilience and sustainability in the salon industry.
4. Usability and User Experience: While there is literature discussing the importance of user-friendly interfaces and seamless booking experiences, there is a lack of empirical studies evaluating the usability and user experience of existing salon booking and management systems. Research in this area could provide insights into common usability issues, user preferences, and areas for improvement in the design and functionality of salon management systems.
5. Security and Privacy Concerns: Despite the emphasis on data protection and privacy in online service platforms, there is limited research specifically addressing security and privacy concerns in salon booking and management systems. Further investigation is needed to assess the effectiveness of current security measures, identify vulnerabilities, and develop strategies to mitigate risks related to data breaches and unauthorized access.

**2.6 Contributions of the proposed system**

1. Efficiency and Productivity Enhancement: By automating appointment scheduling, staff management, and client record-keeping processes, the Smart Salon system can significantly enhance the efficiency and productivity of salon operations. This allows salon owners and staff to focus more on delivering high-quality services to clients rather than administrative tasks.
2. Improved Customer Experience: The system's user-friendly interface and seamless booking experience can enhance customer satisfaction and loyalty. Clients can easily browse available appointments, select preferred services and staff members, andautomated notifications and reminders, leading to a more convenient and enjoyable salon experience.
3. Enhanced Communication and Engagement: Automated communication features such as appointment reminders, service updates, and feedback collection mechanisms facilitate better communication between salon staff and clients. This fosters stronger relationships and engagement, leading to increased customer retention and positive word-of-mouth referrals.
4. Data-Driven Insights and Decision-Making: The system's data analytics capabilities enable salon owners to gain valuable insights into client preferences, booking patterns, and service utilization trends. This data-driven approach empowers salon owners to make informed decisions regarding staffing, service offerings, pricing strategies, and marketing initiatives, ultimately driving business growth and profitability.
5. Streamlined Operations and Cost Reduction: By centralizing salon management tasks and streamlining workflows, the Smart Salon system can help reduce operational costs and overhead expenses. This includes savings on paper-based record-keeping, manual appointment scheduling, and inefficient resource allocation, leading to improved profitability for salon businesses.
6. Resilience to External Disruptions: The system's online booking and management capabilities provide salon owners with greater flexibility and resilience to external disruptions such as the COVID-19 pandemic or unforeseen closures. Clients can continue booking appointments and accessing salon services remotely, ensuring business continuity even in challenging circumstances.
7. Competitive Advantage and Differentiation: Implementing a modern and innovative online booking and management system like Smart Salon can help salon businesses stand out in a competitive market. It demonstrates a commitment to technological innovation, customer convenience, and service excellence, attracting new clients and retaining existing ones in an increasingly digital world

**2.7 Conclusion**

This chapter has provided a comprehensive review of the related literature pertinent to the development of the Smart Salon online booking and management system. Through this review, several key literature knowledge issues have emerged, shedding light on the state of research in the field.

Firstly, while existing literature offers valuable insights into online booking and management systems across various service industries, there is a notable lack of studies specifically tailored to the unique needs and challenges of the salon industry. This knowledge gap underscores the importance of conducting research that addresses the specific requirements and dynamics of salon operations.

Secondly, controversies in the literature have centered around the integration of advanced technologies such as AI and machine learning into salon management systems. While some studies tout the potential benefits of these technologies in optimizing resource allocation and enhancing customer experiences, others raise concerns about their practical implementation and user acceptance. Resolving these controversies requires empirical research that evaluates the feasibility, efficacy, and user perceptions of these technologies in salon settings.

Lastly, the actual gap that this research seeks to address lies in the development and implementation of a tailored online booking and management system specifically designed for the salon industry. By leveraging insights from existing literature and conducting empirical research, this study aims to fill the gap by delivering a comprehensive solution that addresses the unique needs and challenges of salon operations.

In summary, this literature review has provided a foundation for the subsequent phases of the research, offering valuable insights into existing knowledge, controversies, and gaps in the field. By addressing these gaps and building upon existing literature, the research aims to contribute to the advancement of salon management practices and the enhancement of customer experiences in the salon industry.

**2.7 Citations**

Familia, M.F., 2017. *Web-Based Data Management System for Salon NadeeLalani* (Doctoral dissertation).

Hemarathna, L.W., 2015. Web-Based Salon Management System for Salon Dilu**.**

Farmila, M.F., 2017. *Web-Based Data Management System for Salon NadeeLalani* (Doctoral dissertation).

Bulathsinhala, B.D.L., 2013. WEB-BASED CLIENT HANDLING SYSTEM FOR SALON GAYATHRI.

Sserunjogi, F., 2022. *A computerized beauty salon management system for Shaping Heads Beauty Salon* (Doctoral dissertation, Makerere University).

Bandara, W.G.E.C.D., 2015. Effective Workflow Management System For Kanthini Beauty Salon.

# CHAPTER 3

## 3.1 Introduction To Methodology

The development of the Smart Salon online booking and management system required a systematic approach to ensure the project's success. This chapter outlines the comprehensive methodology adopted, encompassing research, system development, implementation, evaluation methodologies, data collection and analysis, as well as limitations and assumptions encountered during the project lifecycle. It also elaborates how the data was collected, the procedure used, the instruments used, the type of collection used. It contains the functional and non-functional requirements, the methodologies used, and the justification of the methodology used. It also uses Unified Modeling Language (UML) i.e., use-case diagram to describe the outline of the system.

## 3.2 RESEARCH METHODOLOGY

The investigation of Smart salon system dynamic is a multi-stage process, which allows for feedback on the adoption of automation and the online booking. Extensive studying of literature was performed along the line of salon technology to analyze the present condition of the landscape, such as existing solutions, the industry trends and the users’ expectations. Furthermore, the primary research approaches like questions, interviews, and gathering information from both the salons owners, salon managers and end users were availed to avouch credibility to the perspectives from the sources involved in the first hand. This research aimed at designs of strategies to understand most painful point of users, their requirements, and preferences regarding features and tools of Smart Salon system.

### 3.2.1 Target population

1. Clients: This group consists of individuals who require grooming services such as haircuts, manicures, pedicures, facials, and spa treatments. Clients may vary in age, gender, occupation, and personal preferences. The system aims to provide convenience and accessibility to clients by allowing them to schedule appointments easily from the comfort of their homes or on the go.
2. Salon Owners and Staff: This group comprises salon owners, managers, receptionists, stylists, and other staff members involved in salon operations. The system aims to streamline salon management tasks such as appointment scheduling, resource allocation, inventory management, and performance analysis. It provides tools and features to enhance operational efficiency and optimize staff productivity.

### 3.2.2Data collection procedure and instruments

1. Surveys: Develop online surveys using platforms like Google Forms to gather feedback from potential users, including salon owners, staff, and clients. Ask questions about their preferences, pain points, and desired features for a salon booking and management system.
2. Interviews: Conduct in-person or virtual interviews with salon owners, staff, and clients to gain deeper insights into their needs and experiences. Use semi-structured interview guides to explore topics such as current booking processes, challenges faced, and suggestions for improvement.

## 3.3. System development methodology

For the development of the Smart Salon online booking and management system, we will adopt an iterative and incremental approach, which is Agile methodology. Agile methodology emphasizes flexibility, collaboration, and iterative development.

It involves breaking down the project into smaller, manageable tasks or user stories that can be completed in short iterations called sprints.

Agile promotes continuous feedback from stakeholders, allowing for adjustments and improvements throughout the development process.

The Agile software development life cycle helps you break down each project you take on into six simple stages:

1. **Concept:** Define the project scope and priorities
2. **Inception:**Build the Agile team according to project requirements
3. **Iteration:** Create code factoring in customer feedback
4. **Release:** Test the code and troubleshoot any issues
5. **Maintenance:** Provide ongoing tech support to ensure the product remains serviceable
6. **Retirement:** The end of the product lifespan, which often coincides with the beginning of a new one



**3.3.1 Scrum Framework Implementation**:

1. Implement the Scrum framework within the Agile methodology to structure development activities.
2. Define roles: Assign roles such as Product Owner, Scrum Master, and Development Team. The Product Owner represents stakeholders and defines requirements, the Scrum Master facilitates the Scrum process, and the Development Team implements the requirements.
3. Plan Sprints: Break down the project into sprints, typically two to four weeks in duration, with each sprint delivering a potentially shippable increment of the product.
4. Sprint Planning: Conduct sprint planning meetings at the beginning of each sprint to prioritize tasks from the product backlog and define the sprint goal.
5. Daily Stand-ups: Hold daily stand-up meetings to review progress, discuss any impediments, and plan the day's work.
6. Sprint Review: Conduct sprint review meetings at the end of each sprint to demonstrate the completed work to stakeholders and gather feedback.
7. Sprint Retrospective: Hold sprint retrospective meetings to reflect on what went well, what could be improved, and identify action items for the next sprint.

**3.3.2 User Story Development**:

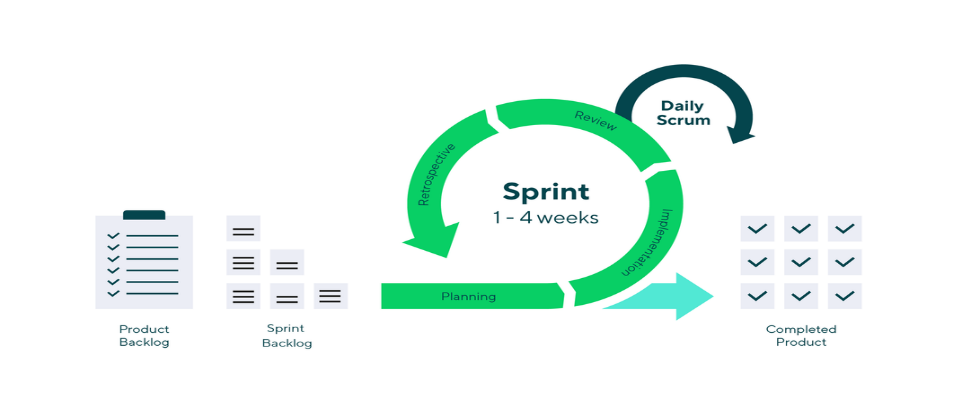
1. Define user stories based on stakeholder requirements, focusing on the needs of salon owners, staff, and clients.
2. Each user story should follow the INVEST criteria (Independent, Negotiable, Valuable, Estimable, Small, Testable) and be written from the perspective of the end user.
3. Prioritize user stories based on business value and dependencies, with input from the Product Owner.

**3.3.3 Continuous Integration and Delivery**:

1. Implement continuous integration and delivery practices to ensure that code changes are integrated frequently and delivered to production environments automatically.
2. Use version control systems like Git to manage code changes and track revisions.
3. Set up automated build and deployment pipelines to streamline the process of testing and releasing new features.

**3.3.4 Iterative Development and Feedback**:

1. Iterate on the development process based on feedback gathered from stakeholders, user testing, and sprint reviews.
2. Continuously refine and improve the system based on changing requirements and emerging insights.
3. Encourage collaboration between development teams, stakeholders, and end users to ensure alignment with project goals and objectives.



### 3.4 Methodology Justification

#### 3.4.1 Here are the advantages of the Agile methodology

Flexibility: The agile methodologies are well known for their capability to provide the flexibility that enables the introduction of changes in the development process at different stages so as to meet the emerging requirements or meet stakeholders demands. This is especially useful in a project such as Smart Salon, as needs may change along with the system as development and testing is carried out.  
Iterative Development: Iterative development is at the core of agile methodologies and each project is divided into smaller and more manageable tasks, which are called sprints. In every sprint, the team achieves potentially shippable piece of the product which makes it possible for continuous improvement and feedback from stakeholders.  
Customer Collaboration: Agile methodologies are built on collaboration with clients and other stakeholders all through the development process. When it comes to Smart Salon, engaging salon owners, staff members as well as customers in the development process ensures that the system works perfectly for their needs.  
Early and Continuous Delivery: Agile methodologies highlight the release of working software often and at early stages. The Smart Salon team's implementation of continuous integration and delivery will make it possible to push new features and code directly to the production environments, ensuring instant feedback and validation.  
Adaptability: Agile approaches can be easily adapted to dynamic conditions and requirements. This is crucial for Smart Salon as the beauty industry is full of dynamics which might call for updates on the system to accommodate the changing market trends, regulations, or new technologies.  
Risk Management: Agile methodologies are capable of identifying risks and opportunities early during the development process. Through splitting the project into many segments, and constantly monitoring the progress, the Smart Salon team can deal with the potential problems before they become big problems.

**3.4.2 Functional requirements**

1. User Registration and Authentication: Salon owners, staff, and clients should be able to register for accounts on the platform. Users should be able to log in securely using email/password or social media accounts.
2. Appointment Scheduling: Clients should be able to view available appointment slots and schedule appointments with preferred stylists and services. Salon staff should be able to manage their availability and accept or reject appointment requests
3. Service Selection and Booking: Clients should be able to browse and select from a list of available services offered by the salon. Clients should be able to book multiple services in a single appointment slot if applicable.

**3.4.3 Non-functional requirements**

1. Usability:
   1. The system should have an intuitive and user-friendly interface that is easy to navigate for both salon staff and clients.
   2. Response times for actions such as appointment scheduling and service selection should be fast to ensure a smooth user experience.
2. Performance:
   1. The system should be able to handle a large number of concurrent users and appointments without significant degradation in performance.
   2. Response times for critical operations, such as loading appointment schedules and processing payments, should be within acceptable limits.
3. Reliability:
   1. The system should be highly available and reliable, with minimal downtime for maintenance or upgrades.
   2. Backup and recovery mechanisms should be in place to protect against data loss and ensure continuity of service.
4. Security:
   1. The system should implement robust security measures to protect user data, including personal information and payment details.
   2. Access to sensitive data and functionality should be restricted based on user roles and permissions.
   3. The system should comply with relevant data protection regulations such as GDPR or HIPAA.
5. Scalability:
   1. The system should be able to scale horizontally to accommodate growth in user base and transaction volume over time.
   2. Scalability should be achieved through technologies such as cloud computing and distributed architectures.

**3.4.3 Unified Modelling Language**

The Unified Modeling Language (UML) is a general purpose, developmental, modeling language in the field of software engineering that is intended to provide a According to software and systems engineering, a use case is a list of actions or event steps typically defining the interactions between a role (known in the UML as an actor) and a system to achieve a goal.

**a Use case diagram**

A use case diagram is a type of Unified Modeling Language (UML) diagram that illustrates the interactions between actors (users or external systems) and a system under consideration. It provides a high-level view of the system's functionality from the perspective of its users, helping to visualize the various ways in which users interact with the system to achieve specific goals or tasks.

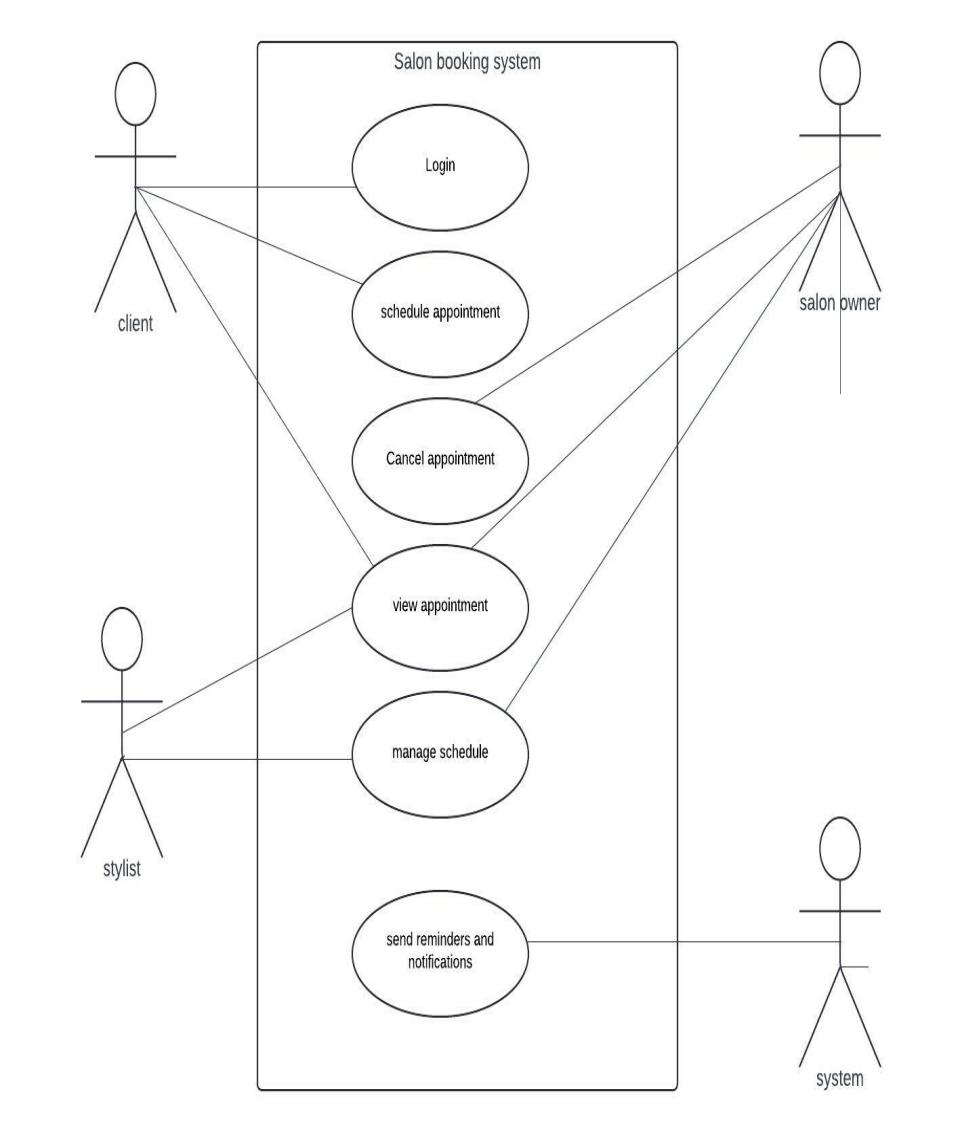


Figure Use Case

**b Class diagram**

a class diagram is a type of Unified Modeling Language (UML) diagram that illustrates the structure and relationships of classes within a system. It provides a conceptual view of the system's static structure, focusing on the classes, attributes, methods, and associations between them.

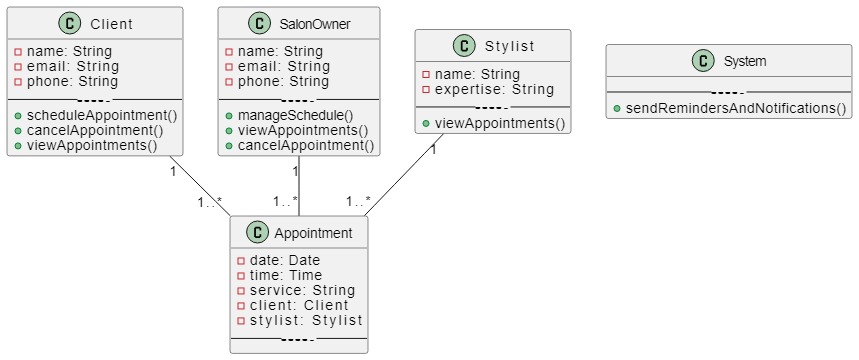


Figure Class Diagram

**c)Activity diagram**

an activity diagram is a type of Unified Modeling Language (UML) diagram that illustrates the flow of activities or actions within a system or process. It provides a visual representation of the sequential and parallel activities that occur during the execution of a use case, scenario, or business process.

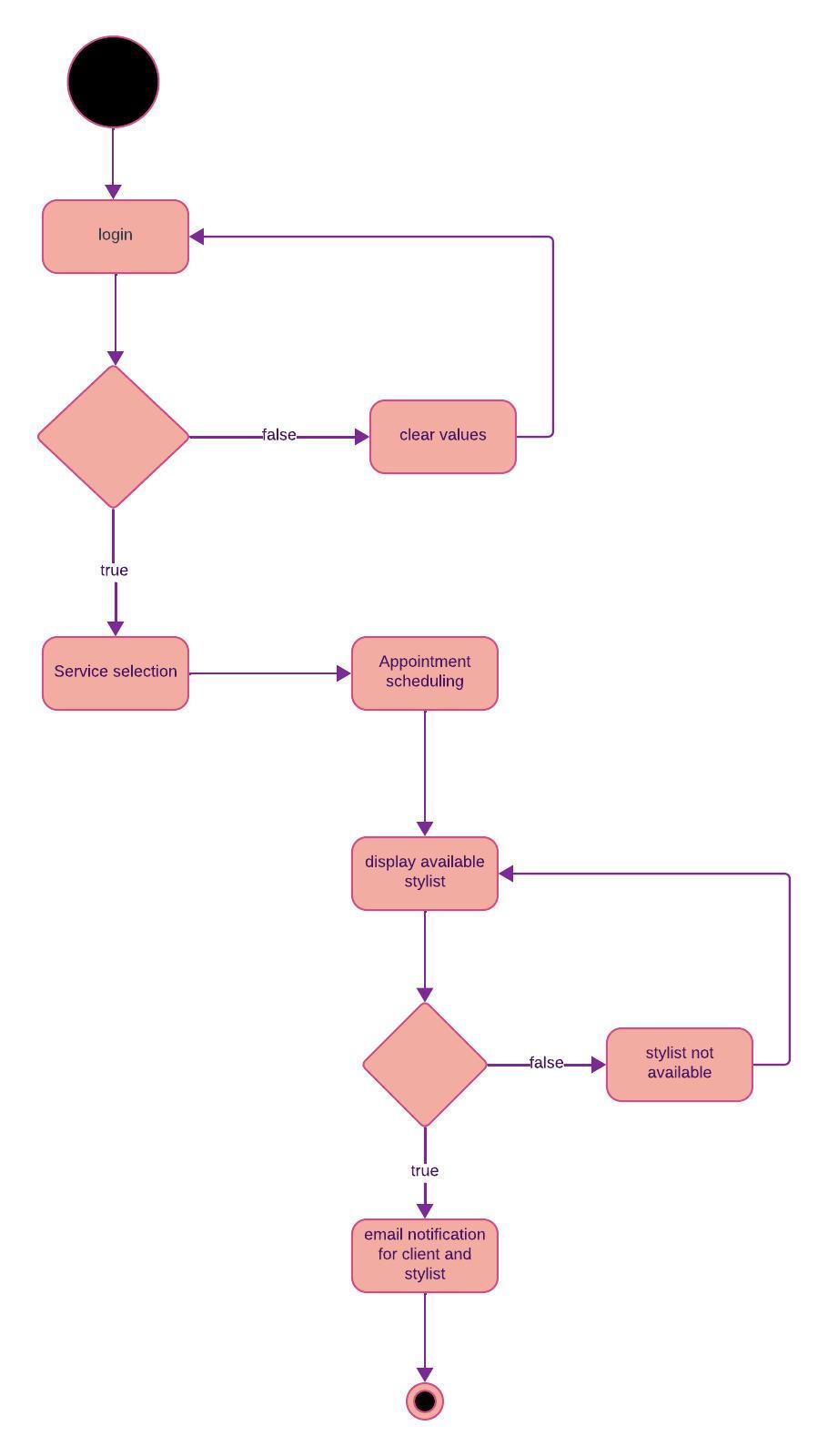
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Figure Activity Diagram

**d Sequence diagram**

a sequence diagram is a type of Unified Modeling Language (UML) diagram that illustrates the interactions between objects or components within a system over time. It shows the sequence of messages exchanged between objects as they collaborate to perform a particular task or scenario.

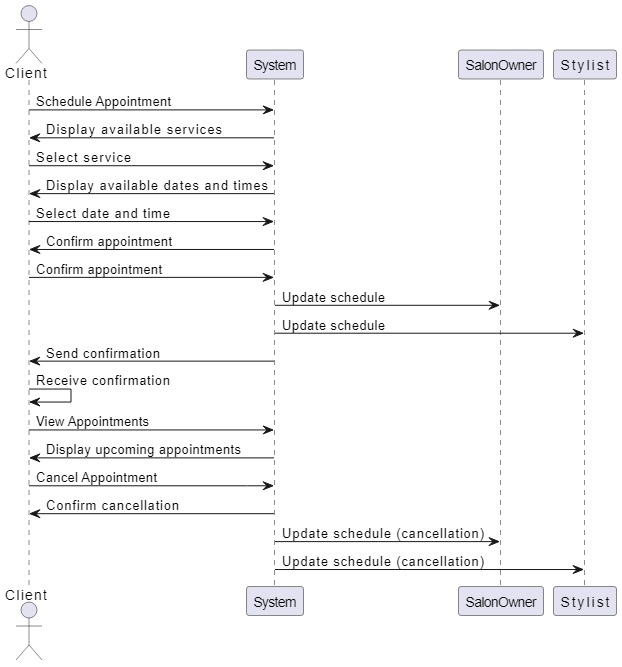


Figure Sequence Diagram

**e Deployment diagram**

These diagrams are used to visualize the topology of the physical components of a system where the software components are deployed. They are used to describe the static deployment view of a system. These diagrams also consist of nodes and their relationships.

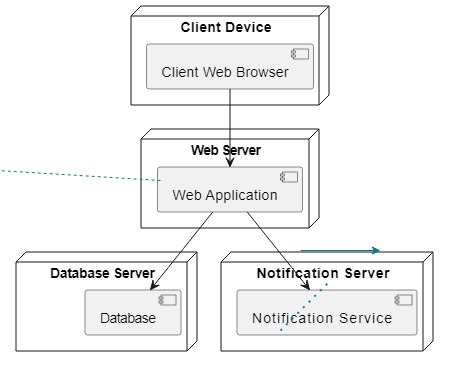


Figure Deployment Diagram

**3.5 Database Design**

Database design refers to organization of data according to a database model. The designer determines what data must be stored and how the data elements interrelate.

It also involves classifying data and identifying interrelationships. Here, data will be stored in different tables but in a single centralized database.

**3.5.1 Table Design**

Table designing involves arranging related data in a table format within a database.

A table consists of rows and columns they have specific number of columns but can have any number of rows.

**Client table. Table 3.0 . client table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATA TYPE | FIELD SIZE |
| Client ID | Primary key | int | 10 |
| Name | Name of user | Varchar | 20 |
| Email | User email | Varchar | 20 |
| Phone | User phone no | varchar | 20 |

**Stylist table 3.1 stylist table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| Stylist ID | Primary key | int | 10 |
| Name | Stylist name | varchar | 20 |
| Expertise | What they are good at | varchar | 20 |

**Salon owner table 3.2 salon owner table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELDSIZE |
| Salon owner ID | Primary key | Int | 10 |
| name | Name of owner | Varchar | 20 |
| Email | Email of owner | Varchar | 20 |
| phone | Phone no of owner | varchar | 20 |

**Service table 3.3 service table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| Service ID | Primary key | int | 10 |
| name | Name of service | varchar | 20 |
| description | Service description | varchar | 20 |
| price | Service price | varchar | 20 |

**Appointment table 3.4 appointment table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| Appointment ID | Primary key | INT | 10 |
| Client ID | Foreign key | INT | 10 |
| Stylist ID | Foreign key | INT | 10 |
| Salon owner ID | Foreign key | INT | 10 |
| time | Appointment time | VARCHAR | 10 |
| date | Appointment date | DATE | 20 |

**Schedule table 3.5 schedule table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| Schedule ID | Primary key | INT | 10 |
| Stylist ID | Foreign key | INT | 10 |
| Date | Day available | DATE | 20 |
| Time | Schedule time | VARCHAR | 20 |
| Available | boolean | VARCHAR | 10 |

**Notification table 3.6 notification table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| Notification ID | Primary key | INT | 10 |
| Client ID | Foreign key | INT | 10 |
| message | Reminder | TEXT | 30 |
| Date and time | Date and time | VARCHAR | 20 |

**Login table 3.7 login table**

|  |  |  |  |
| --- | --- | --- | --- |
| FIELD NAME | DESCRIPTION | DATATYPE | FIELD SIZE |
| User ID | Primary key | INT | 10 |
| User name | User’s name | VARCHAR | 20 |
| Password | User’s password | VARCHAR | 10 |

**3.6 Data Analysis**

**3.6.1 User Behavior Analysis:**

Analyze user interaction data collected from the Smart Salon system, such as:

1. User registration and login activity
2. Appointment scheduling patterns
3. Service selection preferences
4. Browsing behavior on the platform
5. Use techniques like funnel analysis to identify drop-off points in the user journey and optimize the booking process for better conversion rates.

System Performance Analysis:

1. Monitor system performance metrics to ensure optimal operation, such as:
2. Response times for booking requests
3. Server uptime and availability
4. Error rates and system failures
5. Use performance monitoring tools to track these metrics and identify areas for optimization and improvement.

Business Metrics Analysis:

Analyze key business metrics to assess the overall performance and effectiveness of the Smart Salon system, including:

1. Revenue generated from bookings
2. Number of appointments scheduled per day/week/month
3. Average booking value and frequency
4. Customer retention and churn rates
5. Use data visualization techniques such as charts and graphs to present these metrics in a clear and actionable format.

Customer Feedback Analysis:

Analyze feedback collected from users through surveys, interviews, and feedback forms to understand customer satisfaction and sentiment towards the Smart Salon system.

Use sentiment analysis techniques to categorize and analyze user feedback, identifying common themes and areas for improvement.

Incorporate user feedback into future iterations of the system to enhance the user experience and address any issues or concerns raised by users.

**3.6.2 Predictive Analysis:**

Use historical data collected from the Smart Salon system to perform predictive analysis and forecast future trends and patterns.

Predictive analysis can help anticipate peak booking times, identify high-demand services, and optimize resource allocation and staffing levels accordingly.

Utilize machine learning algorithms and predictive modeling techniques to build predictive models based on historical booking data.

**3.6.3 Competitive Analysis**

Conduct competitive analysis by comparing the performance of the Smart Salon system with that of competing salon booking and management platforms.

Benchmark key metrics such as user engagement, customer satisfaction, and market share against industry standards and competitors to identify areas of strength and opportunities for improvement.

Actionable Insights and Recommendations:

Summarize the findings from data analysis and distill actionable insights and recommendations for stakeholders.

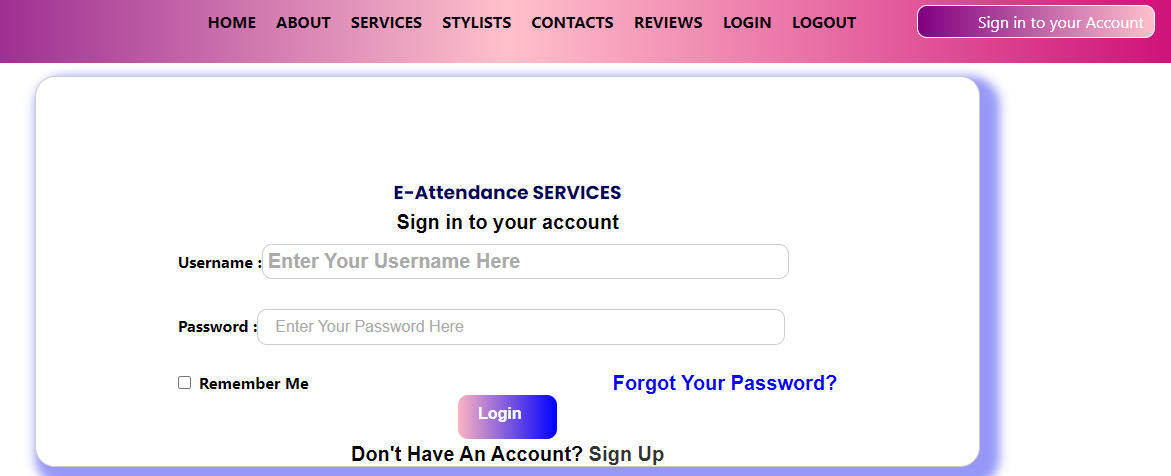
Provide recommendations for optimizing the Smart Salon system based on data-driven insights, such as implementing new features, refining user interfaces, or adjusting pricing strategies.

### 3.7 User Interface

Among all the major components of the system, a major role of the system is played by user interfaces. Interactivity in between system and the user is managed by the interface. User friendliness, integrated color combination and the well organized components are dependent on it. Without having a user friendly interface, interaction with the system becomes hard. Privileges must be set by the System Administrator to users in different ways. Management of those privileges and presenting them effectively to users is helped by the interfaces.

**3.7.1 Login Window**

Login form uses to login to the system for authorized users using a valid username and password. If username and password correct user allow to login to the system. Else alert to user that enter the correct password.



**3.7.2 Main window of the System**

Main window of the system provide the tile view for access the modules in system and see overview of the salon day by day process. For each modules it’s provides separate tile. User can access these modules by clicking on tiles

**3.8 Conclusion**  
At last, Chapter 3 has given a general presentation about the theoretical concepts, development methodology of systems, and Unified Modeling Language (UML) diagrams which come to the use in the design of the online booking and managements system. The chapter opened with the theoretical aspect of the system involving the state of the knowledge regarding the physics principles as a basis to the investigation. This was to clear the path for how the investigator decided on the investigation method to develop the system.  
  
The chapter assumed the next point to describe the methodology of system development which made a case for an iterative and incremental one due to its suitability for projects that are complex and have a continuous cycle of improvements which includes the online salon booking and management system. This approach features constant feedback along with incorporating changes and iterations so that the plan exactly fulfills all objectives and goals of stakeholders.  
  
Moreover, different UML diagrams were shown including: use case diagrams, activity diagram, class diagrams, and sequence diagrams to visually illustrate the system's architecture. Visualization diagrams picture the system’s operation, the way it performs other tasks, and the components that make it up. This makes communication easier, better analysis, and effective decision making.  
  
Primarily, Chapter 3 is the prelude, which provides the readers a clear picture of the system organizational setup, infrastructure creation and software design approach. This online salon scheduling and management system will have the effective development and implementation by means of the theoretically correct theory, the most successful methods, and the visual modelling methods.

## CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

## 4.1. INTRODUCTION

This chapter presents the findings from the development and implementation of the online salon management system. It details how each objective of the project was achieved through the system’s features and functionalities. Screenshots and descriptions of various aspects of the system, including user interfaces, data entry forms, query outputs, reports, and validation processes, are included to demonstrate the system's effectiveness and usability.

## 4.2. Presentation Of Findings

* + 1. **Obective 1:User Friendly Interface**

The primary goal of this objective is to create an intuitive and efficient interface that salon owners can use to manage their day-to-day operations.

**Appointment Management**: Providing a clear and accessible way to view, schedule, and manage client appointments. This includes a calendar view, time slots, and the ability to modify or cancel bookings easily.

**Staff Schedules**: Enabling salon owners to manage staff availability and shifts. This involves visual scheduling tools, notifications for schedule changes, and conflict resolution features.

**Client Records**: Offering a comprehensive client management system that stores detailed information about clients, such as contact details, service history, and preferences. This helps in personalizing services and improving customer satisfaction.

## 4.2.2 Objective 2: Implementing a secure Authentication system

This objective focuses on ensuring that the salon management system is secure and that sensitive data is protected. Key aspects include:

1. **Data Privacy**: Protecting client and staff information from unauthorized access. This involves encrypting sensitive data both in transit and at rest.
2. **Access Control**: Implementing role-based access control (RBAC) to restrict system access based on user roles. Only authorized personnel should have access to specific functionalities and data.
3. **Authentication**: Using secure authentication mechanisms such as multi-factor authentication (MFA) to verify user identities and prevent unauthorized access.

### 4.2.3 Objective 3: Creating a Seamless Booking for Clients

Service Selection: Providing detailed information about available services, including descriptions, duration, and prices, to help clients make informed choices.

### 4.2.4 Objective 4: Evaluating The System’s Usability, Reliability And Performance

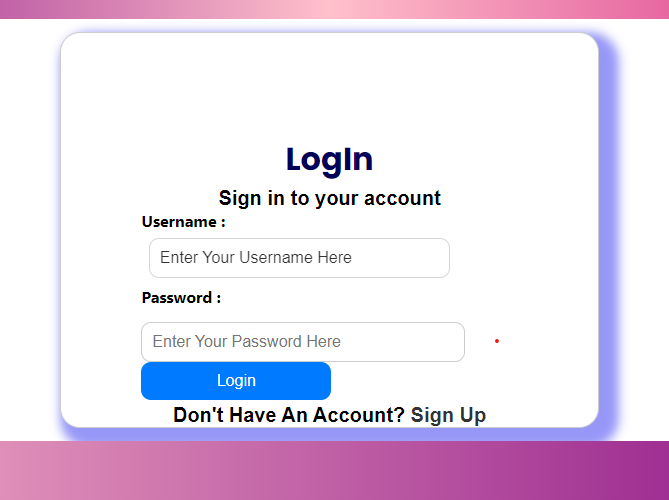
A) **Usability Testing**: Conducting tests with real users to identify any usability issues and ensure the interface is intuitive and easy to navigate.

**B) Reliability Testing**: Ensuring the system can handle typical loads and stresses without failure. This includes testing for uptime, error rates, and recovery from failures.

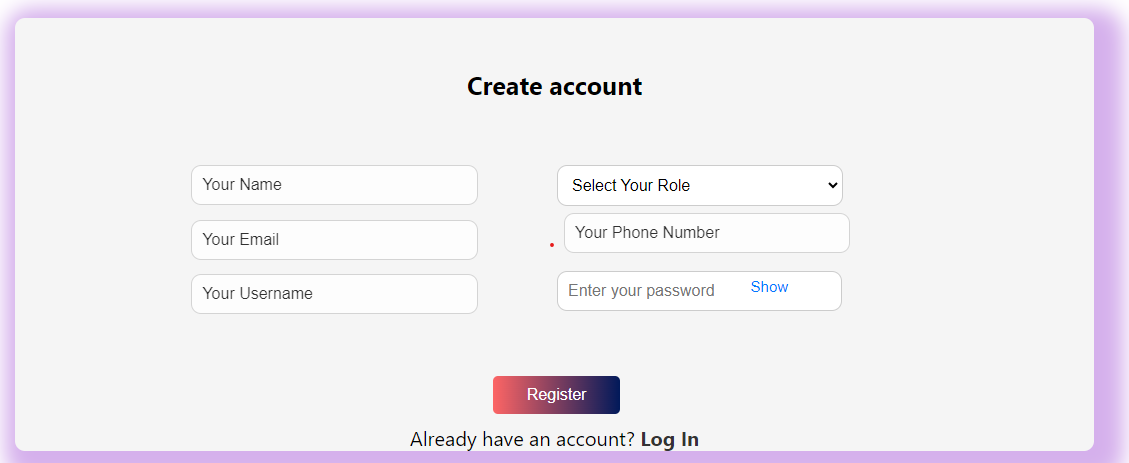
C) **Performance Analysis**: Assessing the system’s performance in terms of speed, responsiveness, and resource usage. This involves bench marking against key performance indicators (KPIs) and optimizing where necessary.

D) **Feedback Analysis**: Collecting and analyzing feedback from users to continuously improve the system. This helps in identifying bugs, understanding user needs, and making iterative enhancements to the system.

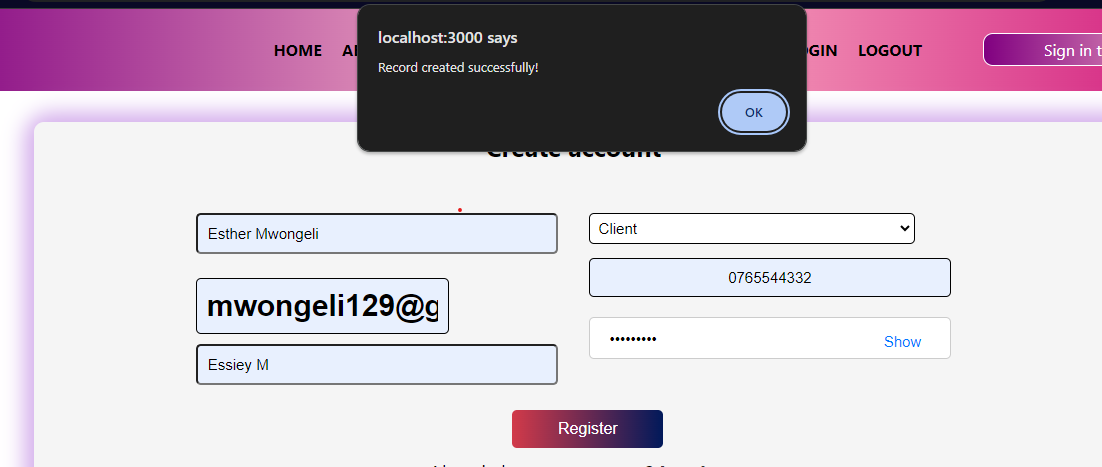
Login Screenshot



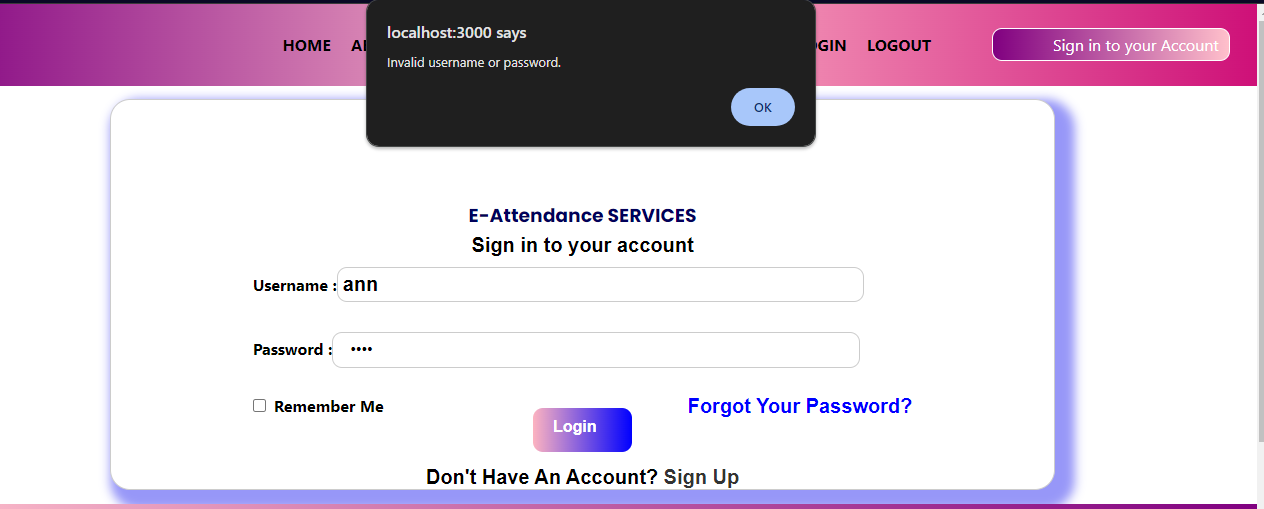
Entry Form screenshot



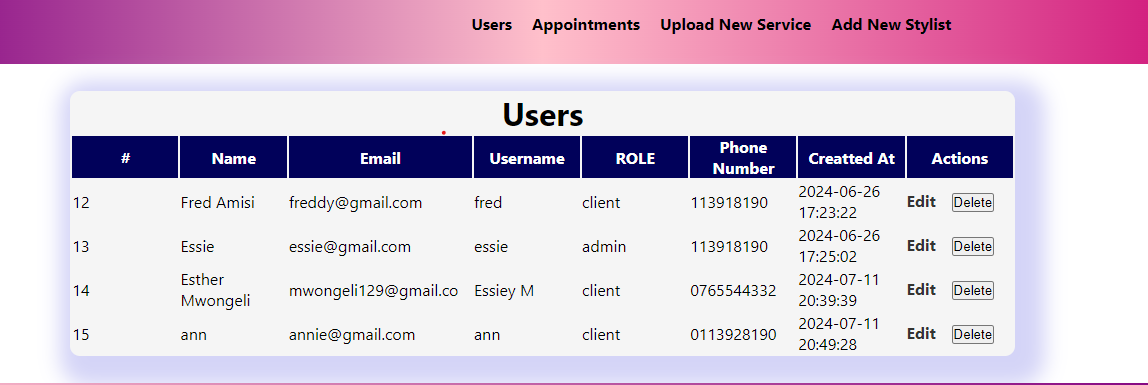
Querry Output Screenshot



Validation Form Screenshot



Report Screenshot



## CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

**5.1 Introduction**

This chapter presents a detailed summary of the findings, conclusions, and recommendations from the study on the salon management system. The focus is on designing a user-friendly interface, implementing secure authentication, creating a seamless booking experience, and incorporating features for automated notifications and feedback collection. Each section addresses how the system met its objectives and provides actionable insights for future improvements.

### 5.2 Summary Of Findings

#### General Information

#### The primary goal of this project was to develop a comprehensive salon management system that enhances operational efficiency, data security, and customer experience. The system was designed to tackle the common challenges faced by salon owners, including managing appointments, staff schedules, client records, and customer details.

#### i) Objective One: Designing a User-Friendly Interface

The system was designed with an intuitive and user-friendly interface, enabling salon owners to manage appointments, staff schedules, and client records with ease. The interface featured a dashboard that provided an overview of daily activities, quick access to critical functions, and customization settings to cater to individual salon needs.

#### ii) Objective Two: Implementing a Secure Authentication System

To ensure data privacy and access control, the system incorporated a robust authentication mechanism. This included user role management, where different levels of access were granted to administrators, staff, and clients. Additionally, encrypted data storage and secure communication protocols were implemented to protect sensitive information.

#### iii) Objective Three: Creating a Seamless Booking Experience for Clients

The booking module was designed to offer clients a seamless experience when scheduling appointments. Clients could view available time slots, select desired services, and choose preferred staff members through a simple and intuitive interface. This feature significantly reduced the time and effort required for booking appointments and improved customer satisfaction.

#### iv) Objective Four: Incorporating Automated Notifications and Feedback Collection

The system included features for automated notifications and reminders, enhancing communication and engagement with clients. Notifications for appointment confirmations, reminders, and promotional offers were sent via email and SMS. A feedback collection feature was also integrated, allowing clients to rate their experience and provide suggestions for improvement.

### 5.3 Conclusion

The salon management system effectively met its objectives, addressing the key challenges identified at the outset of the study. Specific conclusions are drawn based on the research questions:

1. **Research Question 1: How can a user-friendly interface improve salon management?** The user-friendly interface enabled salon owners and staff to efficiently manage appointments, schedules, and client records, resulting in better organization and time management.
2. **Research Question 2: What measures ensure data privacy and access control in a salon management system?** The implementation of secure authentication, role-based access control, and data encryption ensured that sensitive information was protected and accessible only to authorized users.
3. **Research Question 3: How can the booking experience be enhanced for clients?** The seamless booking experience, with easy access to available appointments and service options, improved client satisfaction and reduced booking-related issues.
4. **Research Question 4: How can automated notifications and feedback collection enhance customer engagement?** Automated notifications kept clients informed and reminded them of upcoming appointments, while feedback collection facilitated continuous improvement based on client input.

### 5.4 Recommendations

Based on the findings and conclusions, the following recommendations are proposed

1. **Integration with Payment Systems:** Integrate the salon management system with various payment gateways to provide seamless payment options for clients.
2. **Advanced Analytic:** Implement advanced analytic to track client preferences, service usage, and staff performance for data-driven decision-making.
3. **Mobile Application Development:** Develop a mobile application version of the system to increase accessibility and convenience for both staff and clients.
4. **Staff Training Programs:** Conduct regular training sessions for staff to ensure they are proficient in using the system and can assist clients effectively.
5. **Enhanced Marketing Features:** Incorporate marketing automation features to create and manage promotional campaigns, loyalty programs, and referral bonuses.

## 5.5 Referrences

Familia, M.F. (2017). "Web-Based Data Management System for Salon NadeeLalani" (Doctoral dissertation).

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Bandara, W.G.E.C.D. (2015). "Effective Workflow Management System For Kanthini Beauty Salon."

## 5.6 Appendices

### Appendix I: Questionnaire

QUESTIONNAIRE FOR THE PROPOSED SYSTEM

Online booking appointment is more efficient than paper registration.

(Click where appropriate)

[ ] Strongly agree.

[ ] Agree

[ ] Disagree

[ ] Strongly disagree.

[ ] Not sure

Booking appointments online in the past has been more difficult and tiresome.

(Click where appropriate)

[ ] Strongly agree.

[ ] Agree

[ ] Disagree

[ ] Strongly disagree.

[ ] Not sure

No problems have arisen while accessing the current system.

(Click where appropriate)

[ ] Strongly agree.

[ ] Agree

[ ] Disagree

[ ] Strongly disagree.

[ ] Not sure

Online appointment booking is difficult and only be used by literate people.

(Click where appropriate)

[ ] Strongly agree

[ ] Agree

[ ] Disagree

[ ] Strongly disagree.

[ ] Not sure

### Appendix II : Budget

|  |  |  |
| --- | --- | --- |
| Category | Cost(Kshs) | Details |
| DEVELOPMENT COSTS |  |  |
| Software development | 50,000 | Includes coding, testing and integration |
| Hardware infrastructure | 10,000 | Servers, networking equipment |
| Testing and quality assurance | 7000 | Test cases, QA tools |
| DEPLOYMENT COSTS |  |  |
| Training sessions for staff | 3000 | Training materials, instructor  costs |
| System deployment and  integration | 8000 | Rollout integration with existing system |
| MAINTAINANCE COST |  |  |
| Ongoing support and updates | 15000 per year | Support staff salaries, software  updates |
| Security and data protection  measures | 17000 per year | Security audits, data encryption |
| MISCELLINIOUS |  |  |
| Contingency | 6000 | Buffer for unforeseen expenses |
| TOTAL | 160000 |  |

# Appendix III:Time Frame

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **MONTHS**  **TASKS** | **FEB** | **MAR** | **APR** | **MAY** | **JUNE** | **JULY** |
| PLANNING AND ANALYSIS |  |  |  |  |  |  |
| DESIGN |  |  |  |  |  |  |
| DEVELOPMENT |  |  |  |  |  |  |
| TESTING |  |  |  |  |  |  |
| DEPLOYMENT |  |  |  |  |  |  |
| TRAINING AND SUPPORT |  |  |  |  |  |  |

### APPENDIX IV: PROGRAM CODE



