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Design and Implementation of a Beauty Salon Appointment and Sales Management System

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Abstract: This study developed and evaluated a web-based Beauty Salon Appointment and Sales Management System to address the operational inefficiencies at Synells Beauty Salon in Bantayan, Cebu. The salon's reliance on manual or semi-digital processes for appointment scheduling, inventory tracking, sales monitoring, and report generation led to scheduling conflicts, data management errors, and delayed reporting. The primary objective was to design and implement a digital solution to automate these tasks and provide real-time operational visibility. Employing the Rapid Application Development (RAD) methodology, the system was built through iterative prototyping, ensuring continuous stakeholder feedback and alignment with user requirements. The resulting application features a real-time dashboard that displays scheduled appointments, daily, weekly, and monthly sales, service lists, and customer data. Administrative functionalities include comprehensive appointment management (creation, viewing, deletion, cancellation), sales updates, service record management, invoice generation,

and the printing of e-receipts and sales reports. The system's quality was rigorously evaluated by IT experts using the ISO/IEC 25010 software quality model, assessing characteristics such as functional suitability, reliability, and security. Concurrently, end-user usability was measured with the USE Questionnaire, evaluating usefulness, satisfaction, ease of use, and ease of learning. Quantitative results indicated very high levels of acceptance, with an overall effectiveness mean of 4.25. The ISO/IEC 25010 evaluation yielded a grand mean of 4.19, with functional suitability scoring highest at 4.33. Usability assessment resulted in a grand mean of 4.18, where ease of use achieved a notable 4.33. The findings confirm that the system provides an efficient, user-friendly, and secure solution for managing salon operations, significantly reducing manual errors and improving the potential for customer service. The study contributes to the literature on digitizing small service enterprises and recommends future enhancements such as integrating online payment gateways, developing offline functionality, and implementing multi-user role support for beauticians and customers.

Keywords: Salon Management System, Appointment System, Rapid Application Development, ISO 25010, Usability Evaluation, Scheduling Automation

I. INTRODUCTION

The beauty salon industry increasingly relies on digital management solutions to enhance operational efficiency and customer satisfaction [3], [13]. Appointment management systems automate key operational tasks, enabling businesses to track schedules, monitor inventory, process sales, and generate reports systematically [4]. Established systems such as AURA Salonware demonstrate the viability of such platforms in reducing manual errors and improving service delivery. At Elvira True Beauty Salon, the reliance on manual appointment management has led to inefficiencies, human error, and security concerns such as data breaches, highlighting the need for a customized digital solution that addresses the specific workflow requirements of local salons [12].

Web-based appointment scheduling systems have demonstrated significant benefits across various service industries. A systematic review of web-based medical appointment systems found that most practices reported positive changes after adoption, including "reduced no-show rates, decreased staff labor, decreased waiting time, and improved user satisfaction [14]. A study evaluating a training package for Emergency Medical Dispatchers found that the intervention led to a significant increase in the proportion of stroke patients correctly identified, from 63% to 80%, and a marginally non-significant reduction of 2.8 minutes in ambulance response time. These findings demonstrate that targeted training interventions can improve emergency response accuracy and efficiency, suggesting that similar training protocols could benefit salon staff in accurately assessing customer needs and managing service delivery [7].

Synells Beauty Salon, located on the second floor of the Green Apple Building in Binaobao, Bantayan, Cebu, currently manages appointments, inventory, and sales through manual or semi-digital processes. These methods are prone to scheduling conflicts, inventory mismanagement, delayed report generation, and limited visibility into daily operations. Consequently, staff experience inefficiencies, and customer dissatisfaction may arise when services cannot be rendered due to stock unavailability or double-booked appointments. This aligns with findings from a study on service quality in beauty salons, which emphasized that service quality dimensions including reliability and responsiveness "significantly impact customer satisfaction in beauty salons." [10][11].

This study addresses the gap between generic salon management platforms and the contextual needs of a local Filipino salon. By developing a customized, web-based appointment management system that automates tasks such as appointment scheduling, transaction recording, customer reminders, and resource allocation—thereby addressing the specific operational challenges of manual documentation and inefficient customer relationship management identified at Salon Chami in Panadura, Sri Lanka [7]—this research contributes to the growing body of literature on digitizing small service enterprises and provides a replicable model for similar establishments seeking affordable, user-centered digital transformation.

Research on expertise-based skills management highlights that while creating skill inventories for employees and enabling managers to assign tasks based on workers' abilities is essential for effective human resource management, this practice is often hindered by inadequate skill evaluation and a lack of supporting tools. This framework addresses these gaps by proposing a mathematical model that automatically calculates

employees' soft and hard skills over time, supporting managers in making appropriate task assignment decisions [1]. These principles align directly with the need for proper staff assignment in salon operations, where matching stylists to services based on their expertise can improve efficiency and service quality.

General Objective

This study aims to develop a Beauty Salon Appointment Management System for Synells Beauty Salon.

Specific Objectives

1. To design and develop a system dashboard with appointment management and sales monitoring functionalities with the following functional capabilities:

1.1 To design and develop a system dashboard that displays important information including scheduled appointments, services offered, and the customer list.

1.2 To provide administrative functionalities that allow the administrator to create, view, and delete appointment records, manage sales, view available services with corresponding costs, and generate invoices for services rendered.

1.3 To enable the printing of system-generated documents, including e-receipts and weekly, monthly, and yearly sales reports.

1.4 Cancel appointments and make invoice, rate feedback.

2. Evaluate the quality of the developed system using ISO 25010 standards [5].

3. To evaluate the usability of the developed system in terms of usefulness, ease of use, ease of learning, and satisfaction using the USE Questionnaire [9][11].

Conceptual Framework

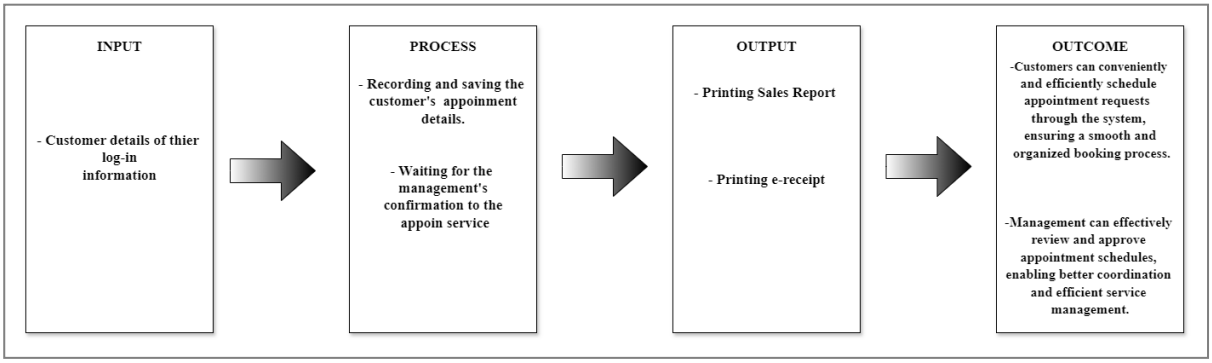

Figure 1. Conceptual Framework of the Study

The study is guided by the Input-Process-Output-Outcome (IPOO) model, a common framework in instructional design and development research. Inputs include user requirements, salon workflow data, and hardware/software specifications. The process encompasses system development using RAD methodology, prototyping, and iterative refinement. Outputs consist of the functional appointment management system, dashboard visualizations, and generated reports. The intended outcome is improved operational efficiency, reduced manual errors, and enhanced customer satisfaction at Synells Beauty Salon.

II. METHODS

This study employed a developmental research design, focusing on the systematic design, development, and evaluation of a software application. This approach aligns with established practices in instructional design and technology, where the creation and validation of a product are central to the research process [6]. The descriptive-evaluative approach was used to assess system quality and usability based on established criteria, following best practices in information systems research.

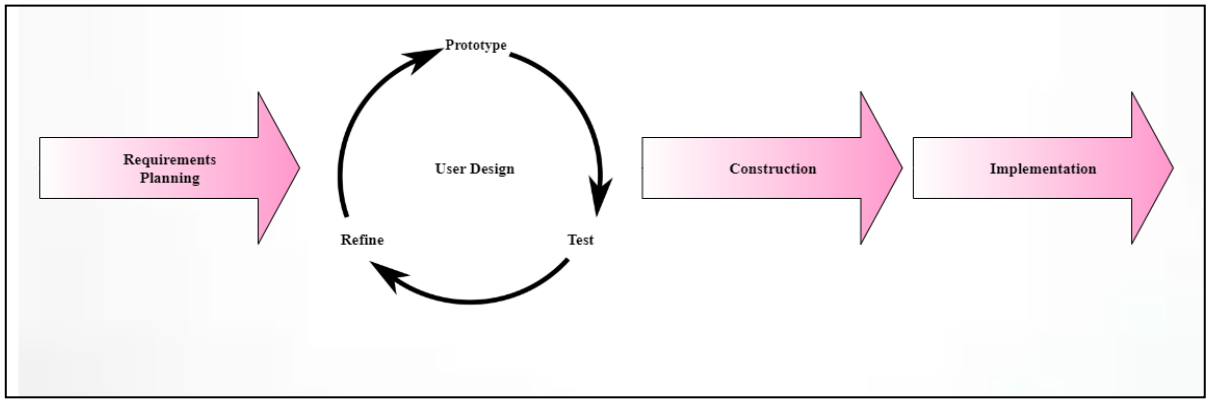

Figure 2. Rapid Application Development

The system was developed using the Rapid Application Development (RAD) methodology. RAD is an agile project management approach characterized by accelerated development cycles, minimal upfront planning, and intensive prototype iteration. This methodology was selected due to its suitability for small-scale projects with clearly defined user requirements and active stakeholder involvement, as demonstrated in similar salon system developments.

RAD Software Phases
The following phases were involved in developing the system using Rapid Application Development (RAD):

Step 1. Requirements Planning
Developers, clients (software users), and team members communicate at this stage to define the project's goals and expectations as well as any current or potential problems that would need to be fixed during the development. An overview of this stage includes the following: Researching the issue, defining the project's requirements, and finalizing the specifications with the agreement of all stakeholders.
Step 2. User Design Cycle (Prototype, Refine, Test)
Clients and developers collaborate closely throughout this stage to make sure that their needs are satisfied at every stage of the design process. The users can evaluate each product prototype at each level to make sure it matches their expectations, almost like custom software development.

Step 3. Construction
During this phase, the software development team, which consists of programmers, coders, testers, and developers, collaborates to ensure that everything is running well and that the final product meets the goals and expectations of the customer. The client still has the opportunity to provide input during this third phase, which is crucial. They can offer suggestions for improvements, adjustments, or even brand-new concepts to address issues as they develop.

Step 4. Implementation
The finished product is launched during this phase of execution. It comprises user training in addition to data conversion, testing, and the switchover to the new system. While the coders and customers continue to scan the system for problems, all final adjustments are done.

To evaluate the system, this study employed two instruments based on international standards. The first was the ISO/IEC 25010 software quality model [5], which was used by IT experts to assess functional suitability, performance efficiency, compatibility, reliability, and security. The second was the USE Questionnaire which was used by end-users (salon staff) to evaluate the system's usefulness, satisfaction, ease of use, and ease of learning [9], [11].

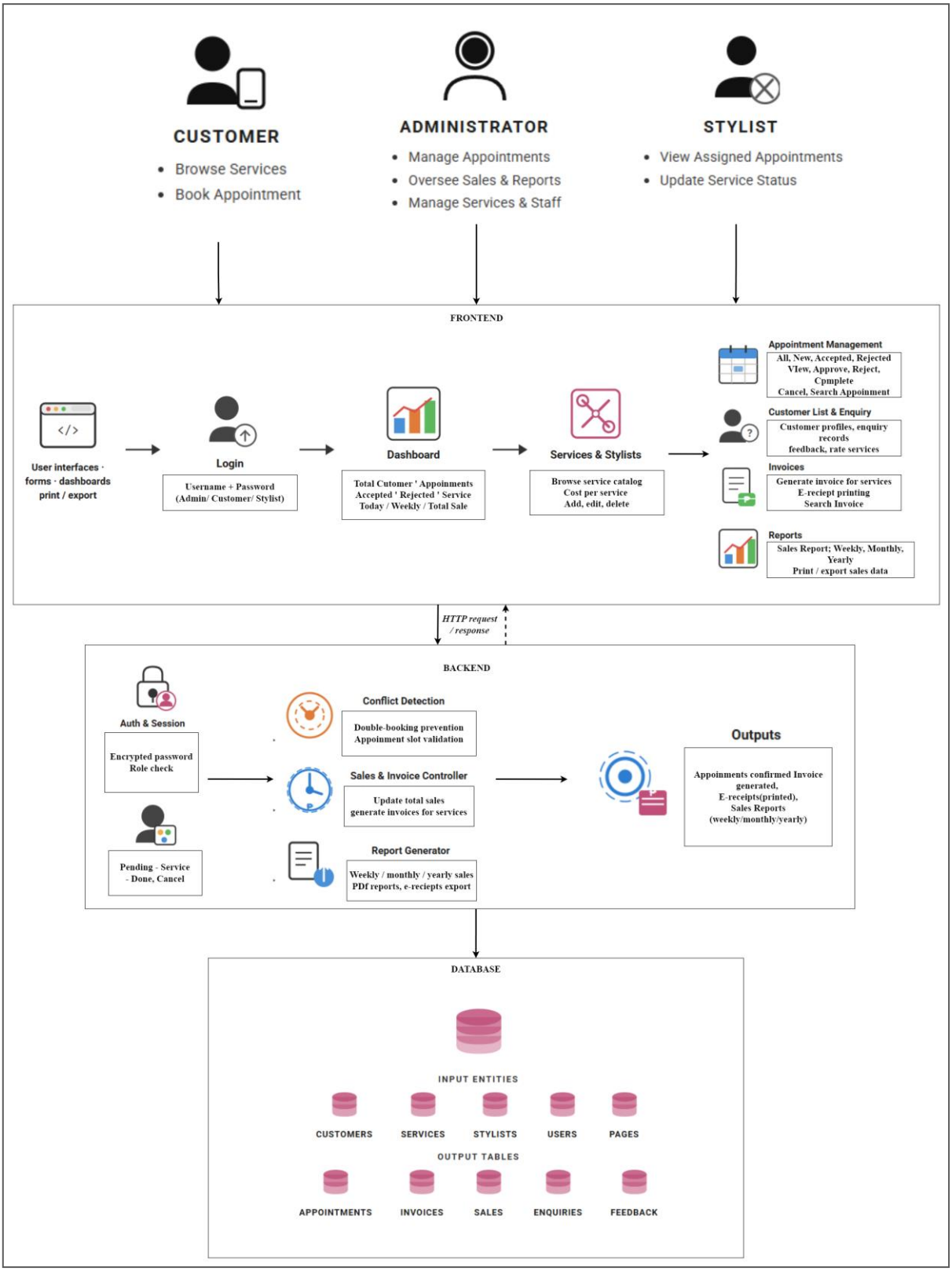

Figure 3. System Architecture

Figure 3 presents the high-level system architecture of the Beauty Salon Appointment and Sales Management System, illustrating the technological ecosystem and data flow that supports its operation. This diagram maps out the interaction between the various client devices—such as smartphones, tablets, and personal

computers—and the central server that hosts the application and its database. By delineating how users connect to the system via the internet to access its features, the architecture provides a foundational blueprint for the implementation of the platform's core functionalities, including appointment scheduling, data management, and report generation.

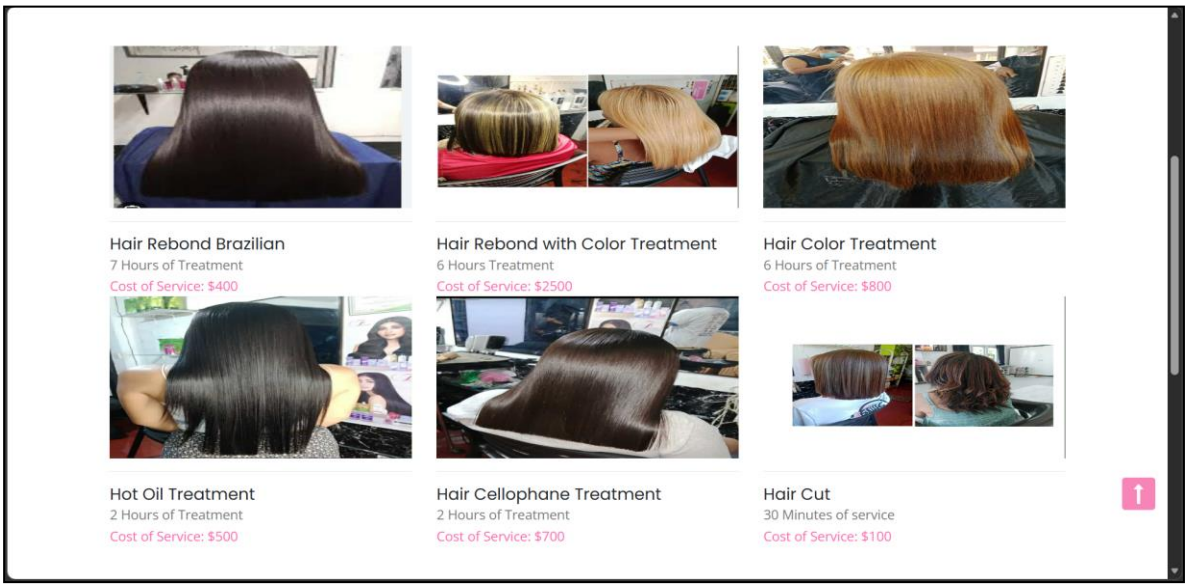

Figure 4. Shows the available services of Beauty Salon

Figure 4 presents the available services of Beauty Salon.

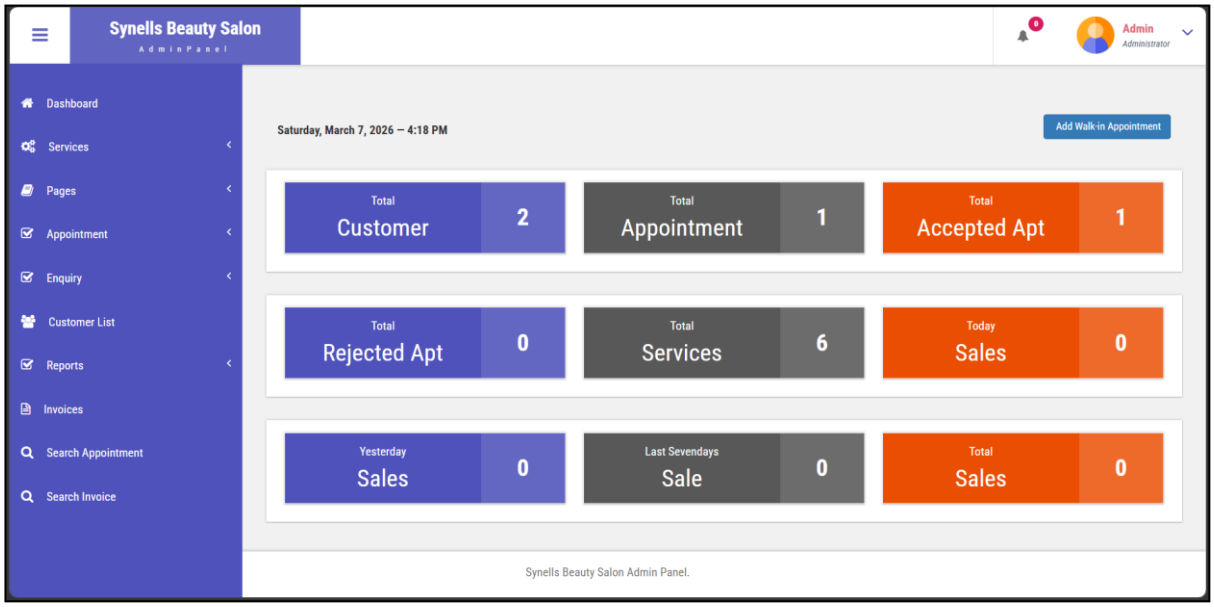

Figure 5. Synells Beauty Salon Management System Dashboard

Figure 5 displays the main dashboard of the Synells Beauty Salon Management System, which serves as the central navigation and command center for the administrator. This interface provides a consolidated real-time overview of key operational data, while a series of clearly labelled navigation menus offer access to the system's core functional modules. From this hub, the administrator can efficiently manage services, stylists, appointments, customer lists, feedback, and invoices, and generate comprehensive sales reports, enabling streamlined oversight of daily salon activities.

Figure 6. The Administrator can view the appointment.

Figure 6 depicts the appointment management interface within the system, showcasing the administrator's capability to access and review the salon's booking history. This view presents a detailed, organized list of past and scheduled appointments, allowing for effective monitoring of customer visits, service usage, and overall scheduling trends. The interface supports the administrative function of maintaining comprehensive records, which is essential for operational analysis, managing customer relationships, and ensuring accountability in service delivery.

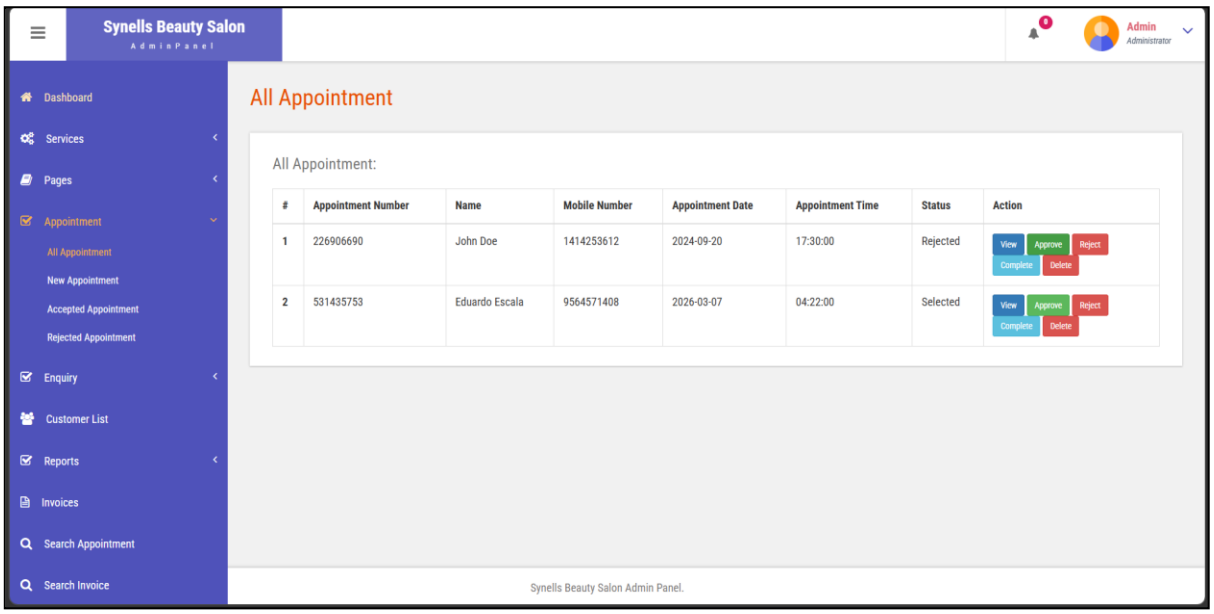

Figure 7. The Administrator can change the appointment status of the customer

According to the aforementioned figure, the administrator of Beauty Salon Appointment Management System has the authority to modify the customer's appointment status. After a customer book an appointment, their status must be pending. The administrator can confirm the appointment when it isn't full, after which it changes to servicing. The stylist will perform the services, and the status will change to done when the stylist is finished. The administrator can also cancel the appointment if something unplanned occurs at the salon.

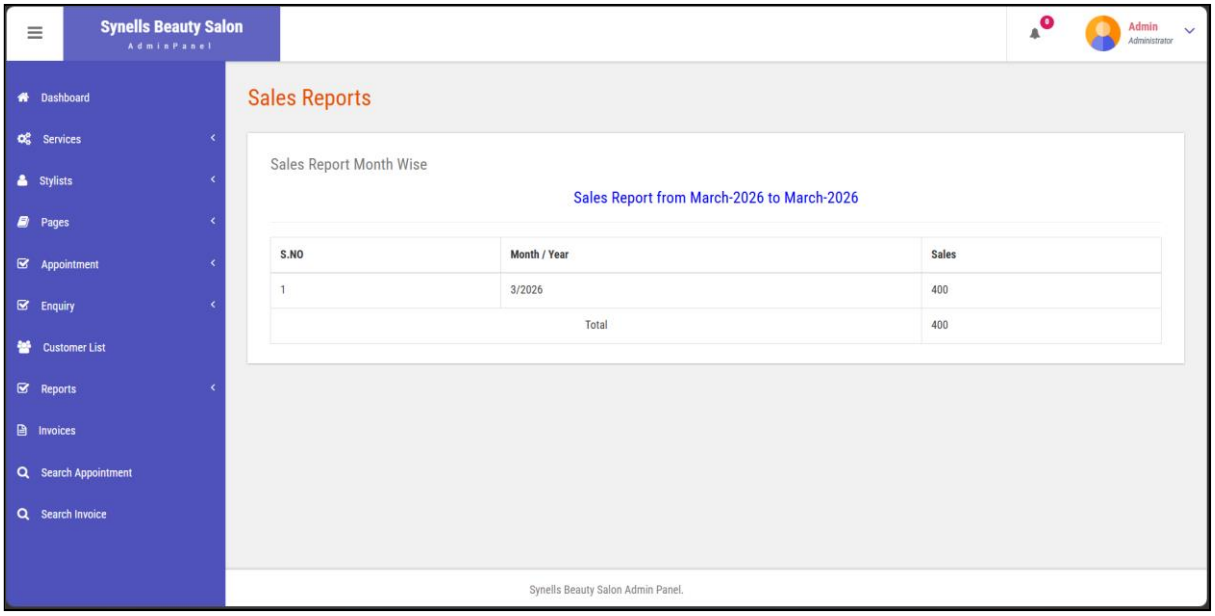

Figure 8. Sales Report of Synells Beauty Salon

Figure 8 presents the Sales Report interface of the Synells Beauty Salon Appointment and Sales Management System. This module allows the administrator to generate and view comprehensive sales data over specified periods, such as weekly, monthly, or yearly. The report typically displays key metrics including total sales, the number of transactions, and a breakdown of revenue by service or product. This feature directly addresses the objective of automating report generation, providing management with a clear, digital overview of the salon's financial performance to support informed business decisions and reduce the manual effort of compiling sales data.

III. RESULTS

TABLE I
EFFECTIVENESS OF THE BEAUTY SALON APPOINTMENT MANAGEMENT SYSTEM

Criteria	Mean	Verbal Interpretation
1) Dashboard displaying: Scheduled appointments, Service, Customer list	4.44	Very Satisfactory
2) Admin options: Create/add/update/reject appointment, Manage Sales, show services/cost, Make invoice	4.33	Very Satisfactory
3) Printing reports: E-receipt and Sales Report	4.00	Very Satisfactory
4) Cancel appointments, make invoice, rate feedback	4.33	Very Satisfactory
Total	4.22	Very Satisfactory

The overall mean of 4.25 indicates that the system effectively meets its functional objectives. The dashboard feature received the highest rating (4.44), reflecting successful implementation of real-time data visualization. Report printing, while still rated Very Satisfactory, received the lowest mean (4.00), suggesting minor usability concerns or formatting preferences.

TABLE III
ISO/IEC 25010 SOFTWARE QUALITY EVALUATION

Criteria	Mean	Verbal Interpretation
Functional Suitability	4.33	Very Satisfactory
Performance Efficiency	4.11	Very Satisfactory

Compatibility	4.13	Very Satisfactory
Reliability	4.17	Very Satisfactory
Security	4.22	Very Satisfactory
Total	4.19	Very Satisfactory

Functional suitability and security received the highest ratings, confirming that the system delivers intended functions while safeguarding data. Performance efficiency and compatibility received slightly lower scores, likely reflecting the system's dependency on continuous internet connectivity.

TABLE IIIII
USABILITY EVALUATION USING USE QUESTIONNAIRE

Criteria	Mean	Verbal Interpretation
Usefulness	4.08	Very Satisfactory
Satisfaction	4.14	Very Satisfactory
Ease of use	4.33	Very Satisfactory
Ease of learning	4.17	Very Satisfactory
Total	4.18	Very Satisfactory

Ease of Use received the highest rating (4.33), indicating that the interface is intuitive and navigation is straightforward. Usefulness scored 4.08, suggesting that while users find the system beneficial, additional features (e.g., inventory forecasting, client loyalty tracking) may further enhance perceived value.

IV. DISCUSSION

The Beauty Salon Appointment Management System successfully addressed operational challenges at Synells Beauty Salon, achieving very satisfactory ratings in effectiveness (4.25), software quality (4.19), and usability (4.18). These positive results align with findings from similar studies on salon management systems, which have demonstrated that digital solutions with user-friendly interfaces contribute to operational efficiency and user acceptance [2], enhance scheduling management efficiency and provide a platform for digital reservations [4], and enhance overall operational efficiency [3] and improve customer experience [13], which also reported high levels of user acceptance and improved operational control after implementing digital solutions. For example, a study on a hair salon management application noted that their application's "user-friendly interface" contributed to its effectiveness [2].

The dashboard visualization scored highest (4.44), supporting research demonstrating that web-based systems lead to "reduced total waiting time" [8] and "improved user satisfaction" [13] through real-time information access and streamlined scheduling. The "user-friendly interface" of such applications has been shown to contribute to their effectiveness [2]. However, the lower performance efficiency (4.11) and compatibility (4.13) scores reflect challenges in automating manual salon operations, including inefficiencies in appointment and transaction management [7], and security concerns such as data breaches in traditional systems [12]. Studies on digital transformation for SMEs emphasize that in areas with unreliable connectivity, web-based systems become unusable when connections are slow or lost, creating operational disruptions that offline-capable applications avoid. Research on cloud-based salon software confirms that consistent internet connectivity is essential, recommending that businesses verify upload speeds of 10+ Mbps during peak hours before adoption. These findings suggest that the system's dependency on continuous internet access may limit its effectiveness in environments with unstable connectivity, reinforcing the need for offline-capable features identified in the limitations of this study.

The system's high ease of use rating (4.33) corroborates findings from a salon management application that emphasized the importance of a 'user-friendly and intuitive interface' [2], as well as research highlighting that such systems are designed to be 'easy to use and effective' [4]. Though still positive, the slightly lower usefulness score (4.08) suggests a need for additional features like inventory forecasting, which connects to the principles of expertise-based resource management where anticipating demand is key to efficiency, as noted in research on skills management [1] which stated that "managers can assign tasks to workers based on worker's abilities." The lower score for report printing (4.00 in Table I) indicates a specific area for interface improvement, a common finding in user-centered design evaluations such as those using the USE questionnaire [9].

Confounding factors in this study include the immediate post-deployment evaluation, which limits the assessment of sustained impact, as the literature suggests the need for further studies to fully establish long-term benefits [14]. The key limitations identified—internet dependency, absence of payment integration, and single-user restriction—prevent the salon from implementing the online customer registration and appointment booking features that systems like FOREVER18 Hair Salon have successfully deployed [13] and address service quality dimensions such as reliability and responsiveness that significantly impact customer satisfaction in beauty salons [11].

This study contributes to the field of digitizing small service enterprises by demonstrating that the Rapid Application Development methodology can produce tailored, functional systems for local businesses [3][4]. It offers a replicable model for affordable digital transformation that extends previous Android-based reservation systems [4] by integrating a real-time dashboard and conflict detection features, addressing gaps in manual scheduling and basic web-based management systems [12]. Future research should explore developing enhanced online booking systems with improved accessibility features [3], integrating payment gateways, implementing skills-based resource allocation for appropriate task assignment [1], incorporating machine learning for demand forecasting, and conducting longitudinal studies across multiple establishments to evaluate generalizability and sustained operational impact [14].

V. CONCLUSIONS

The Beauty Salon Appointment Management System successfully developed a web-based platform that achieved all primary objectives, including real-time dashboard visualization, appointment management, sales tracking, and automated reporting. It received very satisfactory ratings across effectiveness (4.25), software quality (4.19) based on ISO 25010 standards, which defines "a product quality model composed of eight characteristics... providing consistent terminology for specifying, measuring and evaluating system and software product quality," and usability (4.18) as measured by the USE Questionnaire, which assesses "usefulness, ease of use, ease of learning, and satisfaction" as validated in a psychometric evaluation. This work is significant as it addresses the gap between generic salon platforms and the specific needs of a local Filipino salon by developing a customized, web-based appointment management system, thereby contributing to the growing body of literature on web-based systems that automate appointment scheduling and reduce manual documentation burdens in small service enterprises [7]. The findings apply to salon owners seeking to automate appointment scheduling, streamline client management, reduce paperwork, and generate sales reports efficiently [2], [4], [13]; to developers creating customized appointment management systems that address the specific workflow requirements of local salons, including security features such as two-factor authentication [12]; to researchers studying small enterprise digitization, including skills-based resource management [1], online booking system adoption [3], and service quality dimensions that impact customer satisfaction in salon settings [10] [11]; and to vocational institutions developing training programs for digital transformation in local businesses. Future work should focus on integrating payment gateways to expand transaction handling beyond cash-based payments [2], developing offline capabilities to ensure usability in areas with unstable internet connectivity [3], expanding multi-user roles to allow beauticians to access schedules and customers to book self-service appointments [1], and extending the system's application to other service-oriented sectors, particularly within healthcare, where similar web-based platforms have demonstrated significant benefits such as reduced no-show rates, decreased staff labor, decreased waiting time, and improved user satisfaction [8], [14].

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