**Case Studies & Guesstimates for Healthcare Industries(Part – 1)**

The healthcare industry is fundamental to society, providing crucial services that ensure the health and well-being of people worldwide. In today's world, its significance is highlighted by rapid medical technology advancements and the growing demand for quality healthcare. The industry faces various challenges, such as increasing costs, aging populations, and the need for more efficient patient care.

**Product Dissection**

1. **Platform Selection**

**Question:** Choose a leading platform from a domain related to the **e-commerce** industry. Justify your selection by discussing the platform's popularity, impact, and relevance in its industry.

**Answer:** **Apollo 24/7 Pharmacy**

**Popularity:** Apollo 24/7 Pharmacy has swiftly emerged as a significant player in the online pharmacy market, leveraging the extensive healthcare network and trusted reputation of Apollo Hospitals. By utilizing advanced technology and a robust supply chain, Apollo 24/7 Pharmacy offers a wide array of medications and healthcare essentials with the promise of quick and convenient delivery. Its rise in popularity is fueled by the ease of access, 24/7 availability, and dependable service, making it a favored choice among customers seeking reliable healthcare solutions.

**Impact:** Apollo 24/7 Pharmacy has made a notable impact on the online pharmacy sector by establishing new standards for accessibility and efficiency in medication delivery. Its integration of advanced technology, including real-time inventory management, personalized health recommendations, and seamless digital interfaces, has set a high bar for digital pharmacies. This has prompted both traditional and online pharmacies to elevate their services. By optimizing supply chains, reducing delivery times, and ensuring a wide range of medications are readily available, Apollo 24/7 Pharmacy has significantly enhanced customer satisfaction and loyalty, reshaping the landscape of pharmaceutical care.



**Relevance:** In today’s fast-moving world, immediate access to medications and healthcare products is increasingly important. Apollo 24/7 Pharmacy’s relevance is significantly bolstered by its connection with Apollo Hospitals, a trusted name in healthcare. This partnership allows Apollo 24/7 to utilize a robust medical network and advanced technological resources, enhancing its operational efficiency and service quality. By incorporating sophisticated tools like real-time inventory tracking, personalized health recommendations, and data-driven insights, Apollo 24/7 Pharmacy meets the urgent needs of modern consumers, solidifying its role as a key player in the evolving digital healthcare landscape.

**2. Core Features and Functionalities**

**Question**: Research and list the core features and functionalities of the selected platform. Describe how these features contribute to the platform’s success and user engagement.

**Answers:** Core Features and Functionalities of Apollo 24/7 Pharmacy

1. **Rapid Delivery**: Provides quick delivery of medications and healthcare products, addressing the need for prompt access to essential items.
2. **Extensive Product Range**: Features a wide assortment of pharmaceuticals, health supplements, and wellness products, appealing to a diverse customer base and encouraging frequent use.
3. **Integration with Apollo Hospitals**: Leverages Apollo Hospitals' extensive medical network and resources, ensuring reliable service and enhanced operational efficiency.
4. **Intuitive User Experience**: Offers a streamlined and user-friendly interface, facilitating easy navigation and increasing customer engagement and retention.
5. **Customized Health Recommendations**: Employs advanced data analytics to provide personalized medication suggestions and health tips, improving user satisfaction and adherence.
6. **Special Offers and Discounts**: Regularly features promotions and loyalty programs to attract customers and foster long-term relationships.
7. **Auto-Refill and Subscription Options**: Provides automatic refill services and subscription plans for ongoing medication needs, ensuring steady revenue and consistent customer support.
8. **Order Tracking and Transparency**: Enables real-time tracking of orders, providing customers with clear updates and building trust in the service.
9. **24/7 Access**: Operates around the clock, catering to the diverse schedules of users and enhancing convenience with round-the-clock availability.

**Contribution to Success and User Engagement**

1. **Accessibility**: Fast delivery, a broad selection of medications, and 24/7 operation meet the critical need for immediate and convenient access to health products, making Apollo 24/7 Pharmacy a top choice for users.
2. **Improved User Experience**: An intuitive interface, customized health recommendations, and real-time order tracking enhance the overall shopping journey, leading to higher user satisfaction.
3. **Customer Retention**: Regular promotions, discounts, and auto-refill options incentivize repeat purchases and foster strong customer loyalty.
4. **Operational Excellence**: The integration with Apollo Hospitals and advanced logistical capabilities ensure reliable service and operational efficiency, contributing to increased customer trust and satisfaction.
5. **Personalized Health Insights**: Data-driven recommendations and health tips cater to individual needs, enhancing engagement and increasing the likelihood of continued use.

These factors collectively contribute to Apollo 24/7 Pharmacy’s success and high levels of user engagement in the evolving digital healthcare market.

**3. Real World Problems**

**Question:** Identify the real-world problems that the platform aims to solve. Discuss how the platform addresses these problems through its features and functionalities.

**Answers:** Real-World Problems Addressed by Apollo 24/7 Pharmacy

1. **Convenience and Accessibility:**

**Problem**: Limited access to medications due to geographical constraints or inconvenient pharmacy hours can delay treatment.

**Solution**: Apollo 24/7 Pharmacy offers a seamless online platform that allows users to order medications from anywhere at any time. With its 24/7 availability, users can conveniently access healthcare products without being restricted by traditional pharmacy hours.

1. **User Experience and User Interface:**

**Problem**: A complicated or unintuitive interface can lead to frustration and decreased user engagement.

**Solution:** Apollo 24/7 Pharmacy provides a user-friendly interface that simplifies the shopping process. The app's design is intuitive and easy to navigate, enhancing the overall user experience and encouraging frequent use.

1. **Range of Choice:**

**Problem:** Limited product availability at local pharmacies can restrict access to necessary medications and health products.

**Solution**: Apollo 24/7 Pharmacy offers a comprehensive range of pharmaceuticals and wellness products. The platform's extensive inventory ensures that users can find the medications they need, including specialty and rare items.

1. **24/7 Access and Rapid Delivery:**

**Problem:** Delays in receiving medications can impact health outcomes, especially for urgent needs.

**Solution:** Apollo 24/7 Pharmacy ensures rapid delivery of orders, with a 24/7 service that allows users to receive their medications promptly. This timely delivery helps address urgent needs and supports continuous access to essential health products.

1. **Cost Savings, Rewards, and Payment Flexibility:**

**Problem:** High medication costs and limited payment options can be barriers for many users.

**Solution:** Apollo 24/7 Pharmacy offers competitive pricing, regular discounts, and a rewards program to provide cost savings. The platform supports various payment methods, including online payments and insurance claims, making it easier for users to manage their healthcare expenses.

1. **Personalized Healthcare:**

**Problem:** Generic recommendations may not meet individual health needs or preferences.

**Solution:** Apollo 24/7 Pharmacy uses data analytics to offer personalized healthcare recommendations based on user profiles and purchase history. This tailored approach ensures that users receive relevant product suggestions and health tips, enhancing their overall healthcare experience.

**How Apollo 24/7 Pharmacy Addresses These Problems**

* **Convenience and Accessibility:** By offering a fully digital platform, Apollo 24/7 Pharmacy allows users to access their medications from anywhere at any time. This eliminates the need for physical trips to the pharmacy and removes geographical and time-based barriers to accessing essential healthcare products.
* **User Experience and User Interface:** The platform is designed with simplicity and ease of use in mind, featuring an intuitive interface that makes it easy for users to search for and order medications. This streamlined design helps users navigate the app effortlessly, enhancing their overall experience.
* **Range of Choice:** Apollo 24/7 Pharmacy boasts a broad inventory of medications and health products, ensuring that users can find almost any item they need. This extensive selection addresses the problem of limited availability and helps meet diverse healthcare needs.
* **24/7 and Rapid Delivery:** With its continuous operation and efficient logistics, Apollo 24/7 Pharmacy ensures that users receive their medications quickly. This rapid delivery service is particularly crucial for urgent prescriptions and reinforces the platform’s commitment to timely service.
* **Cost Savings, Rewards, and Payment Flexibility:** The platform offers competitive pricing along with various promotions and a rewards program to provide financial benefits to users. It also supports multiple payment options, including flexible methods and insurance claims, making healthcare expenses more manageable.
* **Personalized Healthcare:** Apollo 24/7 Pharmacy uses advanced analytics to provide users with tailored health recommendations and relevant product suggestions. This personalized approach ensures that users receive advice and products that best fit their individual health profiles and needs.

These solutions effectively tackle the major challenges faced by users, driving Apollo 24/7 Pharmacy's success and fostering high levels of user engagement and satisfaction.

**Database Management & Schema Design**

**4. Schema Design**

**Question:** Based on the features and functionalities you have identified, design a schema that reflects the platform’s data structure. Define the key entities, attributes, and relationships that underpin these features.

**Answers: Schema Design for Apollo 24/7 Pharmacy**

To design a schema for Apollo 24/7 Pharmacy, it is essential to capture the platform's core features and functionalities, ensuring efficient data management and providing a seamless user experience. Below is an overview of the primary entities, their attributes, and the relationships between them:

**Key Entities and Attributes**

1. **User**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| User\_ID | Primary Key | Unique identifier for the user |
| Name | String | Name of the user |
| Email | String | Email address |
| Password | String | Password |
| Phone | String | Phone Number |
| Address | String | Home address |
| RegistrationDate | Date | Date of registration |

1. **Product**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Product\_ID | Primary Key | Unique identifier for the product |
| Name | String | Name of the product |
| Description | String | Description of the product |
| Price | Decimal | Price of the product |
| Category | String | Product category |
| Stock Quantity | Integer | Quantity in stock |

1. **Order**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Order\_ID | Primary Key | Unique identifier for the order |
| User\_ID | Foreign Key | Reference User (User\_ID) |
| Order Date | Date | Date of the order |
| Total Amount | Decimal | Total amount of the order |
| Status | String | Order status (e.g., pending, completed) |

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Order\_Detail\_ID | Primary Key | Unique identifier for the order detail |
| Order\_ID | Foreign Key | References Order (Order\_ID) |
| Product\_ID | Foreign Key | References Product (Product\_ID) |
| Quantity | Integer | Quantity of the product ordered |
| Price | Decimal | Price of the product at the time of order |

1. **Order\_Detail**
2. **Cart**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Cart\_ID | Primary Key | Unique identifier for the cart |
| User\_ID | Foreign Key | References User (User\_ID) |
| Created\_Date | Date | Date the cart was created |

1. **Cart\_Item**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Cart\_Item\_ID | Primary Key | Unique identifier for the cart item |
| Cart\_ID | Foreign Key | References Cart (Cart\_ID) |
| Product\_ID | Foreign Key | References Product (Product\_ID) |
| Quantity | Integer | Quantity of the product in the cart |
| Brand | String | Preferred brand |

1. **Circle\_Membership**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| User\_ID | Foreign Key | References User (User\_ID) |
| Order\_ID | Foreign Key | References Order (Order\_ID) |
| Membership\_Type | String | Membership\_Type |
| Membership\_Description | String | About membership plan |

1. **Promotion**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| Promotion\_ID | Primary Key | Unique identifier for the promotion |
| Code | String | Promotion code |
| Description | String | Description of Promotion |
| Discount\_Percentage | Decimal | Discount percentage |
| Start\_Date | Date | Start date of the promotion |
| End\_Date | Date | End date of the promotion |

1. **User\_Promotion**

| **Attribute** | **Type** | **Description** |
| --- | --- | --- |
| User\_Promotion\_ID | Primary Key | Unique identifier for the user promotion |
| User\_ID | Foreign Key | References User (User\_ID) |
| Promotion\_ID | Foreign Key | References Promotion (Promotion\_ID) |
| Usage\_Date | Date | Date the promotion was used |

**Relationships**

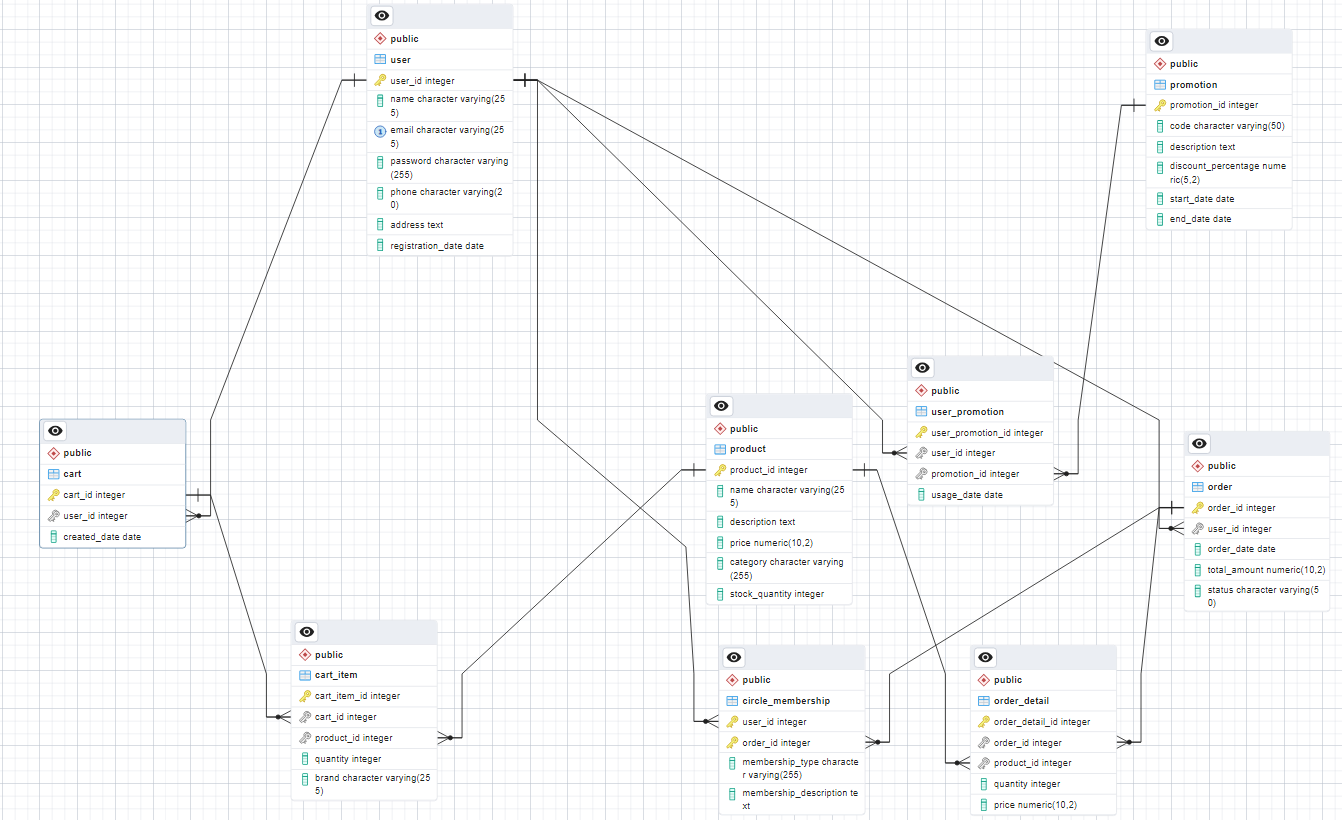
| **From Table** | **From Attribute** | **To Table** | **To Attribute** | **Relationship** |
| --- | --- | --- | --- | --- |
| User | User\_ID | Order | User\_ID | One-to-Many |
| Order | Order\_ID | Order\_Detail | Order\_ID | One-to-Many |
| Product | Product\_ID | Order\_Detail | Product\_ID | Many-to-One |
| User | User\_ID | Cart | User\_ID | One-to-Many |
| Cart | Cart\_ID | Cart\_Item | Cart\_ID | One-to-many |
| Product | Product\_ID | Cart\_Item | Product\_ID | Many-to-One |
| User | User\_ID | User\_Promotion | User\_ID | One-to-Many |
| Promotion | Promotion\_ID | User\_Promotion | Promotion\_ID | One-to-many |
| Circle\_Membership | User\_ID | User | User\_ID | One-to-One |
| Circle\_Membership | Order\_ID | Order | Order\_ID | One-to-Many |

This schema design captures the essential data interactions and relationships within Apollo 24/7 Pharmacy, supporting its features and functionalities efficiently. It ensures scalability, performance, and a personalised user experience, contributing to the platform's overall success.

**5. ER Diagram Creation**

**Question:** Utilise tools like the Miro platform or similar applications to create an illustrative Entity-Relationship (ER) diagram. This diagram should vividly depict the entities, attributes, and relationships present within your schema design.

**Answers:**

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**Case Study: Revenue and Profit Growth Strategies**

**Focus of the problem statement:**

To address the challenge of boosting Apollo Pharmacy's profit by 25%, we implemented an inside-out approach. This strategy focuses on evaluating internal factors first, such as analyzing company expenses, customer behavior, and revenue strategies, to enhance profitability.

1. **Analysing Apollo Pharmacy's Current Status**

To assess the current status of Apollo Pharmacy and devise a strategy to boost its profit by 25%, we need to perform a comprehensive analysis of the company's present situation. This involves evaluating its current profit, identifying the sources of revenue and expenses, and examining customer acquisition and retention strategies. Here’s how data science students can approach this analysis for Apollo Pharmacy:

| **Category** | **Details** |
| --- | --- |
| **Current Financial Data** | **Collect Financial Data** |
| **Revenue:** Apollo Pharmacy achieved a total revenue of ₹74,537 million in the financial year 2024. The major revenue streams include sales from pharmaceuticals, sales from healthcare products, Circle Membership, and additional services. |
| Expenses: Apollo Pharmacy spent a total of ₹61,251 million in FY2024 on the Cost of Goods Sold (COGS), supply chain management, employee salaries, finance costs, marketing, and other operational expenses. |
| **Analyse Current Profit** |
| **Profit Calculation:**   * **Total Revenue (FY2024):** ₹74,537 million * **Total Expenses (FY2024):** ₹61,251 million * **Profit Before Tax (PBT):** ₹13,286 million * **Profit AfterTax (PAT):** ₹10,105 million   For FY2024, Apollo Pharmacy's Profit Before Tax (PBT) is ₹13,286 million. After accounting for taxes, the Profit After Tax (PAT) stands at ₹10,105 million. |
| **Profit Trends:**  **Year-on-Year Analysis:**   * FY2024 - ₹10,105 million * FY2023 - ₹10,848 million   The profit has seen a slight decline from FY2023 to FY2024 despite an increase in total revenue. There is a 6.85% loss on a year-on-year basis.  **Quarter-on-Quarter Analysis:**   * Q2 - ₹3633 million * Q3 - ₹3682 million   There is a positive growth in profit of approximately 1.35% on a quarter-on-quarter basis. |
| **Sources of Revenue** | **Identify Revenue Streams** |
| **Sales from Pharmaceuticals:** The primary source of revenue, including prescription and over-the-counter drugs.  **Sales from Health Care Products:** Includes health and wellness products, nutritional supplements, and personal care items. |
| **Circle Membership:** Revenue from the subscription-based Circle Membership program, which offers health services and additional benefits. |
| **Additional Services**: Includes diagnostic services, health check-ups, and consultation fee. |
| **Analyse Revenue Contribution** |
| 1**. Sales from Pharmaceuticals** are the primary revenue driver, encompassing prescription and over-the-counter drugs, and typically contribute the largest share.  2. **Sales from Health Care Products**, including wellness items and supplements, support pharmaceutical sales but generally account for less revenue.  3. **Circle Membership** generates steady income from subscription-based health services and benefits.  4. **Additional Services**, such as diagnostic tests and health check-ups, provide supplementary revenue. |
| **Top Products/Services:**  **Top-Selling Products:**  1**. Prescription Medications:** Commonly prescribed drugs for chronic diseases such as diabetes (e.g., Metformin), hypertension (e.g., Amlodipine), and cardiovascular conditions (e.g., Atorvastatin).  2. **Over-the-Counter (OTC) Drugs:** High-demand OTC products include pain relievers (e.g., Paracetamol, Ibuprofen), cough and cold remedies (e.g., Cough syrups, Decongestants), and antacids (e.g., Omeprazole).  3.  **Health and Wellness Products:** Popular items include multivitamins, dietary supplements, and personal care products (e.g., Vitamin D, Fish Oil).  **Most Popular Subscription Plans:**  **Circle Membership Plans:**  1. Apollo Pharmacy’s Circle Membership offers a range of benefits including 24/7 access to Apollo doctors and one free lab test (HbA1c, CBC, or Lipid Profile) with a 12-month plan.  2. Members benefit from a 15% discount and free delivery on medicine and healthcare products, along with a 5% discount on lab tests, which includes free doorstep sample collection and same-day results.  3. Additionally, there are discounts of up to ₹150 on consultations with specialist doctors and ₹1 lakh in accidental coverage through Niva Bupa. |
| **Sources of Expenses** | **Identify Major Expenses** |
| **Cost of Goods Sold (COGS):** Apollo Pharmacy's major expenses include the cost of goods sold (₹19,990 million in FY2024). This includes costs related to the procurement and production of pharmaceutical and grocery items. |
| **Supply Chain Costs:** Based on an estimated 8.12% of total expenses, Apollo Pharmacy's supply chain expense for FY2024 is approximately ₹4957.65 million. It includes costs related to logistics, warehousing, and transportation expenses. |
| **Marketing and Advertising:** In FY2024, Apollo Pharmacy spent approximately ₹1,531.28 million on marketing and advertising, which includes expenditures on advertising, promotions, and customer acquisition campaigns. |
| **Employee Salaries:** Apollo Pharmacy spent ₹14,252 million on employee salaries in FY2024, which has increased from FY2023. This includes salaries, wages, benefits, and other employee-related expenses. |
| **Other Operational Expenses:** Apollo Pharmacy spent ₹20,521 million in FY2024 on operations, which has increased significantly from FY2023. This includes rent, utilities, administrative costs, and miscellaneous expenses. |
| **Analyze Expense Distribution** |
| 1**. Other Operational Expenses** is the largest expense category, comprising 33.5% of total expenses, reflecting the substantial costs associated with operations.  2**. COGS** Cost of Goods Sold is also substantial, covering a wide range of daily operational costs. It accounts for 32.6% of total expenses.  3**. Employee Salaries and Supply Chain Costs** represent 31.4% of the expenses, with salaries reflecting a key investment in human resources and supply chain costs being critical for product distribution.  4**. Marketing and advertising costs** are relatively small, accounting for 2.5% of total expenses, but they are essential for growth and customer engagement. |
| **Improving Cost Efficiency:**  1**. COGS:** Negotiate better supplier prices, buy in bulk, and reduce waste.  2. **Operational Expenses:** Invest in energy-saving technologies, streamline operations, and renegotiate leases.  3. **Employee Salaries:** Use performance-based pay, invest in training, and consider outsourcing non-core activities.  4. **Supply Chain Costs:** Optimize logistics, improve supplier relationships, and use technology for better inventory control.  5. **Marketing and Advertising:** Emphasize cost-effective digital marketing, track ROI, and leverage in-house resources. |
| **Customer Acquisition & Retention** | **Analyse Customer Acquisition Channels** |
| **Channels:** ApolloPharmacy.com receives the majority of its new customers through referrals from existing patients of Apollo Hospitals. Satisfied with the healthcare treatments, these patients often recommend Apollo Pharmacy to others. As a result, potential new customers frequently search for Apollo Pharmacy on Google search engine. Additionally, some new customers are acquired through targeted advertising campaigns. |
| **Effectiveness of Channels:**  1. **YouTube:** Effective if it engages a large audience through targeted content and advertising. It allows for interactive and visual engagement, which can significantly boost brand awareness.  2. **Google Search Engine:** Cost-effective as it captures users with high intent who are actively searching for relevant products or services. This leads to a higher conversion rate and better ROI.  3. **Word of Mouth:** Costs virtually nothing, relying on satisfied customers to spread the word. It’s highly cost-effective but harder to quantify and track in terms of direct impact.  4. **Advertising Program:** While expensive, it has the potential to reach a broad and diverse audience quickly. Effective for brand visibility and driving immediate traffic, but requires careful budget management. |
| **Understand Customer Behaviour and Retention** |
| **Customer Data:**  **Purchase History:** customers frequently buy from Apollo Pharmacy, such as pharmaceuticals, healthcare products, and additional services. This includes their buying frequency and average spend, helping to identify popular items and revenue trends.  **Feedback:** Evaluating customer reviews and feedback from Apollo Pharmacy's Circle Membership and other services to gauge satisfaction levels, common concerns, and areas needing improvement. |
| **Retention Rates:**  1. **Retention Rate Calculation:** Based on FY 2024 data, Apollo Pharmacy’s retention rate is approximately 75%. This is calculated by comparing the number of repeat customers to the total number of customers over a specific period.  2. **Factors Contributing to Loyalty:**   * **High-Quality Services:** Customers frequently return due to reliable pharmaceutical products and excellent healthcare services. * **Circle Membership Benefits:** Exclusive perks such as free lab tests, cashback offers, and insurance cover incentivize ongoing engagement. * **Personalized Experience:** Tailored services and follow-ups enhance customer satisfaction and encourage repeat business. |
| **Churn Analysis:**  1. **Reasons for Churn:**   * Competition: Customers may switch to competitors with lower prices or better services. * Price Sensitivity: High costs may drive customers to seek alternatives. * Lack of Engagement: Insufficient follow-up or lack of personalized interactions.   2. **Strategies to Reduce Churn:**   * Competitive Pricing: Adjust pricing to stay competitive. * Customer Feedback: Actively address feedback to improve satisfaction. * Loyalty Programs: Enhance loyalty programs like Circle Membership for repeat purchases. |

By examining Apollo Pharmacy's current financial data, revenue sources, expenses, customer acquisition channels, and retention rate, we can create a detailed strategy to boost the company's profit by 25%. Emphasizing cost optimization, revenue enhancement, and improved customer satisfaction and retention will drive sustainable growth and profitability. Leveraging data-driven insights at every stage will enable more effective and strategic decision-making, ultimately supporting Apollo Pharmacy's financial success.

1. **Focus Areas for Increasing Apollo Pharmacy's Profit by 25%**

To boost Apollo Pharmacy’s profit by 25%, the company needs to strategically concentrate on several critical areas. These include internal operations, product development strategies, market expansion, post-sales management, and branding. By targeting these areas with focused initiatives, Apollo Pharmacy can improve operational efficiency, enhance customer satisfaction, and expand its market presence.

| **Category** | **Focus Area** | **Measures** |
| --- | --- | --- |
| **Internal Operations**  **~ 9%** | **Process Optimization**  **~ 7%** | **Quality Control:** Implement quality control measures to ensure products and services meet high standards. This reduces errors, rework, and customer complaints, which improves overall efficiency. |
| **Process Optimization:** Analyze and refine workflows to eliminate bottlenecks, reduce redundant steps, and streamline operations. Implement automation where possible to increase speed and accuracy. |
| **Cost Control:** Identify and cut unnecessary expenses. This could involve renegotiating supplier contracts, optimizing inventory levels, and reducing waste. |
| **Human Resource Management**  **~ 2 %** | **Training and Development:** Invest in regular training to improve skills and efficiency. Well-trained employees are more productive and make fewer mistakes, lowering costs. |
| **Strategic Hiring:** Focus on hiring skilled employees who match the company’s needs. Efficient hiring practices ensure you bring in the right talent without increasing unnecessary costs. |
| **Performance Management:** Use performance management systems to set goals, provide feedback, and assess performance. Recognize and reward high performers to motivate the team. |
| **Logistics and Operations Management**  **~ 4 %** | **Supplier Coordination**  **~ 2.5%** | Enhance supplier relationships by negotiating better terms and ensuring reliable supply sources. Focus on improving procurement processes to reduce costs. |
|  | **Logistics Optimization**  **~ 1.5 %** | Streamline transportation, warehousing, and inventory management to improve efficiency and lower costs. Aim for faster, more reliable delivery performance. |
| **Product Development**  **~ 3 %** | **Product Optimization**  **~ 2%**  **Product Design**  **~1%** | **Cut Down Underperforming Products:** Discontinue products that do not meet sales or profitability targets. Focus resources on more successful products to improve overall performance. |
| **Launch Combo Products:** Apollo Pharmacy could introduce a combo package that includes essential health products such as a multivitamin, a health supplement, and a personalized health check-up at a discounted rate. This combo would offer customers value and convenience, encouraging them to purchase multiple items in one go and making it easier for them to maintain their health |
| **Market Expansion**  **~ 4%** | **Regional Expansion**  **~ 1%** | **New Markets:** Extend reach to new regions or countries to tap into underserved markets and increase overall sales. For instance, opening new stores or setting up delivery services in smaller towns or new cities. |
| **Market Penetration**  **~ 3%** | **Local Market Expansion Strategy:** Increase market share within existing regions by targeting new customer segments or enhancing current offerings. This could involve launching local advertising campaigns, expanding product lines, or improving in-store experiences to attract more customers. |
| **Post-Sales Management**  **~ 2%** | **Customer Satisfaction**  **~ 1%** | **Customer Feedback:** Collect and analyze feedback to understand customer needs and preferences. Use this data to make improvements and tailor services to better meet customer expectations. |
| **Customer Service:** Provide responsive and effective customer support to address issues and inquiries. Ensure quick resolution and maintain high service standards to enhance overall customer satisfaction. |
| **Customer Retention**  **~ 1%** | **Loyalty Programs:** Keep existing customers engaged and loyal by offering personalized follow-ups and utilizing Circle Membership benefits. Provide discounts and rewards to encourage repeat business and strengthen long-term relationships. |
| **Branding and Marketing**  **~ 3 %** | **Brand Visibility**  **~ 1.5%** | **Digital Marketing:** Implement targeted campaigns across social media, email, and other online platforms to increase your brand's reach and engagement with potential customers. |
| **SEO:** Optimize website and online content to improve search engine rankings, driving more organic traffic and boosting brand awareness. |
| **Partnerships**  **~ 0.5%** | Collaborate with health influencers to leverage their audience and increase your brand’s visibility through authentic endorsements and promotions of healthcare and beauty products. |
| **Word of Mouth and Referrals**  **~ 1%** | **Referral Programs:** Implement referral programs that reward existing customers for bringing in new ones. Offer incentives such as discounts or credits for each successful referral. This approach leverages satisfied customers to expand your customer base cost-effectively. |
| **Positive Reviews:** Encourage satisfied customers to leave positive reviews on platforms like Google and social media. Highlight these reviews on your website and marketing materials to build trust with potential customers. Positive reviews enhance credibility and attract new clients. |

By focusing on internal Operations, logistics and operations management, product development strategy, market expansion, post-sales management, and branding & marketing, apollo pharmacy can strategically enhance its profitability by 25%. Adopting these strategies will not only drive higher profits but also reinforce Apollo Pharmacy’s competitive stance in the market.

1. **Defining Strategies**

| **Category** | **Details** |
| --- | --- |
| **Optimise Expenses** | **Cost Reduction:** Implement measures to reduce operational costs, such as negotiating better terms with suppliers, streamlining logistics, and adopting cost-effective technologies.Renegotiate contracts with pharmaceutical suppliers for bulk discounts and better terms. Optimise delivery routes to reduce fuel costs and delivery times. |
| **Efficiency Improvements:** Use data analytics to optimise inventory management, reduce waste, and streamline operations. |
| **Enhance Revenue Streams** | **Upselling and Cross-Selling:** Implement a recommendation engine on the app that suggests vitamins or wellness products when customers purchase medications, enhancing the overall order value. |
| **New Revenue Streams:** Launch subscription services for regular delivery of essential medications and wellness products. Introduce telemedicine services where users can consult with doctors and receive prescriptions directly through the app. |
| Pricing Strategies: Implement a dynamic pricing model that offers discounts on high-demand products during peak times to attract more customers, while adjusting prices of slow-moving items to clear inventory. |
| **Improve Customer Satisfaction and Retention** | **Personalised Experiences:** Use customer purchase history and preferences to provide tailored product recommendations and exclusive discounts. Implement personalised health tips and medication reminders to improve user engagement |
| **Loyalty Programs:** Launch a loyalty program where customers earn points for every purchase, which can be redeemed for discounts or free products. Offer additional points for referrals and social media engagement. |
| **Customer Feedback:** Regularly conduct surveys and feedback forms to gather customer opinions. Use this data to make informed decisions on product offerings and service enhancements. Implement a customer support chat feature on the app for real-time assistance. |

To boost the profitability of Apollo Pharmacy's healthcare app, we have strategically implemented an inside-out approach. This begins with optimising expenses, followed by enhancing customer satisfaction and retention, and finally expanding revenue streams. Each step is driven by data insights to ensure decisions are informed and effective. By focusing on these areas, Apollo Pharmacy can achieve significant profit growth while maintaining exceptional standards of customer care and service. This comprehensive approach ensures that improvements are sustainable and aligned with the needs of modern healthcare consumers.

**N.B.**

All the data included in this document has been sourced from: <https://www.apollohospitals.com/apollo_pdf/SE_CON_May_2024.pdf>

**Part - II**

**Guesstimate Questions**

**Flowchart for Guesstimation:**

| **Step** | **Description** |
| --- | --- |
| Approach Selection | Choose between Demand Side or Supply Side Approach |
| Define Starting Points | Start with definite numbers like population/city area |
| Estimation Steps | Break down the estimation into smaller steps |
| Calculation | Apply ratios and aggregate data |
| Final Estimation | Calculate the final percentage |

**Question 1: Estimate the potential annual cost savings for a hospital if it reduces its readmission rate by 10%.**

**Answer:** To estimate the potential annual cost savings for a hospital if it reduces its readmission rate by 10%, we have used Apollo Hospital, Bengaluru, as our example.

| **Step** | **Details** | **Calculation** |
| --- | --- | --- |
| **Population Estimation** | Assume a city population - Bengaluru. | **1 cr** |
| **Urban / Rural** | Estimate 70% for the urban population and 30% for the rural population. Since Apollo Hospital is a private hospital typically located in urban areas, we are considering the urban population of Bengaluru in this case. | Urban population: 1 cr x 0.7 = **70 lakhs** |
| **Income** | Assuming most people living in the Bengaluru urban area are middle to high-income individuals. Here is the breakdown: 92% are middle-income, 6% are upper-middle-income, 1.5% are high-income, and 0.5% are high net worth individuals. | * Middle-Income: 70 lakhs x 0.92 = 64.4 lakhs **~ 64 lakhs** * Upper- Middle-Income: 70 lakhs x 0.6 = 4.2 lakhs ~ **4 lakhs** * High-Income: 70 lakhs x 0.15 = 1.05 lakhs **~ 1 lakhs** * High Net Worth Individuals: 70 lakhs x 0.005 = **35 k** |
| **Private Hospital Admissions** | Assuming only individuals in the upper-middle-income, high-income, and high net worth categories can afford admission to an expensive private hospital. | The number of people who can afford admission to private hospitals: Upper-Middle-Income + High-Income + High Net Worth Individuals = **5.3 lakhs ~ 5 lakhs.** |
| **Apollo Hospital Admission** | Apollo Hospital is one of the most renowned private hospitals. We assume that around 30% of the population that can afford admission to private hospitals and requires treatment chooses Apollo Hospital, Bengaluru. | Total Apollo Hospital Admission in Bengaluru (Annually):  5 lakhs x 0.3 = **1.5 lakhs.** |
| **Age Distribution** | Assume the age distribution is as follows: 30% of the population is between 0 and 14 years old, 40% is between 15 and 30 years old, 25% is between 31 and 50 years old, and 5% is over 50 years old. | Number of Patients in Apollo Hospital Per Age Group (Annually):   * Age Group: 0 – 14: 1.5 lakhs x 0.3 = **45k** * Age Group: 15 – 30: 1.5 lakhs x 0.4 = **60k** * Age Group: 31 – 50: 1.5 lakhs x 0.25 = **37.5k** ~ **37k** * Age Group: >50: 1.5 lakhs x 0.05 = **7.5k** |
| **Readmitted population** | Among the four age groups, those over 50 years old are more susceptible to chronic diseases that cannot be permanently cured. Therefore, we are assuming that 80% of the over-50 age group may require readmission. Additionally, we are considering that an average of 20% of previously admitted patients from other age groups who suffer from chronic diseases are readmitted to Apollo Hospital in a year. | Readmission of each age group:   * >50: 7.5k x 0.8 = **6 k** * 0 – 14: 45k x 0.2 = **9 k** * 15 – 30: 60k x 0.2 = **12 K** * 31 – 50: 37k x 0.2 = **7.5 k**   Total readmission (Annually) = **34.5 k ~ 35k** |
| **Calculate current readmission rate** | On average, 35k individuals are readmitted to Apollo Hospital, Bengaluru, in a year, out of 1.5 lakh individuals. | Current Readmission Rate: (35k / 1.5 lakhs) x 100 = **23.33% ~ 23%** |
| **Readmission rate after reduction** | As per the problem statement, we are reducing the current readmission rate by 10%. | New readmission rate: 23% - 10% = 13%.  Readmitted population after reduction of 10%: 35k– (35k x 0.13) = **30.4k ~ 30k** |
| **Cost per readmission** | Assume it costs approximately   ₹10k for each readmission at Apollo Hospital. | Cost before reduction of 10%: 35k x 10k = **₹ 35 cr.**  Cost after reduction of 10%: 30k x 10k = **₹ 30 cr**. |
| **Annual Cost Saving** | Calculate the annual cost saved by Apollo Hospital, Bengaluru, in a year if the readmission rate is reduced by 10%. | Cost Saved:  ₹ 35 cr - ₹ 30 cr =  **₹ 5 cr** |

By estimating the potential annual cost savings for a hospital if it reduces its readmission rate by 10% is ~ ₹5cr.

**Question 2:** Estimate the potential annual revenue generated by a hospital if 20% of its consultations are shifted to telemedicine.

**Answer:**

**Number of Consultations per Year:** Let's assume a large hospital in India conducts 200,000 consultations per year.

**Revenue per In-Person Consultation:** We'll assume the average revenue per in-person consultation in India is ₹350.

**Telemedicine Consultation Revenue:** We'll assume the average revenue per telemedicine consultation is slightly lower, say ₹280, due to lower operational costs.

Given these assumptions, we can calculate the revenue:

**In-Person Consultations Revenue:** If 20% of consultations are shifted to telemedicine, 80% remain in-person.

**Number of in-person consultations:** 80% of 200,000 = 160,000 consultations.

**Revenue from in-person consultations:** 160,000 \* ₹500 = ₹80,000,000.

**Telemedicine Consultations Revenue:** Number of telemedicine consultations: 20% of 200,000 = 40,000 consultations.

**Revenue from telemedicine consultations:** 40,000 \* ₹400 = ₹16,000,000.

**Total Revenue:**

Total annual revenue = Revenue from in-person consultations + Revenue from telemedicine consultations.

Total annual revenue = ₹80,000,000 + ₹16,000,000 = **₹96,000,000**.

So, if 20% of the consultations are shifted to telemedicine, a large hospital in India could potentially generate an annual revenue of **₹96,000,000**.

By incorporating these detailed factors, the revenue estimation for the hospital can be made more accurate and reliable.

**Question 3:** Estimate the potential annual market size (in dollars) for a new medical device designed for diabetes management in the United States.

**Answer:**

| **Step** | **Details** | **Calculation** |
| --- | --- | --- |
| **Identify the Target Population** | Taking US Population into Consideration | * + **Total US Population:**330 million   + **Population with Diabetes:** 10.5%   + **Number of People with Diabetes:** 10.5% \* 330 million = **34.65 million** |
| **Segment the Market** | Population from categories  **Type-1 Diabetes & Type-2 Diabetes** | * + **Avg. Type 1 Diabetes (5-10% of diabetic population)** = 7.5%   + **Avg. Type 2 Diabetes (90-95% of diabetic population)** = 92.5%   + **Number of People with Type 1 Diabetes:** 34.65 million \* 7.5% = **2.60 million(approx.)**   + **Number of People with Type 2 Diabetes:** 34.65 million \* 92.5% =**32.05million(approx.)** |
| **Target Adoption Rate** | The percentage of the target population that is expected to start using the new medical device. | * + **Adoption Rate for Type 1 Diabetes:** 50% (more likely to adopt advanced management devices)   + **Adoption Rate for Type 2 Diabetes:** 15% (less likely due to lifestyle management)   + **Number of Adopters (Type 1):** 2.60million \* 50%= **1.30 million**   + **Number of Adopters (Type 2):** 32.05 million \* 15% = **4.81 million**   + **Total Potential Adopters:** (1.30 + 4.81) million = **6.11 million** |
| **Average Selling Price (ASP)** | Average Selling Price of the device | * + Initial Cost of Device: **$500**   + Annual Maintenance/Subscription Costs: **$100** |
| **Calculate the Annual Revenue** | Annual revenue generation due the product sales | * + **Initial Market Penetration Revenue:** 6.11 million users \* $500 = **$3.055 billion**   + **Recurring Annual Revenue:** 6.11 million users \* $100 = **$611 million** |
| **Total Potential Annual Market Size** | Total Potential Annual Market Size | * + **First Year Market Size:** $3.055 billion (initial device sales) + $611 million (annual maintenance) = **$3.666 billion**   + **Subsequent Years Market Size:** $611 million (assuming no new device purchases, only recurring costs) |

**Conclusion:**

By considering different segments, adoption rates, and a growth factor for new users, we can estimate that the potential annual market size for a new medical device designed for diabetes management in the US is around $3.666 billion in the first year, with subsequent years bringing in approximately $611 million annually from recurring costs, plus additional revenue from new adopters.

**Question 4:** Estimate the potential additional annual revenue for a hospital from implementing preventive care programs.

**Answer:** Preventive care programs focus on the early detection and prevention of diseases, thereby reducing the need for extensive and costly treatments. These programs are essential for promoting public health and can be a significant source of revenue for healthcare providers. Here, we estimate the potential additional annual revenue that Apollo Hospital in Bangalore could generate by implementing preventive care programs.

| **Step** | **Detail** | **Calculation** |
| --- | --- | --- |
| Population Estimation | Assuming a city where Apollo Hospital is located - Bangalore | **10 million** |
| Preventive Care | Estimate 40% of the population need preventive care | Preventive Care population = 0.40 x 1,00,00,000 = **40,00,000** |
| Apollo Services Usage | Assume 30% of Preventive Care Population use Apollo Services | Apollo Users = 0.30 x 4000000 = **12,00,000** |
| Average Spending | Average Revenue per patient for Preventive Care Program: 5000 Rs | Total Additional Revenue = 1200000 x 5000 = **6 billion Rupees** |
| Final Estimation | Final Additional Revenue | **6 billion Rupees** |

**Question 5: Estimate the potential annual cost savings for a hospital from optimizing its supply chain management.**

**Answer:** To estimate the potential annual cost savings for a hospital from optimizing its supply chain management, we will use a structured guesstimation approach. This includes defining a starting point, breaking down the problem, and making educated assumptions. We will focus on key areas where supply chain optimization can lead to cost savings, such as inventory management, procurement, logistics, and waste reduction. we have used Apollo Hospital, Bengaluru, as our example.

**Guesstimation Flow**

1. **Approach Selection:**
   * + **Supply-Side Approach:** Focus on improving the internal operations of Apollo Hospital, Bengaluru, particularly its supply chain management.
2. **Define Starting Points:**
   * + **Hospital Overview**: Apollo Hospital, Bengaluru is a major healthcare facility providing a range of medical services, including surgeries, diagnostics, and patient care.
     + **Annual Expenditure on Supplies:** A substantial portion of the budget is allocated to purchasing medical supplies, equipment, and pharmaceuticals.
3. **Estimation and Calculation**
   * 1. **Total Supply Costs:**
        + **Assumption:** Assume Apollo Hospital, Bengaluru spends approximately **₹200** crore annually on purchasing medical supplies, equipment, and pharmaceuticals.
4. **Key Areas of Optimization:**
   * 1. **Inventory Management**:
        + **Current Issue:** Overstocking and understocking, leading to high holding costs and potential stockouts.
        + **Potential Improvement:** Implement advanced inventory management systems to reduce excess inventory by 15%.
        + **Estimated Savings:** 15% of ₹200 crore = **₹30 crore**.
     2. **Procurement:**
        + **Current Issue:** Inefficiencies in procurement processes and lack of bulk purchasing.
        + **Potential Improvement:** Optimize procurement strategies, including bulk purchasing and improved supplier negotiations, to save 10%.
        + **Estimated Savings:** 10% of ₹200 crore = **₹20 crore**.
     3. **Logistics and Distribution:**
        + **Current Issue:** Inefficient logistics leading to high transportation and storage costs.
        + **Potential Improvement:** Streamline logistics and optimize distribution routes to save 5%.
        + **Estimated Savings:** 5% of ₹200 crore = **₹10 crore**.
     4. **Waste Reduction:**
        + **Current Issue:** Losses from expired or unsellable medical supplies.
        + **Potential Improvement:** Better inventory turnover management and monitoring of expiration dates can reduce waste by 10%.
        + **Estimated Savings:** 10% of ₹200 crore = **₹20 crore**.
5. **Total Savings:**
   * + **Annual Cost Savings**: ₹30 crore (Inventory Management) + ₹20 crore (Procurement) + ₹10 crore (Logistics and Distribution) + ₹20 crore (Waste Reduction) = **₹80 crore**.

**Final Estimation**

**Estimated Potential Annual Cost Savings:** By optimizing its supply chain management, Apollo Hospital, Bengaluru can potentially save approximately **₹80 crore annually**. This estimation considers improvements in inventory management, procurement processes, logistics.