PHARMALYTICA

Business Requirement Document

Pharmalytica

Version 1.2
7/21/2025

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Date	Authors	Organization	Version	Change Description
7/10/2025	Youssef Hegazy	Pharmalytica	0.1	Draft Version. Document for business review.
7/16/2025	Youssef Hegazy	Pharmalytica	1.1	Editing
7/21/2025	Youssef Hegazy	Pharmalytica	1.2	Editing

Reviewers:

Date	Reviewers	Organization	Version	Change Description
7/10/2025	Wafaa Ali	Pharmalytica	1.0	Reviewed
7/16/2025	Ziad Saad	Pharmalytica	1.1	Reviewed
7/21/2025	Youssef Hegazy	Pharmalytica	1.2	Published

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1.0 Purpose:

The purpose of this document is to outline the business analytics requirements related to pharmacy sales operations and product performance. This Business Requirements Document (BRD) is the outcome of multiple requirement-gathering sessions with key stakeholders, including pharmacists, sales staff, product managers, and business analysts.

This project focuses on analyzing pharmacy sales trends and product-related insights across multiple branches or independent pharmacies. The goal is to build a robust system capable of tracking product performance and supporting data-driven business decisions through comprehensive sales analytics.

Specifically, this BRD aims to:

1. Identify KPIs and sales metrics that assist in understanding product demand, best-selling drugs, popular dosage forms, seasonal sales variations, and performance by active ingredient or drug class.
2. Support strategic decision-making through interactive dashboards and reports that present sales volume, revenue trends, product-wise sales distribution, and top-performing brands or suppliers.
3. Enhance visibility into customer purchasing behavior, allowing pharmacies to tailor offerings and promotions based on high-demand products and emerging consumption patterns.
4. Define the data pipeline for sales analytics—covering sources such as POS transactions, digital invoices, product catalog updates, and customer sales logs.
5. Enable cross-branch and multi-pharmacy analysis, allowing owners or decision-makers to compare sales figures, monitor product success rates, and optimize product offerings based on location-specific insights.

This document sets the foundation for developing a system that empowers pharmacy stakeholders to make informed, real-time decisions centered around sales performance and product lifecycle management, with the long-term goal of increasing profitability and customer satisfaction.

2.0 Overview:

2.1 Project Overview and Background:

This project aims to enhance pharmacy operations by developing a smart, data-driven dashboard that focuses on tracking drug sales, product performance, and supplier contribution. The system will enable pharmacy stakeholders to make informed decisions based on accurate, real-time data.

❖ Key Benefits:

1. Monitor sales by brand, dosage form, and active ingredients
2. Suggest alternative drugs by replacing brand names with active ingredients
3. Identify fast-moving and underperforming products
4. Improve supplier visibility and contribution analysis

❖ Data Sources:

- ERP Oracle / Kaggle / by python / WHO

❖ Benefits for Business:

1. Instant visibility into drug sales by brand, dosage form, and active ingredients
2. Identification of fast- and slow-moving drugs to identify the sales of each product
3. Intelligent substitution support by analyzing active ingredients for alternative drug suggestions
4. Supplier performance tracking based on delivery accuracy and consistency
5. Real-time dashboards and automated reporting for quick, informed decision-making

6. Monthly and yearly sales trend analysis to improve forecasting and promotional planning
7. Anomaly detection, such as sudden drops in sales or high return rates
8. KPI-driven insights to enhance strategic, data-backed decision-making across the organization

2.2 Project Dependencies:

#	Dependencies	Owner
1	Availability of pharmacy domain expert (SPOC) to gather business requirements	Pharmacy Operation Team
2	Access to existing POS and database systems	IT Team

2.3 Stakeholders:

Role	Name	Business Requirement RACI
Business Owner- Procurement	Ziad Mohammad	R
Customer – Business Use Case Representative	Anwar Mohamed	C
Project Initiator – Dashboard Objective Lead	Youssef Hegazy	A, R
Data Modeler	Ahmed Ibrahim	R
Data Modeler	Yassin Elmaghrabi	R
Data Engineer	Wafaa Ali	R
Data Engineer	Abdallah Maher	R
Semantic Developer	Yasmine Soliman Ahmed	R
Tableau Developer (Visualization)	Anwar Mohamed	R
Power BI Developer (Visualization)	Yousef Hegazy	R
QA Reviewer – Dashboard & Data Accuracy	Ahmed Ibrahim & Yasmine Soliman Ahmed	C
Stakeholder – Viewer & Feedback	Yassin Elmaghrabi	I

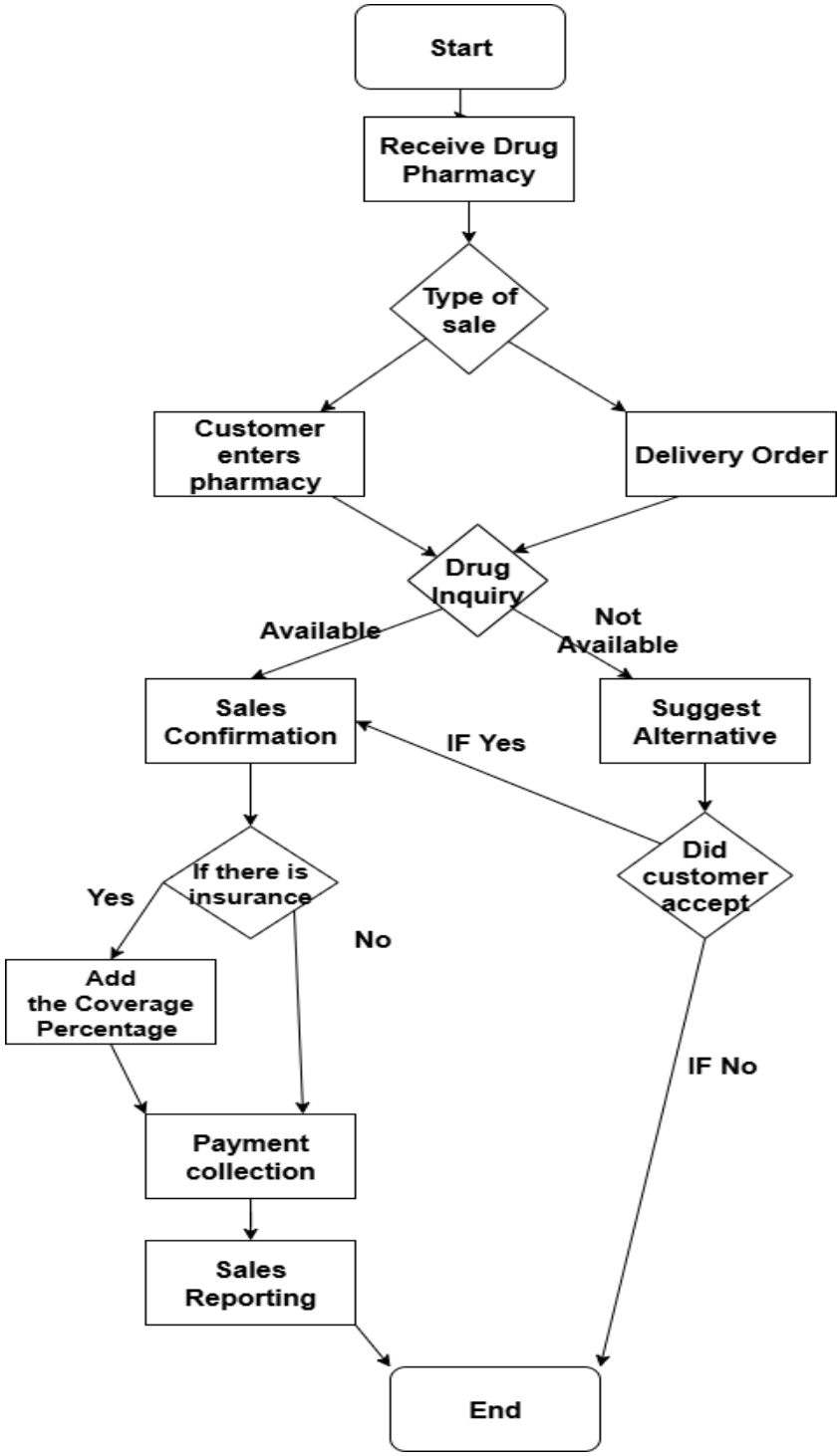
- RACI: **R**esponsible, **A**ccountable, **C**onsult, **I**nform

3.0 Key Assumptions:

#	Assumptions
1.	**Centralized Product Catalog Assumption:** It is assumed that all pharmacies will follow a standardized product catalog to ensure consistent naming, categorization, and tracking of products. This allows for accurate reporting and prevents duplication across different branches. Any inconsistencies will be resolved during the initial data entry phase.
2.	**Sales Data Availability Assumption:** It is assumed that pharmacies will provide complete sales data, either through direct entry or scheduled uploads. This data is essential for monitoring sales performance and generating accurate reports.
3.	**Multi-Pharmacy Integration Assumption:** The system is assumed to support integration with multiple pharmacies across different zones, with each assigned a unique identifier. Sales and product data will be consolidated to allow unified reporting and performance analysis. A consistent data format will be used to ensure smooth integration.
4.	**Product Taxonomy Assumption:** It is assumed that all products will be categorized based on their active ingredients, with commercial names included to avoid duplication. This standard taxonomy will support accurate sales comparison, improve searchability, and maintain data integrity across the system.
5.	**Access to KPI Information Assumption:** It is assumed that the pharmacy management will provide access to relevant documents, data, and key performance indicators to support the IT team. This access will enable the team to capture accurate information related to the targeted functional areas of the system.
6.	**Timely Data Updates:** It is assumed that all pharmacies will provide accurate, standardized sales data, including product, dosage, and manufacturer details. Data will be updated regularly—ideally daily—to ensure timely reporting and reliable KPIs. The project also expects smooth integration with existing systems and compliance with all relevant regulations.

4.0 Business Requirements:

4.1 High Level Procurement Process Flow:

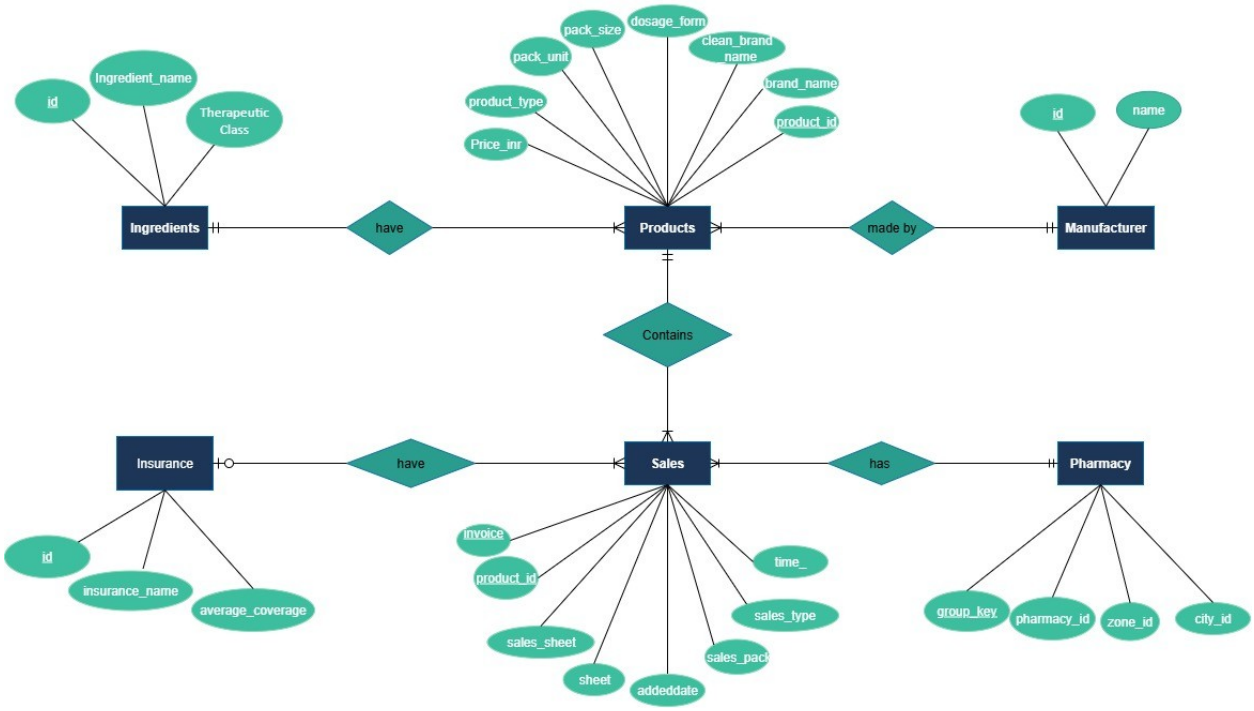


4.2 Business Terms and Definitions:

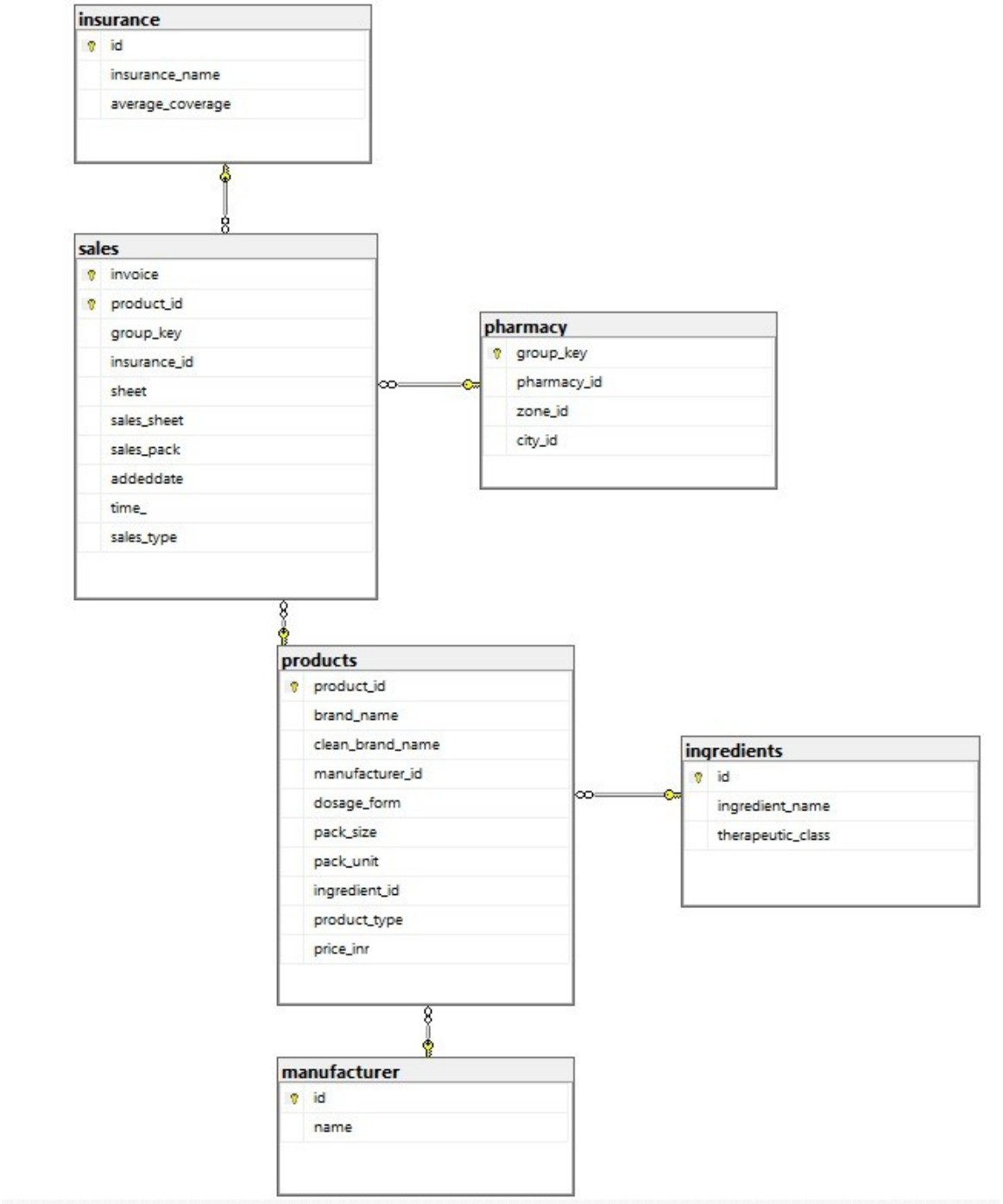
Business Terms	Business Definitions
product_id	Unique identifier for each product.
brand_name	Commercial name under which the product is sold.
clean_brand_name	Standardized version of the product brand name for consistency in reporting.
dosage_form	The physical form in which the drug is administered (e.g., tablet, syrup).
pack_size	Quantity of dosage units contained in one pack.
pack_unit	The unit in which packs are counted (e.g., box, blister, bottle).
product_type	Categorization of product as “drug” or “supply”.
price_inr	Selling price of the product in Indian Rupees (or system currency).
invoice	Unique identifier for a sale transaction.
sales_sheet	Number of units sold measured in sheet format (e.g., 1 sheet of 10 tablets).
sales_pack	Number of packs sold in the transaction.
sheet	Units contained in one sheet.
added_date	Date the transaction or product was added.
sale_time	Timestamp of the sale.
sales_type	Type of sale (e.g., in-pharmacy, delivery)
group_key	Composite identifier for pharmacy location (e.g., city + zone + pharmacy ID).
pharmacy_id	Unique identifier of the pharmacy outlet.
zone_id	Code representing the regional zone.
city_id	Code representing the city.
manufacturer_id	Unique ID for each drug manufacturer.
manufacturer_name	Name of the manufacturer producing the drug.
ingredient_id	Unique identifier for each active ingredient.
ingredient_name	Name of the primary chemical ingredient.

therapeutic_class	Classification based on treatment purpose (e.g., analgesic, antibiotic).
insurance_id	Unique ID of the insurance company or policy.
insurance_name	Name of the insurance provider.
average_coverage	Average percentage of cost covered by the insurance plan.

4.3 Data Model – Entity Relationship Diagram (ERD):



4.4 Database Schema:



4.4 Defined Key KPI's/Metrics/Measures:

Business Reference Number: SCMPROC0001		
Subject Area/Process: Sales Performance		
Report Name: Sales		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Invoice Revenue	Total number of unique invoices issued	COUNTD(Invoice) or DISTINCTCOUNT(Invoice)
Avg Sales/Day	Average total sales per day	SUM(Sales_Sheet × Sheet) ÷ Number of Days
Total Revenue	Total income from all sales transactions	SUM(Sales_Sheet × Sheet × Price)
Total Sold Units	Total number of units sold across all products	SUM(Sales_Sheet × Sheet)
Revenue Per Day	Trend of revenue generated per day	SUM(Revenue) GROUP BY Added_Date
Sales Volatility Index	Stability of sales over time	Standard Deviation(Daily Sales) ÷ Average Daily Sales
Therapeutic Class Revenue	Revenue breakdown by therapeutic class	SUM(Revenue) GROUP BY Therapeutic_Class
Revenue Per Sale Type	Share of revenue by sale type (delivery vs in-pharmacy)	SUM(Revenue) GROUP BY Is_Delivery
Amount of Each Product Sold	Volume sold per product	SUM(Sales_Sheet × Sheet) GROUP BY Product_Name
Top 3 Manufacturer Revenue	Top contributing manufacturers by revenue	TOPN(3, SUM(Revenue)) GROUP BY Manufacturer

Total Measures	10

Business Reference Number: SCMPROC0007		
Subject Area/Process: Product & Active Ingredient mentoring and performance		
Report Name: Product and active Ingredient		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Number of Ingredients	Total count of distinct primary ingredients	COUNT(DISTINCT Primary_Ingredient)
Number of Unique Products Sold	Count of distinct product names sold	COUNT(DISTINCT Product_Name)
Top Manufacturers by Dosage Form	Most selling manufacturers for each dosage form	SUM(Sales) GROUP BY Manufacturer, Dosage_Form
Top 10 Most Profitable Ingredients	Ingredients with the highest revenue	TOPN(10, Primary_Ingredient, SUM(Profit))
Top 5 Highest Selling Products	Products with the highest total units sold	TOPN(5, Product_Name, SUM(Sales_Units))
Top 5 Ingredients by Unit Sales	Ingredients that contribute most to sales volume	TOPN(5, Primary_Ingredient, SUM(Sales_Units))
Top Sales by Dosage Form	Breakdown of total units sold by dosage form	SUM(Sales_Units) GROUP BY Dosage_Form
Total Measures	7	

Business Reference Number: SCMPROC0007		
Subject Area/Process: Time Performance		
Report Name: Time		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Avg Sales/Qtr	Average revenue per quarter	SUM(Revenue) ÷ 4
Peak Hour Sales	Hour of the day with the highest revenue	MAX(SUM(Revenue)) GROUP BY Hour(Time)
Top Revenue Day	Day of week with highest revenue	MAX(SUM(Revenue)) GROUP BY Weekday
Sold Units/Day	Average number of sold units per day	SUM(Sales Sheet × Sheet) ÷ Number of Days
Sold Units by City and Quarter	Comparison of sold units across cities for each quarter	SUM(Units) GROUP BY City, Quarter
Top Daily-Selling Manufacturer	Manufacturer with highest total daily sales	MAX(SUM(Revenue)) GROUP BY Manufacturer
Revenue Over Time (Quarter)	Revenue aggregated by quarter	SUM(Revenue) GROUP BY Quarter
Weekdays Sales	Revenue share by day of week	SUM(Revenue) GROUP BY Weekday
Revenue Per Time	Sales revenue distribution over hours of the day	SUM(Revenue) GROUP BY Time (hour)
Total Measures	9	

Business Reference Number: SCMPROC0007		
Subject Area/Process: Location Performance		
Report Name: Location		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Avg Rev/pharmacy	Average revenue generated per pharmacy across all cities	SUM(Revenue) ÷ COUNT(DISTINCT Pharmacy_ID)
Top City	City with highest total revenue	MAX(SUM(Revenue)) GROUP BY City
Total Pharmacies	Number of unique pharmacies across all cities	COUNT(DISTINCT Pharmacy_ID)
Top Manufacturer per City	Distribution of sales per manufacturer per city	SUM(Revenue) GROUP BY City, Manufacturer
Top 4 Revenue	The 4 highest revenue-generating product-location combinations	TOPN(4, Product × Pharmacy, SUM(Revenue))
Revenue by Month and City	Trend of revenue per city across months	SUM(Revenue) GROUP BY Month, City
Sales Per City	Distribution of total sales volume per city	SUM(Sales Units) GROUP BY City
City Revenue Map	Geographic distribution of revenue by city	MAP(City, SUM(Revenue))
Total Measures	8	

Business Reference Number: SCMPROC0007		
Subject Area/Process: Delivery sales		
Report Name: Delivery		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Avg Sales per Delivery Transaction	Average revenue per delivery invoice	SUM(Price × Units) ÷ COUNT(DISTINCT Invoice) WHERE Is_Delivery = TRUE
Number of Each Pick-up Type	Total number of transactions for delivery and on-site modes	COUNT(*) GROUP BY Pickup_Type
Total Revenue (Delivery & On-site)	Total revenue by transaction type	SUM(Sales WHERE Is_Delivery = TRUE) and SUM(Sales WHERE Is_Delivery = FALSE)
Pick-up Form per Time	Count of pick-ups for each month and pickup method	COUNT(Pickups) GROUP BY Month, Pickup_Type
Revenue by Type and Channel	Revenue split by product type (drug/supply) and transaction type	SUM(Price × Quantity) GROUP BY Product_Type, Is_Delivery
Top 5 Classes Sold via Delivery	Top therapeutic classes by sales through delivery channel	TOPN(5, Therapeutic_Class, SUM(Sales) WHERE Is_Delivery = TRUE)
Top 5 Manufacturers Relying on Delivery	Manufacturers with highest reliance on delivery channel for sales	SUM(Sales WHERE Is_Delivery = TRUE) ÷ SUM(All Sales) GROUP BY Manufacturer
Total Measures	7	

Business Reference Number: SCMPROC0007		
Subject Area/Process: Summary Statistics		
Report Name: Summary		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Top Frequent City	Most frequent city by transactions	MODE(City)
Unique Cities Count	Number of distinct cities	COUNTDISTINCT(City)
Total Manufacturers	Number of manufacturers	COUNTDISTINCT(Manufacturer)
Top Frequent Manufacturer	Most common manufacturer across records	MODE(Manufacturer)
Top Revenue Day	Day of week with highest revenue	TOP1(Day ORDER BY Revenue DESC)
Total Revenue	Total revenue from all transactions	SUM(Revenue)
Total Sold Units	Sum of sold units	SUM(Sold_Units)
Top-Selling Product	Product with highest unit sales	TOP1(Product ORDER BY Units_Sold DESC)

Top Selling Hours	Peak sales hours	TOP N(Hour ORDER BY Revenue DESC)
Sales by Therapeutic Class	Distribution of sales per therapeutic class	SUM(Sales) GROUP BY Therapeutic_Class
Sales Per City	Distribution of sales per city	SUM(Sales) GROUP BY City
Total Measures	10	

Business Reference Number: SCMPROC0007		
Subject Area/Process: Detailed Report		
Report Name: Detailed		
Report Type: Analytical		
Business Benefits: The defined KPIs enable the pharmacy to monitor sales performance by brand, dosage form, and active ingredients, while also suggesting alternative drugs through active ingredient mapping. They support the identification of fast-moving and underperforming products, improve supplier visibility and contribution analysis, and provide data-driven insights for more effective planning and decision-making.		
Business Priority: High		
Measures	**Description**	**Condition**
Sum of Sold Units	Total quantity of units sold across all products	SUM(Sold_Units)
Total Revenue	Total revenue across all products	SUM(Total_Revenue)
Sales by Dosage Form	Sales amount broken down by dosage type	SUM(Sales) GROUP BY Dosage_Form
Sales Per City	Total sales by location (e.g., Cairo, Alexandria, Port Said)	SUM(Sales) GROUP BY City
Sales by Month	Monthly revenue trends across the year	SUM(Sales) GROUP BY Month
Invoices by Hours	Total invoice value distributed by hour of day	SUM(Invoice_Amount) GROUP BY Hour
Sales by Sales Type	Revenue split between on-site and delivery sales	SUM(Sales) GROUP BY Sales_Type

		(On-site/Delivery)
0Total Measures	8	

5.0 Approvals & Acknowledgements:

Approval Sign-Off			
	Name	**Signature**	**Date**
Business Owner- Procurement			
Business SPOC – Procurement			
Project Initiator – IT Team			
Project Manager – IT Team			