Descriptive Insights: Analyzing Trends in Medical Store

A Mid-Term Report for the BDM Capstone Project

Submitted by

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1 Executive Summary:-

Buying medicines plays a very crucial role in our health during our sickness period for the speedy recovery of our body. To succeed in the medical market, a store like Sinha Medicals must plan, cultivate positive relationships with clients, and have a clever business strategy. Sinha Medicals is a medium-sized business that struggles to turn a sufficient profit and maintain a balanced inventory, which has an impact on its revenue and sales.

The rise of online medicine delivery has changed how we buy our medicines because of the extra discounts and offers they provide, but it has also affected local stores like Sinha Medicals, which has seen profits go down. This project is all about helping Sinha Medicals deal with its problems by analyzing the business with its data. Our primary focus is figuring out how to maintain their inventory and what they are selling. By carefully examining the data, we want to offer some workable ways to address these issues and improve the store's performance.

Goal for midterm: -

1. To analyse the monthly revenue trends using graphs.
2. To find which SKU(stock-keeping unit) contributes more to the net profit and is suitable in the longer run.
3. To find out which medicines do not contribute to the sales.
4. To find out which manufacturer medicines are contributing to sales most.
5. To apply the Pareto principle in monthly revenue and top SKUs

2 Proof of Originality of data:-

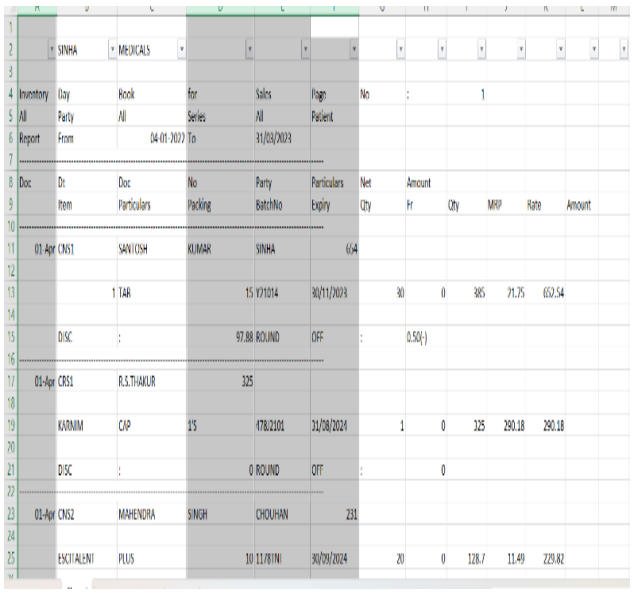
Details:

Shop name-Sinha Medicals

Owner- Sant Lal Sinha

Address- Labour colony, Bajranchowk, Tulsipur ,Rajnandgaon, Chhattisgarh

Fig(1)Shop Area picture for reference name & location



Fig(2)Snapshot of one of the data collected

These pictures help to clearly and honestly show how Sinha Medicals works. The data sheet & video link is provided here:

Video of interaction with the owner:

https://drive.google.com/file/d/1YeOc-7yfQNokD27JuUeyJ_iOfTrJEUHL/view?usp=sharing

Letter:

https://drive.google.com/file/d/1ev5Xd3bvYgvLdOf0ZgouhkrEZxjMt90_/view?usp=sharing

3 MetaData and Descriptive Statistics:

METADATA

- Data format: Excel/Sheets
- Range: April 2023 to March 2024
- Business type- Pharmaceutical
- Unit of measurement for feature involving: Indian Rupee (₹)

The owner generously granted me access to various data sources as listed:

1. **Sales data of financial year 2023-24:** The owner shared a compiled sales report Excel sheet containing details such as date , receipt id, name, and amount.
2. **Inventory Data :** The owner shares a compiled annual report of inventory which contains details such as item names , Packing, purchase, sale return, ,sale value & closing value.
3. **Productwise sales Data:** The owner shared a compiled annual report of productwise sales data which contains manufacturer, item particulars, packing, sold, gross, current, stock for days, and average per day sales.

- **Sales Data Metadata-Keys**

Keys	**Description**
Date	Date of sale
Receipt Id	Unique number of individual bill
Name	Name of customer
Amount	Revenue generated from the sales

- **Inventory Data Metadata Keys**

Keys	**Description**
Item names	specific name of an item sold
Packing	Quantity of particular item
Purchase	Purchase of new stock of medicine
Sale Return	Total return of medicines to manufacturer
Sale Value	total revenue generated from the sale of products
Closing value	total value of inventory left at the end

- **Product wise sales Data Metadata Keys**

Keys	**Description**
Manufacturer	Brand Name of manufacturer
Item Particulars	Name of particular medicine

Packing	Quantity of particular item
Sold	Number of quantity sold of that item
Gross	The total revenue from all sales before any returns, allowances, or discounts are subtracted.
Current	Quantity od inventory presently available in store
Average per day sales	Average value of particular item per day

Here Below is the link provided for data :

https://drive.google.com/drive/folders/1OuhMWjN3mdCfBrZzOYpzSYzMJ5WWN3T3?usp=sharing

4 Descriptive Statistics

4.1 -Annual revenue statistics:

In this section annual revenue that is from April 2023 to March 2024 has been taken for analysing descriptive statistics.

Index	Values
Mean	1164009.4
Standard Error	84156.98
Median	1213825.5
Standard Deviation	291528.33
Sample Variance	8.499E+10
Minimum	381886
Maximum	1604677
Sum	13968113
Count	12

4.2-Top 15 SKU'S sales descriptive statistics:

There are numerous medicine that store contains.For the calculation point of view top 15 medicines has been taken into consideration and its descriptive statistics are as follows:

Descriptive stats	value
Mean	43484.67
Standard Error	2324.208
Median	40741.06
Standard Deviation	9001.618
Sample Variance	81029135
Minimum	33217.73
Maximum	58776.03
Sum	652270.1
Count	15

4.3-Top 15 Manufacturers gross value descriptive statistics analysis

the datasheet shared by the owner also contains the manufacturer brand also. Here are the descriptive statistics of the top 15 manufacturers that contributes maximum in sales:

Descriptive statistics	value
Mean	18190.91
Standard Error	3053.741
Median	13759.29
Standard Deviation	11827.09
Minimum	10345.89
Maximum	57421.88
Sum	272863.6
Count	15

4.4-Monthly sales descriptive analysis

Here is the statistics calculation of monthly based revenue:

Column1	April	May	June	July	August	September
Mean	560.56	593.56	613.78	642.09	617.0848	802.3385
St.Error	18.752	64.761	79.75	98.958	54.1954	164.5597436
Median	321.5	344	319.5	318	344	380
Mode	183	12	170	118	160	300
Standard Deviation	823.39	2787.7	3241.4	4500.1	2454.4	7359.335463
Minimum	0	2	7	4	6	1
Maximum	12513	117169	117103	160238	88260	239924
Sum	10.8L	10.99L	10.14L	13.27L	12.66L	16.04L
Count	1928	1853	1652	2068	2051	2000

Column1	October	November	December	January	February	March
Mean	608.14365	582.3051979	589.0814318	511.1361	599.5071	656.5273804
St.Error	35.089136	23.59126744	42.96797183	12.11626	26.768216	39.97574392
Median	364	333	342	340	407	364
Mode	124	203	204	130	225	270
Standard Deviation	1562.9443	1080.315206	2031.344668	566.8804	675.59923	1799.796607
Minimum	2	1	1	1	8	1
Maximum	51656	29347	88292	6927	6562	64800
Sum	12.6L	12.22L	13.16L	11.2L	3.8L	13.3L
Count	1984	2097	2235	2189	637	2027

5 Detailed Explanation of Analysis Process & Methods

The Excel sheet is used for the analysis, representing sales data & inventory data with pivot tables and graphs. the data collected from the medical shop spans from 1st April 2023 to 31

March 2024. The owner was formally notified both personally and in writing about the project and its objectives and methodology going to be used. Official authorisation and explicit consent were obtained which is shown in the proof of originality section.

The data collected by the owner was directly from their software hence it was a blend of clean and mixed data which requires preliminary cleaning before conducting analysis.The sales data provided by the owner was a merge of all the monthly sales hence requires cleaning to analyse per month revenue.The excel sheet was not also in proper order so by using excel function cleaning was done before conducting analysis. The inventory data sheet along with the manufacturer datasheet is preliminary cleaned to get a basic analysis and it is still an ongoing work in progress, demanding extensive cleaning, categorization efforts and adding new features that might help gain more insights into inventory organization

Spreadsheets offer a recognizable and easy-to-use interface for combining data and performing complex computations.

SALES DATA :A filter function was used to arrange the data cells in a proper, readable format because they were not in the correct order. Some values were missing in the data, which were replaced by the mean value of that month. There were also some blank cells, which were cleared by using the Find & Select function. Since the data was a combination of all the monthly data, the monthly sales data was obtained by utilizing the filter function to distinguish between individual months. A filter function was used to arrange the data cells in a proper, legible format because they were not in the correct order.

INVENTORY DATA : The manufacturer's inventory data includes a list of brand names and medications they supplied; therefore, a pivot table was utilized to separate the data on the total number of medicines by distinct brand and the amount of sales the store is generating by that brand. Since there are 2000 brands so only top 15 were taken for analysis part, To obtain the sales contribution data in a specific order, the inventory data based on medications was arranged using the sort and filter tool.

META DATA : For the metadata table function of excel is used to point out the keys and its features in the data.

DESCRIPTIVE ANALYSIS: Data analysis tool pack is used for getting the statistics value of data like mean, median,variance, count,sum etc.

TIMES-SERIES-ANALYSIS- This approach works well for dependent-on-time financial data. Analyzing trends, patterns, and fluctuations over time can provide insights into a company's financial health and performance. This method is unique in its ability to analyse historical data and identify trends, which is vital for making trained business decisions and setting margins.

Bar chart- The column bar chart is used to show the monthly sales of data, Top 15 revenue contribution & season-wise revenue of the data. The chart is used to show the comparison.

Pie chart- Pie chart is used to highlight major contribution in the revenue by the manufacturer brand in store.

Comprehensive insights into the data were supplied by the basic analysis. Through methodical data organization and exploration within each category, the descriptive statistics featured in this report have been carefully developed.

6 Results and findings

Some insights gain from the sales data:

- A total of 22718 customers bought their medicines from the store, averaging aprrox 1900 customer per month and 60 customers per day.
- It can be ssen from the chart of monthly revenue that the sales are dropping which is shown by the trend line in graph.
- The store faces loss of 0.48% with standard deviation of Rs 291528(annually)
- Overall Trend: The dashed trendline shows a declining trend in revenue throughout the months. This indicates that revenue decreased marginally during the period of the year on average.
- A peak revenue month was September-october 2023.This can be attributed to several factors:
    - In Northern India, September and October’s seasonal shift often weakens immunity, increasing demand for health supplements, immunity boosters, and cold and flu medications.

- In Chhattisgarh, festivals during this period further drive demand for personal care and over-the-counter health products.

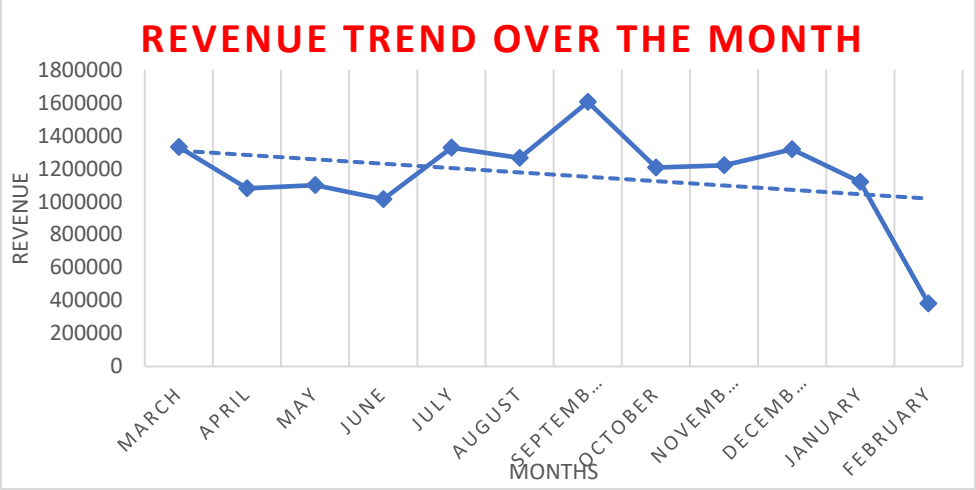


Fig 3 Chart of revenue trend over year

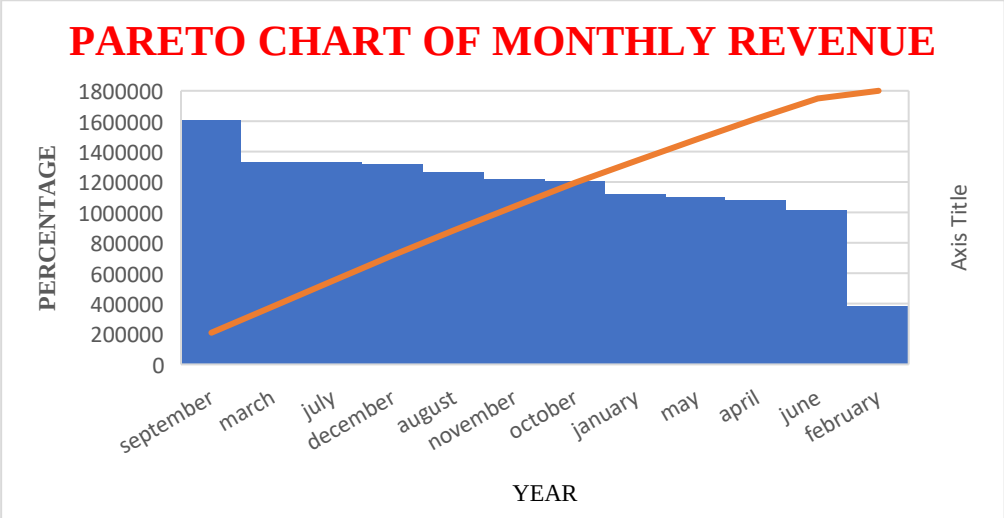


Fig 4 Pareto Chart analysis of monthly sales revenue

- The orange line in Pareto chart represents the cumulative revenue percentage as each month revenue is added in descending order of contribution.
- From the pareto principle it can be seen that a few months likely account large portion of the total revenue

- Since September, March, and July are among top revenue-generating months yield to higher profits.

Fluctuations in Demand: There are noticeable fluctuations from month to month, with revenue rising and falling rather than following a consistent pattern. For example:

- ➢ July and August show a moderate increase after a low point in June.
- ➢ September continues to rise, reaching a peak in October, after which revenue drops sharply in November

Fig 5-chart of seasonally trend

Numerous medicines are sold by the store. Here are the top 15 SKU (medicines) that contains maximum to sales.here are few observation and insights based on the chart

- **Top Performers**: SKUs like *AMOXYCLAV 625 TAB*, *ACCUCHEK ACTIVE STR*, and *EXIDE BATTERY* have the highest revenue, suggesting they are the most popular or high-demand items in this medical shop.
- **Diverse Product Range**: The SKUs cover a range of items including medications (e.g., *AMOXYCLAV 625 TAB*, *AZITHRAL 500*), medical devices (e.g., *ACCUCHEK ACTIVE STR*), and personal care products (e.g., *EKRAN SOFT SUNSCREEN GEL*).

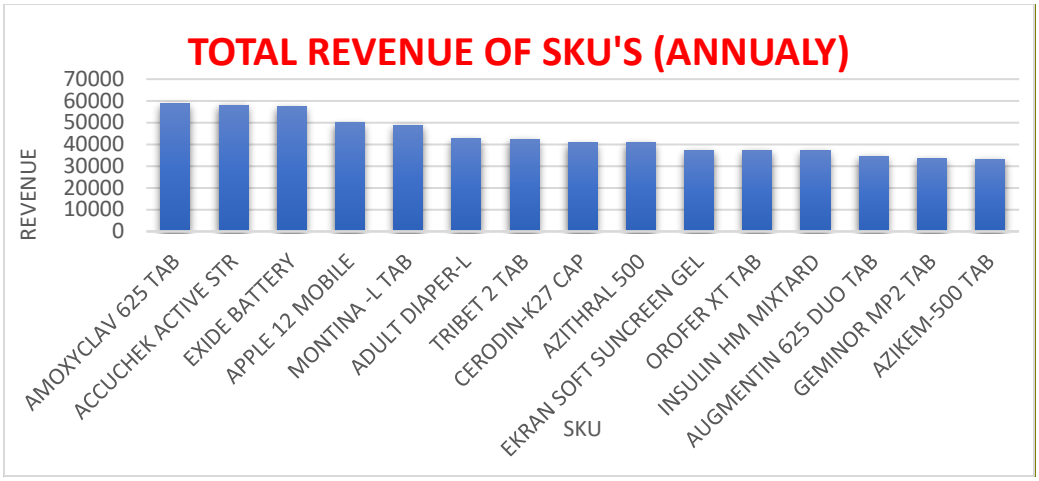


Fig 6-chart of Top 15 SKU contributing the maximum in revenue

The manufacturers with the largest revenue generation, according to the are SUN and MACLE, closely followed by INTAS and LUPI. These four make up the major portion of the revenue, with MP, USV, and FDC contributing significantly less.

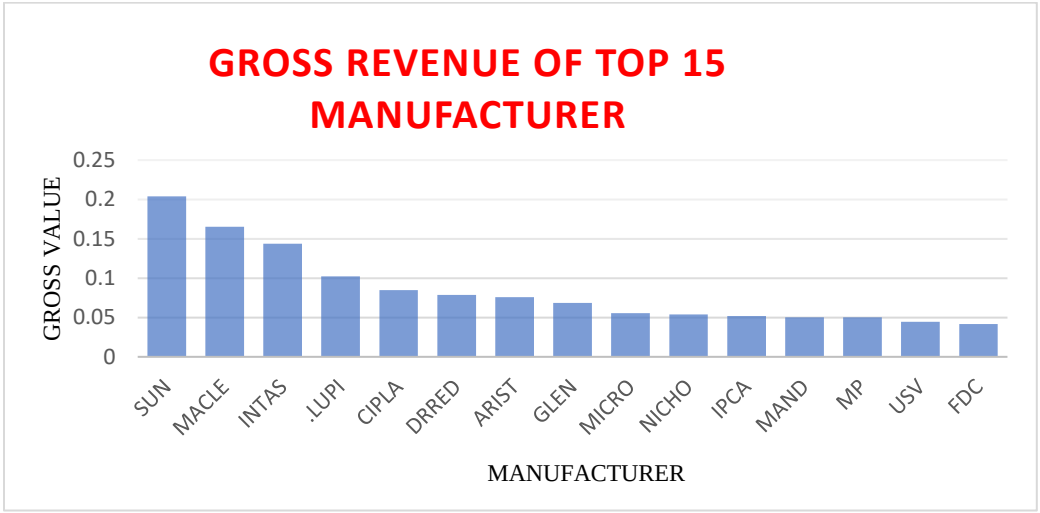


Fig6-Chart of Fig 6- gross revenue of manufacturers