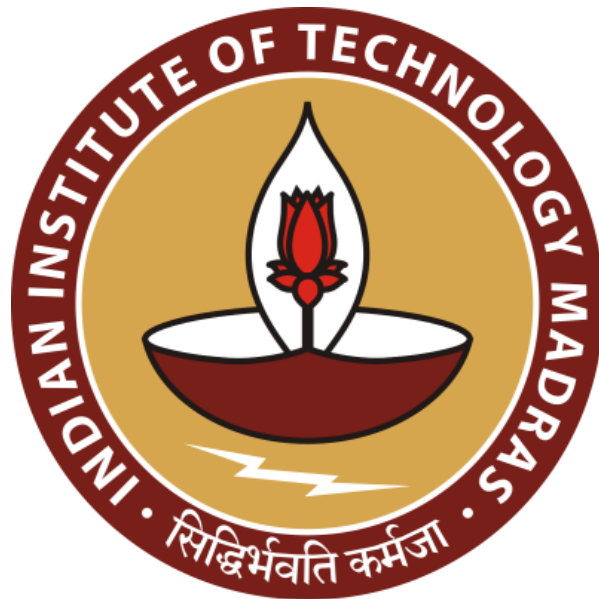


INDIAN INSTITUTE OF TECHNOLOGY,
MADRAS

Business Data Management
Capstone Project Mid Term Report



Title :-
Insights into Pharmacy Sales
and Stock Data

Submitted By :-

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1. EXECUTIVE SUMMARY

This report presents an analysis of data obtained from Jindal Medical Store, a local pharmacy located in Palwal, Haryana. The objective of this analysis is to derive insights and provide recommendations to address various challenges faced by the pharmacy, including understanding sales trends, managing inventory efficiently, and identifying areas for potential growth.

The challenges identified for Jindal Medical Store include fluctuating sales patterns, overstocking or under-stocking of certain medicines, and the need to optimize inventory based on demand. The analysis focuses on sales and stock data over an eight-week period from 1st September 2024 to 26th October 2024 for 10 selected medicines, with the aim of uncovering patterns and trends that can guide decision-making.

The data includes weekly stock and sales records, categorized by medicine name. The analysis explores sales trends and inventory utilization. Additionally, the report examines key performance metrics such as sales quantity ranges, mean, median, and distribution characteristics to provide a comprehensive view of the pharmacy's operational performance.

The findings emphasize the importance of aligning stock levels with customer demand to minimize wastage and maximize revenue. Moreover, the analysis provides actionable insights to help Jindal Medical Store better manage inventory. These recommendations are designed to enhance operational efficiency, improve customer satisfaction, and increase profitability.

By leveraging the insights and recommendations provided in this report, Jindal Medical Store can address its challenges effectively and build a robust foundation for sustainable growth in a competitive market. This analysis serves as a critical step toward informed decision-making and strategic planning for the pharmacy.

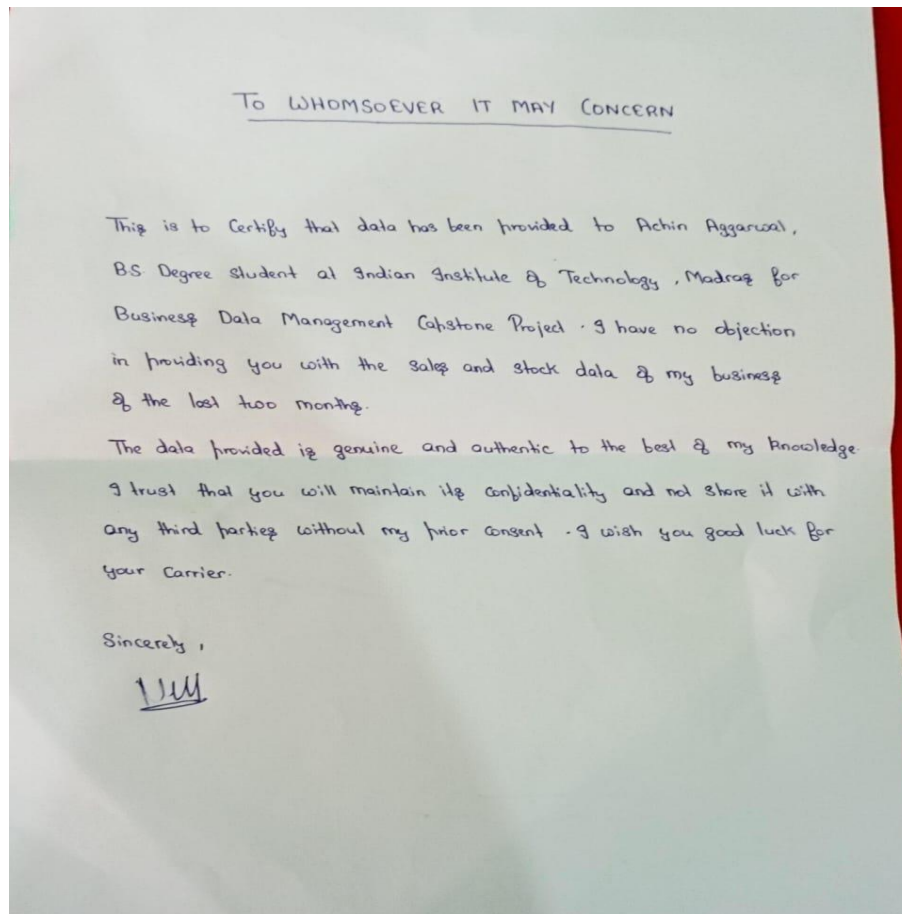
2. PROOF OF ORIGINALITY OF THE DATA

The data used in this analysis was collected directly from Jindal Medical Store, a local pharmacy in Palwal, Haryana. This primary data was gathered through direct discussions with the pharmacy owner, Mr. Narender Jindal, who provided access to sales and stock records. The pharmacy's inventory and sales information were initially maintained in manual documentation, which was then digitized by me and shared for analysis.

The original data was provided in physical form, which I transferred into Excel for analysis. All relevant data points for the period from 1st September 2024 to 26th October 2024 were digitized and used for comprehensive analysis. This allowed for a thorough review of sales trends, stock levels, and key metrics. The analysis was conducted entirely within Excel, ensuring that all calculations, charts, and insights were developed from the original dataset provided.

No external surveys or third-party data sources were involved in the data collection or analysis process, making this report a true representation of the pharmacy's operational data over the

specified period. Below is a letter from the business owner, Mr. Narender Jindal, authorizing the use of this data for my project :-



I've attached photographs of the medical store, along with a brief video recording of my meeting with Mr. Narender Jindal, during which we discussed the data and the challenges the business is currently experiencing.

These resources are uploaded in the Google drive link below:

Link :- <https://drive.google.com/drive/folders/1Tr2xtgj6z7Ufm8IfKFnwVrN6ig0P3-IA?usp=sharing>

The video includes details about:

- The background of Jindal Medical Store.
- The sales process and daily operations.
- Challenges faced, such as stock management, expired medicines, and customer payment delays.

3. METADATA AND DESCRIPTIVE STATISTICS

Data link :-

https://docs.google.com/spreadsheets/d/1V6qLqsEksBSNgZCyPLk3wmjrQn5MOD9B/edit?usp=s_haring&oid=101997079832483081770&rtpof=true&sd=true

METADATA

Description :- This project involves the analysis of data collected from Jindal Medical Store, a pharmacy located in Palwal, Haryana. The data was manually digitized from original documentation to ensure accuracy and completeness. The workbooks contain two primary data sheets: Master Data and Stock Data, along with additional sheets created for in-depth analysis, such as revenue analysis, sales analysis, profit analysis, and payment status analysis.

a.) Master Data

This sheet tracks the sales information of medicines sold at the pharmacy.

Dataset Headers	Description	Range	Format	Category
Dates	Represents the date of sale.	From 09/01/2024 to 10/26/2024.	MM/DD/YYYY Y.	Ordinal (dates in sequential order).
Day	The day of the week corresponding to the date of sale.	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.	Text (Categorical)	Nominal.
Medicine Name	Names of the medicines sold.	Montair-LC, Amoxyclav 625mg, Calpol - 500mg, Pantop 40mg, Cetirizine - 10mg, Bricarex A, Wikoryl DS, Betnovate-C, Volini Gel, Moov.	Text (Categorical)	Nominal.
Category of Medicine	Type of medicine.	Tablet, Syrup, Spray, Ointment.	Text (Categorical).	Nominal.
Quantity	Quantity of medicines sold in a transaction.	1 to 30 (numeric).	Numeric (Integer).	Quantitative (Ratio).
MRP (Maximum Retail Price)	The retail price of each medicine in INR.	Rs. 14.00 – Rs. 370.00	Numeric (Currency).	Quantitative (Ratio).
Cost Price (CP)	The cost price of each medicine in INR.	Rs. 9.00 – Rs. 300.00	Numeric (Currency)	Quantitative (Ratio)
Selling Price (SP)	The selling price of each medicine in INR	Rs. 10.00 – Rs. 400.00	Numeric (Currency).	Quantitative (Ratio)
Payment	Indicates if the	Paid, Credit Purchase.	Text	Nominal

Status	payment for the transaction is completed or pending (credit		(Categorical)	
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b.) Stock_Data :-

This sheet tracks the weekly stock data over 8 weeks.

Medicine Name : - Montair-LC, Amoxyclav 625mg, Calpol - 500mg, Pantop 40mg, Cetirizine - 10mg, Bricarex A, Wikoryl DS, Betnovate-C, Volini Gel, Moov.

Dataset Headers	Description	Format	Category
Week Number	Indicates the week number within the 8-week analysis period.	Ordinal (Integer)	Ordinal
Medicine Name	Names of the medicines in stock	Text (Categorical)	Nominal
Current + Incoming Stock	Total stock available, including current and incoming stock	Numeric (Integer)	Quantitative (Ratio)
Sales	Stock sold during the week	Numeric (Integer)	Quantitative (Ratio)
Remaining Stock	Stock remaining after sales	Numeric (Integer)	Quantitative (Ratio)

DESCRIPTIVE STATISTICS

Descriptive statistics involves summarizing and organizing data to provide a concise and meaningful representation of its main characteristics. It includes measures such as averages, ranges, which help to understand the data's central tendencies, variability, and distribution.

- a.) Master_Data : - the descriptive statistics for the master data of Jindal Medical Store. The dataset contains 560 records, detailing various attributes of the medicines sold. The mean quantity of items sold per transaction is 8.075, with a median of 13 units. The quantity range varies from 1 to 30, with a maximum of 30 and a minimum of 1, giving a range of 29 units. The total quantity sold across all records is 4522. For the pricing statistics, the mean M.R.P (Maximum Retail Price) is ₹164.90, with the median at ₹132.60. The highest recorded M.R.P is ₹370.00, while the lowest is ₹14.00, resulting in a range of ₹356.00. The mean C.P (Cost Price) stands at ₹123.65, with a median of ₹109.70. The cost price fluctuates between ₹9.80 and ₹293.40, showing a range of ₹283.60. The mean S.P (Selling Price) is ₹137.20, with a median of ₹117.45. The selling price data spans from ₹12.00 to ₹325.00, producing a range of ₹313.00. The total sum of the M.R.Ps for all items sold is ₹92,344.00, the C.P. sum is ₹69,241.20, and the S.P. sum amounts to ₹76,832.00.

Descriptive Statistics	Quantity	M.R.P	C.P.	S.P.
Mean	8.075	₹164.90	₹123.65	₹137.20
Median	13	₹132.60	₹109.70	₹117.45
Maximum	30	₹370.00	₹293.40	₹325.00
Minimum	1	₹14.00	₹9.80	₹12.00
Range	29	₹356.00	₹283.60	₹313.00
Sum	4522	₹92,344.00	₹69,241.20	₹76,832.00
Count	560	560	560	560

4. ANALYSIS AND PROCESS DESCRIPTION

a.) Revenue Analysis :-

Method and Column Used: The "Total Revenue vs. Dates" chart is used for revenue trend analysis. This chart displays the daily revenue of Jindal Medical Store over an 8-week period, from September 1, 2024, to October 26, 2024.

Justification Connected with PB (Problem Statement): The analysis of revenue trends is crucial for addressing the challenges of maintaining consistent cash flow and identifying periods of high or low sales. By understanding revenue patterns, the store can plan better for peak periods and manage slower days more effectively.

Reason for Choosing This Method: This method was chosen because it provides a clear visual representation of revenue fluctuations over time, helping to identify days with significant peaks or troughs. Such insights allow the store to align stock, staffing, and promotional strategies with periods of higher demand, optimizing overall financial performance. The stable trend, with minor variations, reflects the store's steady revenue flow and indicates areas where targeted actions could be implemented for improved outcomes.

b.) Sales Analysis :-

Method and Column Used: The analysis uses the Sales Trend chart in conjunction with the Total Revenue vs. Medicine chart to evaluate product demand and revenue generation at Jindal Medical Store.

Justification Connected with PB (Problem Statement): Understanding sales trends is essential to address inventory management issues, such as avoiding overstocking or stockouts. By identifying which products contribute significantly to sales and revenue, the store can better plan for stock replenishment and optimize inventory.

Reason for Choosing This Method: This method was chosen because it highlights not only the sales volume of different medicines but also their impact on overall revenue. The analysis

of high-performing products like Montair-LC and Pantop 40mg shows that while they sell in large quantities, their higher prices contribute to substantial revenue shares. Conversely, products with lower sales and revenue, such as Bricarex A and Betnovate-C, indicate specialty or pricing challenges. This insight helps the store refine its pricing strategy, inventory management, and marketing efforts, ensuring that popular products are stocked appropriately while exploring growth opportunities for lower-performing items.

c.) Profit Analysis :-

Profit Analysis : - Method and Column Used: The Profit Analysis utilizes the "Profit vs. Medicine" column, which identifies the profit margins of individual medicines sold at Jindal Medical Store.

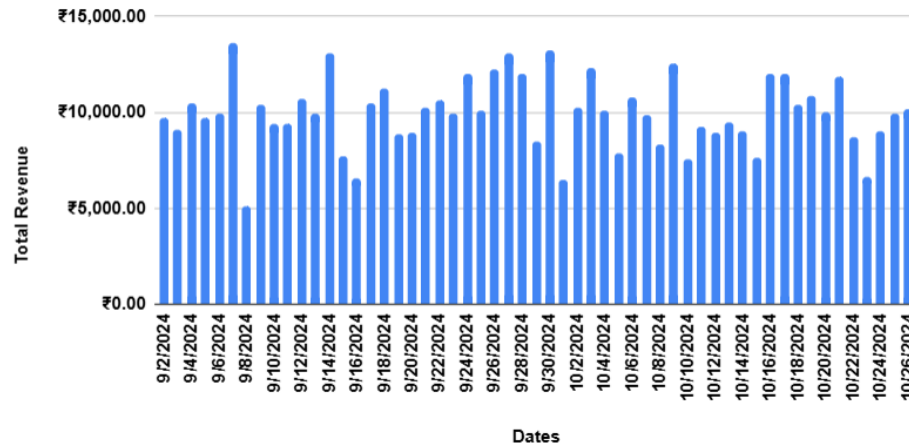
Justification Connected with PB (Problem Statement): This analysis is essential as it directly addresses the challenge of optimizing profitability. By understanding which products yield higher profit margins, the store can make informed decisions to focus on these items and enhance overall financial performance.

Reason for Choosing This Method: We chose this method because it allows us to pinpoint high-margin medicines that contribute most to the store's profitability. It also highlights items with lower margins, helping the store devise strategies like promotions or pricing adjustments to improve their performance. This comprehensive approach supports maximizing profit and sustainable growth for the store.

5. RESULTS AND PRELIMINARY FINDINGS

- a.) **Revenue Trend :-** The "Total Revenue vs. Dates" chart illustrates the revenue performance of Jindal Medical Store over the 8-week period from September 1, 2024, to October 26, 2024. The chart indicates fluctuations in daily revenue, showing consistent revenue generation with some peaks and troughs throughout the timeframe. Certain dates show higher revenue, indicating potential higher customer demand or the sale of high-value items on those specific days. For example, a noticeable peak in revenue occurs around the middle of the 8-week period, suggesting a surge in customer transactions or seasonal factors. The chart also highlights days with lower revenue, which may correspond to weekdays with less foot traffic or specific dates where sales were impacted by external factors. The revenue trend is relatively stable, with minor fluctuations that may reflect regular business cycles, weekly variations, or external influences. The consistency of the revenue indicates a steady flow of business, though analyzing the reasons behind peaks and troughs could reveal opportunities for targeted strategies.

Toatal Revenue vs. Dates

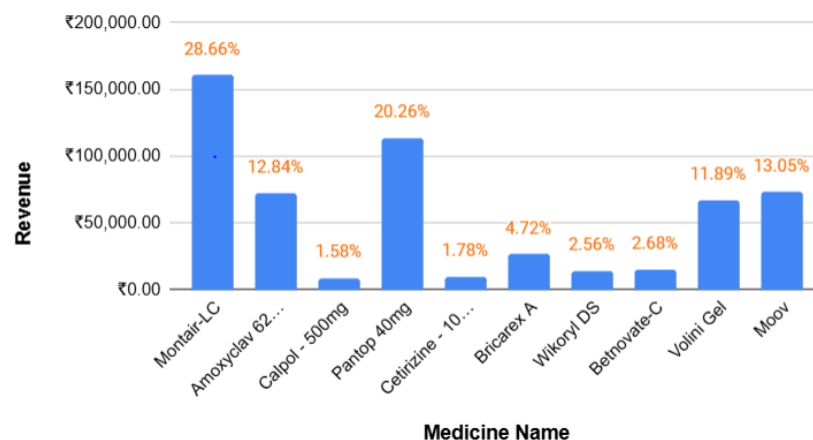


The "Total Revenue Vs. Medicine" chart shows revenue distribution among different medicines at Jindal Medical Store, identifying top and low contributors to income. Montair-LC leads with 28.66% of total revenue, indicating high popularity for treating respiratory issues. Pantop 40mg follows at 20.26%, suggesting strong demand for stomach-related treatments. Amoxyclav 625 contributes 12.84%, highlighting its importance for infection management.

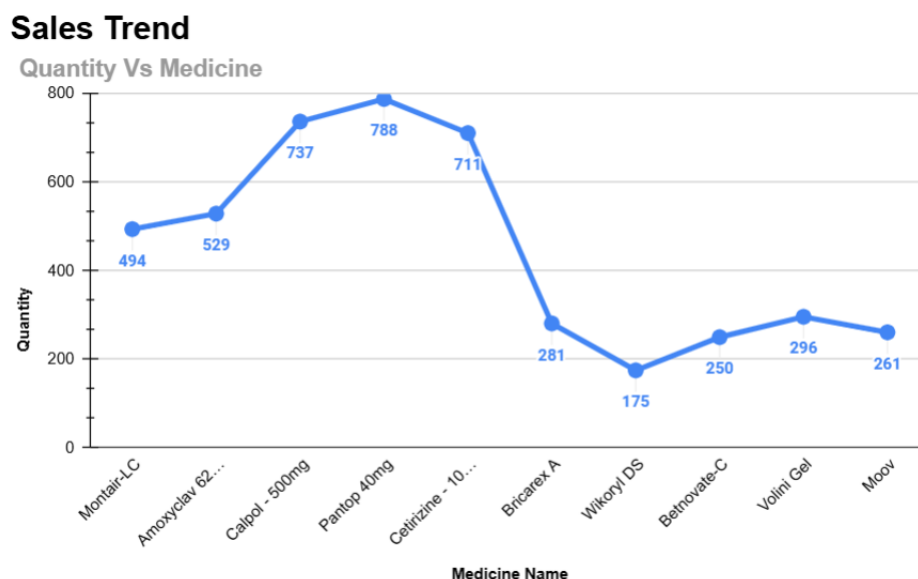
Medications like Calpol-500mg (1.58%) and Cetirizine 10mg (4.72%) have a lower share, possibly due to less frequent use or competitive pricing. Bricarex A and Betnovate-C show limited revenue, indicating low demand or sales volume. Volini Gel and Moov contribute 11.89% and 13.05%, signifying that pain relief products are important but less dominant than the top sellers.

Revenue distribution can be influenced by selling prices; higher-priced medicines may generate more revenue even with lower sales. This will be further explored in the Sales and Profit Trend Chart, which will examine how pricing and volume impact profit margins and revenue.

Total Revenue Vs Medicine

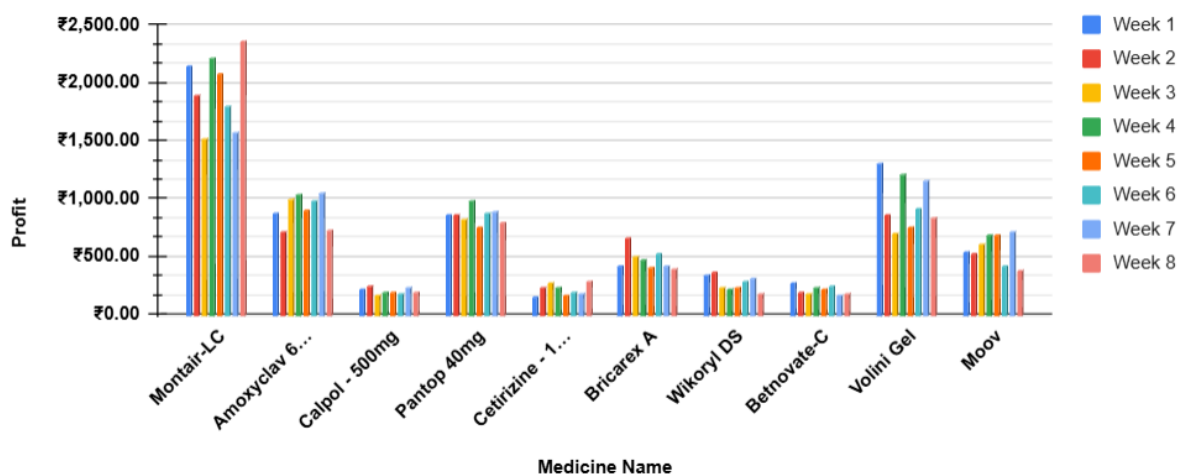


b.) Sales Trend : - Analyzing the Sales Trend chart alongside the Total Revenue vs. Medicine chart reveals key insights into Jindal Medical Store's revenue generation and product demand. Montair-LC and Pantop 40mg lead both charts, showing high sales quantities (494 and 788 units) and significant revenue contributions (28.66% and 20.26%), indicating they are not only frequently sold but likely priced higher. Amoxyclav 625, with 529 units sold and a 12.84% revenue share, further suggests a higher price point contributing to strong revenue despite moderate sales volume. In contrast, Cetirizine 10mg and Calpol-500mg show good sales but lower revenue shares, possibly due to competitive pricing. Items like Bricarex A, Wikory DS, and Betnovate-C reflect limited sales and revenue, suggesting specialty demand or pricing impacts. Volini Gel and Moov demonstrate balanced sales and revenue, indicating steady demand for topical treatments. This analysis shows that while high sales volume boosts revenue, the pricing strategy is crucial in determining revenue share, offering valuable insights for inventory and marketing optimization at the store.



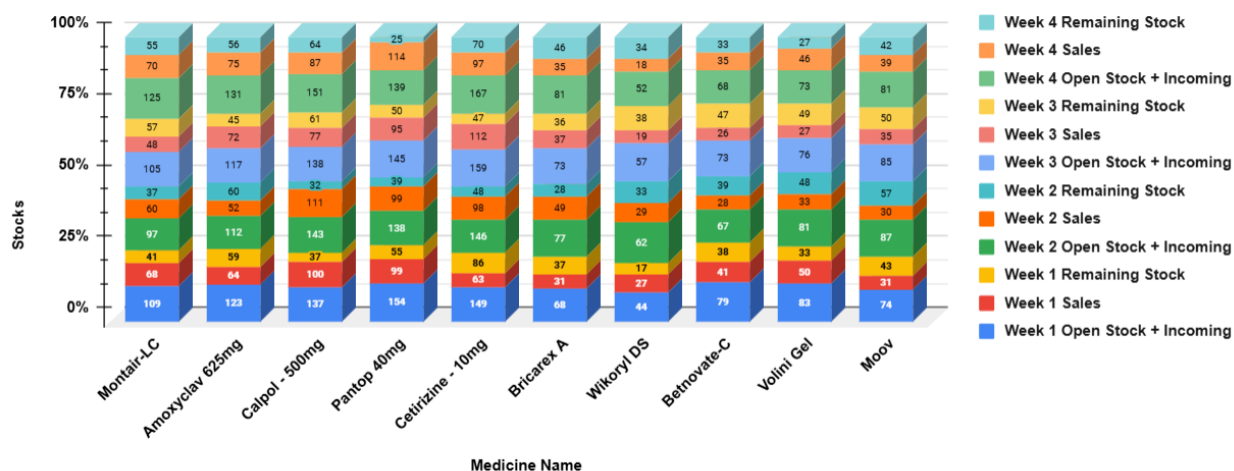
c.) Profit Trends : - The Profit vs. Medicine chart provides insights into the profitability of different medicines sold at Jindal Medical Store. Montair-LC, Amoxyclav 625, and Pantop 40mg emerge as top performers, likely due to high-profit margins and consistent demand. While Calpol-500mg and Cetirizine 10mg show moderate profits, products like Wikory DS, Bethovate-C, Voli Gel, and Moov have lower profit margins. To optimize profitability, the store should focus on maintaining stock levels for top performers, consider promotions for lower-performing items, and analyze pricing strategies. By combining insights from both the Profit vs. Medicine and Total Revenue vs. Medicine charts, the store can make informed decisions to maximize revenue and profitability.

Profit Vs Medicine

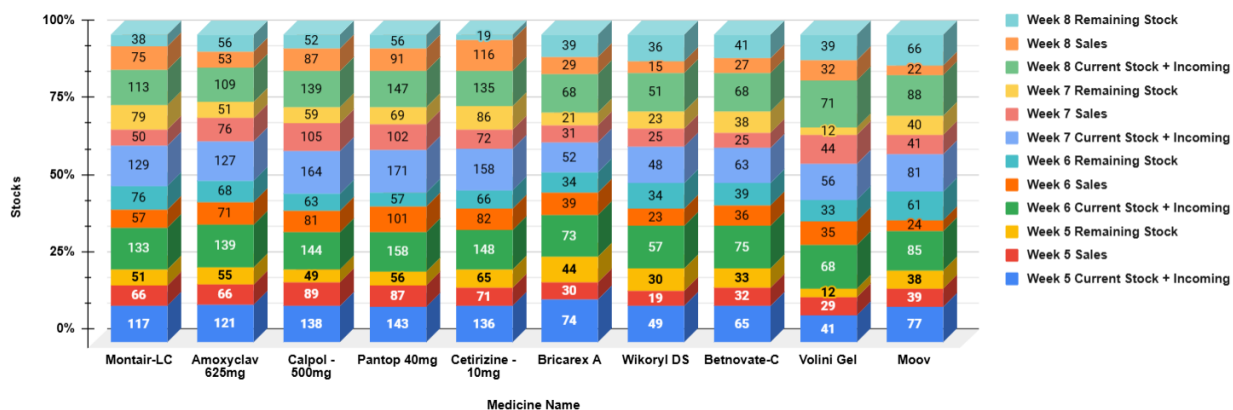


d.) Stocks Trend :- By analyzing both the September and October Month Stock Data, alongside the Profit vs. Medicine chart, we can gain a comprehensive understanding of Jindal Medical Store's operations. While top performers like Montair-LC, Amoxyclav 625, and Pantop 40mg consistently show strong sales and stable stock levels, aligning with their high profitability, products like Cetirizine 10mg and Amoxyclav 625mg experience decreasing stock levels in both months, potentially impacting their sales and profitability. To optimize inventory management and sales, the store should prioritize demand forecasting, inventory optimization, supplier relationships, and data-driven decision making. By addressing these areas and considering factors like seasonal trends, competitive analysis, and customer feedback, Jindal Medical Store can further enhance its operational efficiency and profitability.

September Month Stock Data



October Month Stock Data



- e.) **Payment Status Trend** : - The payment status chart reveals that a significant portion of sales at Jindal Medical Store are made on credit, constituting around 32% of total sales. While October saw a slightly higher proportion of credit purchases (33%) compared to September (32%), the overall trend suggests a reliance on credit facilities by customers. To optimize financial health, the store should implement robust credit monitoring and collection systems, consider incentives for cash payments, and analyze customer data to tailor credit policies. By effectively managing credit sales and cash flow, the store can enhance its overall financial performance.

