**3.0. Introduction**

System analysis refers to the process studying the existing operations and procedures of a business in order to identify it’s weaknesses and propose improvements through automation. In beauty and cosmetic management system, system analysis was undertaken to streamline client bookings , inventory management , and sales tracking . The system analyst undertook the analysis to ensure efficient operations , minimise human errors and improve customer satisfaction.

**3.1 Current System**

**3.1 .1Operations Of The Current System**

The current system is largely manual. The following are the key processes**.**

1. **Customer booking process**

Customer booking process involves scheduling appointments for customers who request services from the organisation. The process is initiated whenever a customer requests a service, either by walking into the premises or contacting the business by phone or other means. It happens in real-time as part of the front-desk operations and is typically the first point of interaction between the customer and the service provider. The receptionist is responsible for handling this process. As the first point of contact, the receptionist interacts directly with the customer to understand the type of service needed and the preferred date and time for the appointment.

The purpose of the customer booking process is to organize and manage service appointments efficiently. It ensures that customers are served in an orderly manner, helps avoid overbooking, and allows the business to allocate time and resource accordingly. It also improves customer satisfaction by reducing waiting time and enhancing service planning.

In the current system, the process is performed manually. The receptionist writes down the customer’s name, service requested, date and time in a physical appointment register. This book serves as the primary scheduling tool, though it is limited in terms of flexibility, speed, and accessibility. There is no automated system to track bookings or send reminders, which means the business is at risk of errors such as double-booking, missed appointments, or poor time management.

1. **Inventory management**

Inventory management process also referred to as inventory tracking, is another crucial part of the current system. It is conducted on a daily basis and also triggered whenever there is a delivery of new stock. This process is overseen by the store manager, who is responsible for keeping accurate records of available products and monitoring stock levels to ensure that inventory is neither overstocked nor understocked.

The main objective of this process is to maintain optimal inventory levels to support continuous service delivery. Without proper tracking, the organization risks running out of essential items or accumulating excess stock, which can lead to waste or storage issues. Currently, the inventory management process is manual and relies on paper-based records. The store manager physically checks stock levels and updates inventory sheets by hand, which can lead to delays in stock updates, human errors, and difficulties in generating inventory reports or trend analysis.

1. **Service billing and records**

The service billing and records process, also known simply as Billing, is carried out after a service has been rendered to the customer. It is an essential part of the financial operations and is managed by the cashier. The process begins when a customer completes their service, at which point the cashier generates a receipt and collects payment.

The purpose of this process is to document the financial transaction, ensure that the organization receives payment for its services, and provide customers with official proof of payment. Billing records are also important for financial tracking, audits, and planning. In the current system, the process is fully manual. The cashier writes payment details in a receipt book and uses a calculator to compute totals. This traditional method is time-consuming, vulnerable to calculation errors, and makes it hard to retrieve past records quickly.

* 1. **.2 Documents used in the current system**

In the current manual system, several physical documents are used to support day-to-day operations. These documents serve as the primary means of recording, tracking, and referencing activities such as customer bookings, inventory management, and billing. Although effective to some extent, these documents present limitations such as difficulty in updating, lack of real-time access, and vulnerability to loss or damage.

1. **Appointment book**

Appointmentbook is used in the customer booking process. It serves as the main schedule register where the receptionist manually records customer appointments. Each entry typically includes the customer’s name, the service requested, the date and time of the appointment, and any special notes related to the booking.

This document is essential for organizing daily appointments and ensuring that service delivery is planned according to customer needs, it lacks flexibility. It cannot send automated reminders, is prone to human error, and must be constantly updated manually. If misplaced or damaged, all records for scheduled services could be lost, disrupting operations.

1. **Inventory record sheets**

These are paper-based documents used in inventory management. The store manager uses them to manually track stock levels, update entries upon delivery of new supplies, and record product usage.

The record sheets help monitor the availability of essential items and ensure timely restocking. They typically include columns for product name, quantity received, quantity used, current balance, and date of entry. While they provide basic tracking, the manual nature of the sheets makes it hard to detect discrepancies, generate real-time reports, or analyze inventory trends over time.

1. **Receipt books**

Receiptbook are used in billing process. After a service is rendered, the cashier writes out a receipt for the customer by hand. Each receipt includes details such as the service provided, cost, payment method, date, and a receipt number.

Receipt books serve as proof of payment and form part of the organization’s financial records. They are vital for tracking income, but they can easily be misfiled, lost, or tampered with. Manual calculations also increase the risk of arithmetic errors, and compiling reports from multiple receipts is time-consuming.

**4. Stock delivery logs**

These are used to record incoming stock deliveries. When inventory is replenished, the store manager fills out this log with the delivery date, items received , quantities, and supplier information.

The log helps ensure that deliveries match orders and that incoming stock is documented. However, like other paper documents, it lacks intergration with inventory balances and require constant manual updating to stay accurate.

**3.1. 3Users of the system**

**1. Receptionist**

This is the first point of contact for customers**.** They schedule customer appointments, handle walk-in clients and manage the queue, enter customer details into the system and respond inquiries and provide general information.

System use: uses the appointment booking module, customer registration, and daily schedule viewer.

**2. Store manager**

Responsible for monitoring and controlling stock of cosmetic and beauty products. Track product levels and expiry dates, record new stock deliveries, and reorder products when stock is low.

System use: uses the inventory management module to update, monitor, and report stock levels.

**3. Cashier**

Handles customer payments and billing. Generates invoices and receipts, process payments, record financial transactions for reporting.

System use: uses the billing module to create receipts and update payment records.

**4. Beauticians or service providers**

These are professionals providing beauty treatments and services. Thet access customer booking and service details, update customer service records ( treatments given, preferences ) and record product used for each session.

System use: views appointments, enters treatment notes, and selects services provided**.**

**5 . Administrator / Manager**

Oversees the entire system and operations. Manage user accounts and access levels, generate reports ( sales, inventory, appointments). And monitor business performance and customer trends.

System use: accesses all modules with full permissions, configures system settings, and reviews analytics.

**6. Customers (Limited access if system is online-enabled)**

They are the end - users receiving services. They book appointments online (if enabled), view service history and loyalty points.

System use: Limited access portal or app for booking, reviews, and updates.

**7. Marketing Officer / Social Media**

Promotes services, special offers, and new products. May use the system to extract customer data for targeted promotions (e.g, SMS, email), and manages feedback and online reputation.

**8. Suppliers / Vendors**

Provide products and materials. In advanced systems, suppliers may be linked for automated reordering or delivery tracking.

**9. It Support / System Admin**

Manages software, hardware, and data backups, fixes technical issues and ensures system security.

**10. Area Supervisors (for chain salons)**

Oversee multiple branches, and monitor performance, inventory, staff activity across locations using centralized systems.

**11. Accountants / Auditors**

Access financial records for reporting, tax, or audits. Generate sales summaries, expenses, and profit reports.

* 1. **System Approach**

This is used during system analysis is the structured system and analysis design method (SSADM)

How it was used: This method involved defining requirements , modelling data flow , and identifying inefficiencies in the current system

Why it was preferred: SSADM ensures thorough documentation and clarity, which is ideal for complex service environment like beauty and cosmetic management

**3.3. Fact Finding**

**3.3. 1 Tools Used**

**1. Interviews**

The tool was administered to receptionist, store managers and cashiers

It was preferred because it provided detailed insights into the challenges of the current system

**2. Observation**

The tool was administered to staff during working hours

It was preferred because it helped understand actual workflow and identify gaps in process execution

**3.Document review**

It was preferred because it helped validate existing records and processes

**3.3. 2 Facts Found**

Manual process leads to booking conflicts , inventory inaccuracies due to human error , revenue loss due to unrecorded services and lack of centralised data access among staff

**3.4. Feasibility Study**

This is the assessibility of the practicality of a proposed plan or method

**3.4. 1 Objectives of feasibility study**

The objective was to determine whether automating the beauty and cosmetic system would improve operational efficiency , accuracy and service delivery

**3.4. 2 Economic Feasibility Cost benefit analysis:**

**Cost Benefit Analysis**

A cost benefit analysis was performed using the following tools:

Estimated costs: Software development ($8,000), hardware purchase ($5,000), training ($2,000).

Expected benefits: Increase in customer retention , reduction in paper based operations and better inventory management .

Estimated costs:

Software development=$8,000

Hardware purchase=$5,000

Training=$2,000

Total initial cost = $8,000 +$5,000 +$2,000 = $15,000

Yearly Revenue and Costs:

Year 1: Revenue = $12,000, Cost = $8,000 ,Net =$4,000

Year 2: Revenue =$15,000, Cost = $15,000, Net =$10,000

Year 3: Revenue =$18,000, Cost = $3,000, Net =$15,000

1. NPV (Net Present Value) Calculation

To calculate NP, we assume a discount rate.

Let’s use a 10% discount rate as a typical

Example.

Formula:

NPV = Net cash flow / ( 1 +r )t – Initial investment

Where:

r = 0.10

t = Year number

Initial Investment = $ 15,000

NPV = 4,000 / (1+0.10)1 + 10,000 / (1+0.10)2 + 15,000 / (1+0.10)3 – 15,000

= 4,000 / 1.10 + 10,000 / 1.21 + 15,000 / 1.331 – 15,000

= 3,636.36 + 8,264.46 + 11,270.08 – 15,000

NPV =23,170.90 -15,000 =8,170.90 ( Positive )

2 PBP ( Payback period )

We recover the $ 15,000 investment as follows:

After Year 1, $4,000 is recovered remaining : $ 11,000

After Year 2, $10,000 more remaining : $ 1,000

In Year 3, first $ 1,000 is recovered within the first 1,000/15,000 = 0.067 of the year

Payback Period = 2+0.067 =2.07 years ( not 1.5 )

3 IRR ( Internal Rate of Return )

This is the rate r that makes the NPV = 0:

0 = 4,000/( 1 + r )1 + 10,000/( 1 + r )2 + 15,000/( 1 + r )3 – 15,000

Year 0 : - 15000

Year 1 : + 4000

Year 2 : + 10000

Year 3 : + 15000

IRR = 43.9%

**3.4. 3 Other Types Of Feasibility Conducted**

**Technical Feasibility**

It was done by evaluation of infrastructure , identified compatibility with proposed software and hardware . Technically feasible with minor upgrades required

**Operational feasibility**

It was done by observing staff readiness and system workflow integration . Staff training needs are minimal and the system aligns well with daily operations

**Legal feasibility**

It was done by analyzed data privacy laws and business regulations. Complies with applicable laws , including customer confidentiality and e–commerce policies

**Schedule feasibility**

It was done by Developed timeline using project management tools . Can be completed within a six month implementation window

**3.5 Technical Specifications**

Provide minimum requirements of the new system objectively and in tabular form

Include:

|  |  |
| --- | --- |
| CATEGORY  Hardware Requirements  Computers  Printers  Software Requirements  Operating system  Database Management  Application software  Network Resources  Internet connection  LAN setup  System Operators  Quantity  Qualifications | SPECIFICATION  Minimum: Intel Core i5, 8GB RAM, 256GB SSD, 21”monitor  Recommended: Intel Core i7, 16GB RAM, 512GB SSD, Dual monitor support  Laser printer (for receipts, reports); Color printer (for promotional material)  Microsoft windows 10 pro or later (for compatibility with business tools)  MySQL 8.0 or PostgreSQL 13 ( open source and scalable options )  Customized CRM and appointment booking system (web-based ordesktop-based)  Backup software (e.g, veeam or Acronis) for data protection  Minimum: 10mbps (download/upload),Recommended: 50 mbps (fiber optic preferred)  Wired Ethernet (Cat 6 cabling),Wi-Fi 802.11ac, Router with firewall capabilities  Network switch (for connecting multiple workstations and POS terminals)  2 full-time system operators  Experience with database systems, customer management software, and reporting  Diploma in IT/computer science  Basic networking knowledge and troubleshooting skills |