Analysis of Sales Pattern and facilitate organization to reduce the Cash Flow Mismatch

Mid-Term Submission for the BDM Capstone Project

Submitted by

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1 Executive Summary and Title

The project focuses on a medium-sized textile shop located in Kurnool, Andhra Pradesh. This is a B2B business and it provides readymade sarees, dress materials and handlooms to retailers.

In this project I work on some of the organization's persisting problems, try to figure out the underlying reasons for them and give them some recommendations. The organization **Rajashekar Textiles** wants me to help in reducing their overstocks by analyzing sales patterns, reduce their cash flow mismatch and provide better labour management system.

The summary of this report includes:

1. Explaining the collected data in detail (Metadata) and giving some descriptive statistics of the collected data.
2. Explaining the process of my analysis and the reasons I took that approach.
3. Plotting some relevant graphs and providing necessary insights.

Poor inventory management can lead to overstocking and the only way to make better decisions to control it involves dealing with the sales and purchase data, analyse it and take necessary precautions next time. Managing the stocks better can also reduce the cash flow mismatch to some extent, taking better decisions for your labours is crucial and having the better labour management system for your business makes you grow and compete with the market.

The expected outcome is to give the organization some necessary recommendations based on my analysis and fostering the organization's growth.

2 Proof of originality of the Data

The discussion with the owner was done in the shop and to ensure the authenticity of the data, I obtained a letter from him. Additionally, I collected a few images and

recorded a video to further prove the data's originality and my association with the owner.

1. Letter from the organization
2. **Images taken at the organization:**

   Inside the organization

   The Owner

   Me and the Owner

   Organization from the outside
3. **Video Proof:** Interaction with the Owner

   Summary of the video: This video contains me asking the owner their business problems and him explaining them. First, I greeted the owner and told him that I'm doing the Business Data Management Course, then I asked him about his business and problems. He told me that major problem he is facing is the overstocks and not understanding customers behaviour. He explained it in a great detail. He further added, the problem Cash Flow Mismatch. Then I told him maybe reducing the first problem can reduce Cash Flow Mismatch as well for which he said, "yes, you're right." I asked him if there are any other problems and he added, "the most common problem is labour management."

3 Metadata

The datasets I obtained from the organization are:

1. **Sales Data:** This dataset contains the last 6 months sales data of the organization. The columns in this dataset are:
   1. Item name (name of the item)
   2. Quantities sold (number of that particular item sold in the last 6 months)
   3. Amount (revenue generated from that particular item in the last 6 months)

   This data is the sales dataset from Jan, 2024 to Jun, 2024

   The dataset looks like this:

item name	quantities sold	amount
Coronation Blouse	101	3316.97
Top Dye Siroski	244	189927.36
Shivangi F4u	121	43774.78
Jiya Karuna	383	93345.9
Rich Feel AYUSH	295	71314.78
Ice Lady SUNIL	293	71306.54

I collected this dataset to observe the shop's sales patterns for the last 6 months particularly because the trends keep changing in textile business.

2. **Purchase Data:** This dataset contains the last 6 months purchase data of the organization.

   The columns in this dataset are:

   1. Item name (name of the item)
   2. Revenue spent (the revenue spent in purchasing that particular item)
   3. Quantity bought (number of that particular items bought in last 6 months)

   This data is the purchase dataset from Jan, 2024 to Jun, 2024

   The dataset looks like this:

item name	revenue_spent	quantity_bought
Coronation Blouse	3000	200
Top Dye Siroski	124326	181
Shivangi F4u	39776	133
Jiya Karuna	67345	340
Rich Feel AYUSH	61314	304
Ice Lady SUNIL	65306	346

   I collected this dataset to observe the shop's buying patterns in last 6 months.

3. **May and June Sales Data:** This dataset contains day-wise total sales in the months of May and June in the year 2024.

   The columns in this dataset are:

   1. Date (in "dd-mm-yyyy" format)
   2. Day of the week (When the organization provided me the dataset, this column is not present, so I added it. It contains the day of the week, for example: Saturday)

3. Quantities Sold (total number of items sold in that particular day)
4. Amount (Revenue generated in that particular day)

The dataset looks like this:

date	day of the week	quantities sold	amount
01-05-2024	Wednesday	66	87178
02-05-2024	Thursday	49	38232
03-05-2024	Friday	12	23944
04-05-2024	Saturday	73	126742
05-05-2024	Sunday	17	16376
06-05-2024	Monday	36	45895
06-06-2024	Thursday	27	20972
07-06-2024	Friday	24	37493
08-06-2024	Saturday	29	35980
09-06-2024	Sunday	36	51089
10-06-2024	Monday	19	21712
11-06-2024	Tuesday	17	41227

I collected the data for these two months because I wanted to observe the day-wise sales patterns for the last two months.

4 Descriptive Statistics

As the goal of this project is to identify patterns in sales and purchase data and enable the business to make more informed inventory decisions, I'll provide some relevant statistics related to our problem statement.

Sales from January 2024 to June 2024 from the data I've obtained:

Total number of items sold in the last 6 months: 12,370

Total revenue generated: ₹ 33,80,965

Top item in terms of number of quantities sold: "Docomo Suryakiran" with 395 items being sold.

Top item in terms of revenue generated: "Pattu Sarees" with ₹ 3,04,206 revenue being generated.

Purchases from January 2024 to June 2024 from the date I've obtained:

Total number of items purchase in the last 6 months: 15036

Total revenue spent: ₹ 29,41,598

Top item in terms of quantities purchased: “Aravind Lining” with 717 items being purchased.

Top item in terms of revenue spent: “Pattu Sarees” with ₹ 2,89,203 being spent.

Useful Statistics:

The shop purchases an average of 300 quantities per item with an average revenue of 58,831 spent on each item.

And, the shop sells an average of 247 quantities per item with an average revenue of 67,619 generated from each item.

Average revenue spent on each item when purchasing:

Cost per Item = Total spent ÷ quantities purchased =58,831 ÷ 300 = 196.10 per item.

Average revenue generated from each item when selling:

Revenue per Item = Total revenue ÷ quantities sold = 67,619 ÷ 247 = 273.70 per item.

Profit per Item = Revenue per Item – Cost per Item = 273.70 -196.10=77.60

From this, we can say that the shop is making a profit of approximately 77.60 for an item being sold.

Though, the profit per item can vary overtime and may be influenced by factors such as operating costs, pricing strategies and marketing conditions.

The behaviour of different items in the shop and their analysis will be done in the next section.

5 Detailed Explanation of Analysis Process/Method

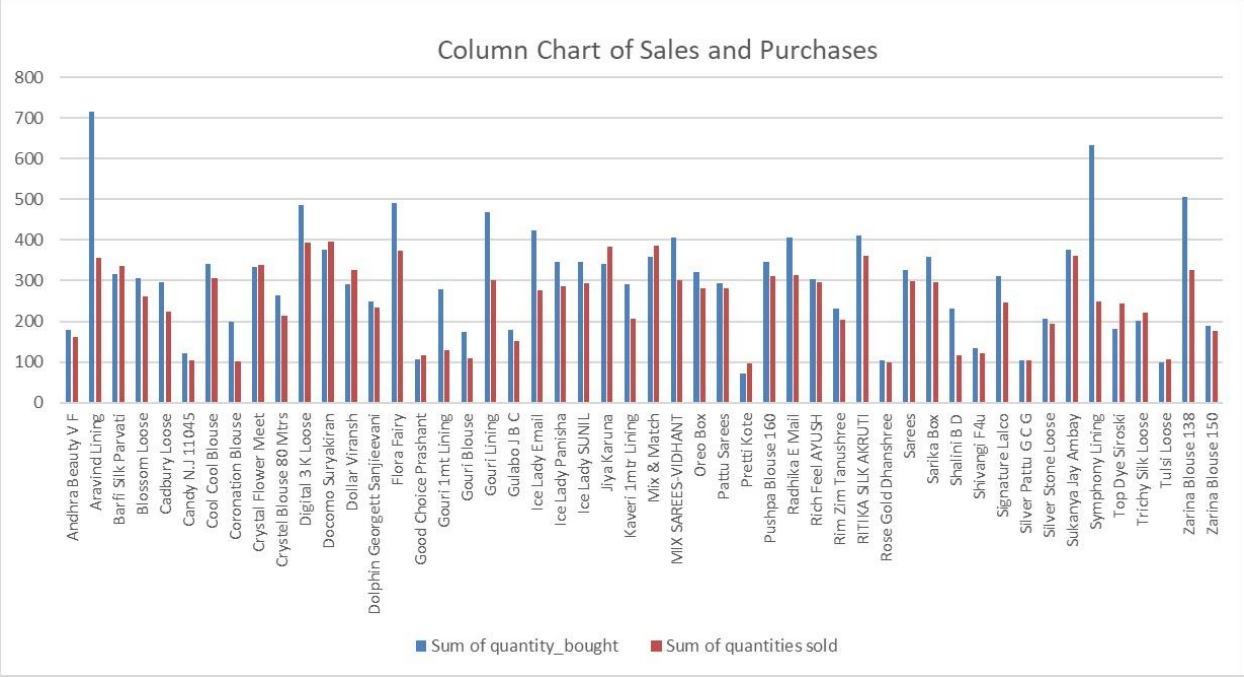
To analyze the sales and purchase patterns from the provided datasets, we will use several methods to gain insights into how items are performing in terms of sales and purchases. This is the approach I will take:

1. Group both sales and purchase data into one table. (done)
2. Create a pivot table to summarize the data and make it ready for the analysis using visualization.
3. Create Charts for visualization

I will then create a clustered column chart of sales and purchase with respective quantity and then a clustered column chart of sales and purchases with respective revenue. I will use clustered column charts because it gives a clear comparison across multiple categories and it is appropriate for categorical grouping and multiple series analysis

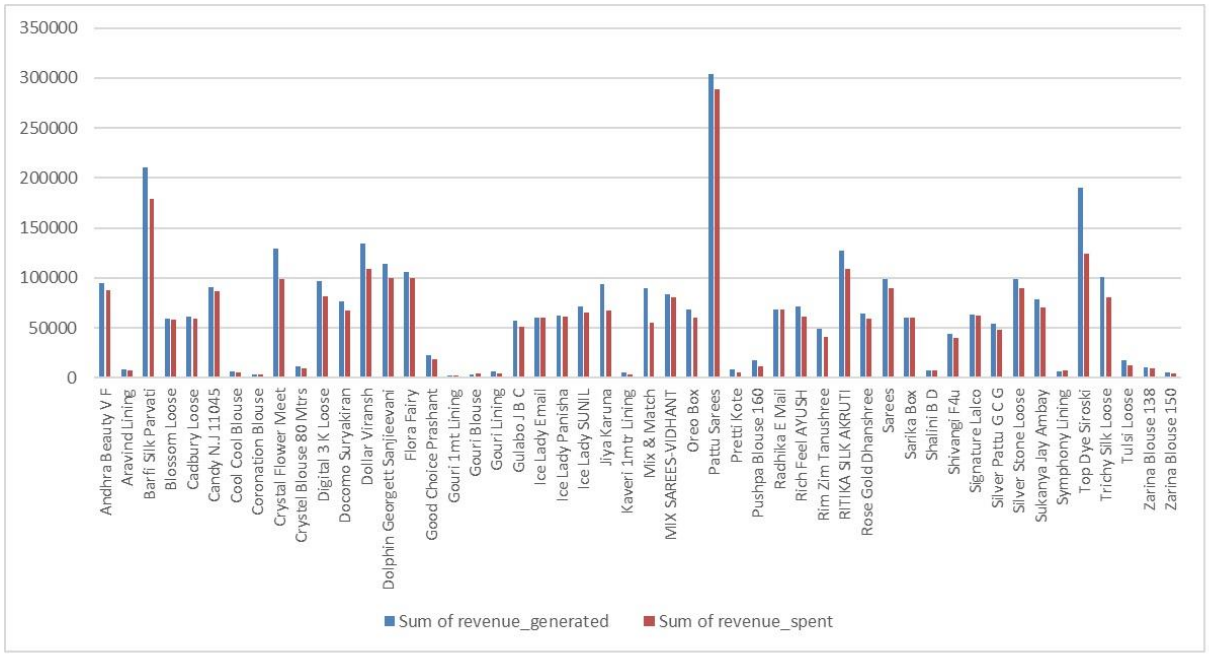
For May and June data, I will create a line chart to identify the sales pattern over time. I will use a line chart for this because it is ideal temporal trends as they clearly show upward or downward trends, fluctuations and patterns overtime.

6 Results and Findings



From the chart above, at the first glance we can say that:

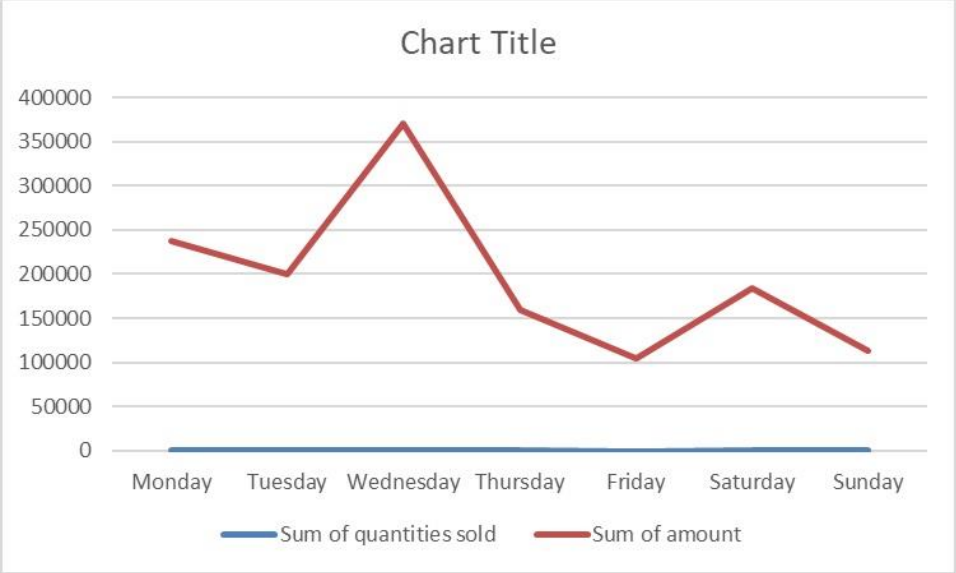
1. Aravind Lining and Symphony Lining are the most overstocked items in the shop because the quantities purchased are far more than the quantities sold while Zarina Blouse 138, Gouri Lining and Flora Fairy are not too far behind them.
2. Jiya Karuna, Mix and Match and Preeti Kotte have the sales more than purchases, so they might be the potential stock-out items in the future



This is the clustered column chart for different items based on revenue generated.

From the chart above, at the first glance we can say that:

1. Pattu Sarees is highest in both revenue spent and revenue generated. Aravind Lining which is an overstock item in terms of quantities sold is making very less profit. Same with the Symphony Lining
2. We can tell that shop is buying more quantities of items whose prices are less. It appears that the items with low prices are the ones that tend to be overstocked.



These are the line charts for the month of May in terms of revenue generated and June in terms of quantities sold.

Findings from these graphs:

1. Friday seems to be the least active day in the shop from last two months. And Wednesdays and Thursdays seem to be the most active days.
2. The reason could be due to tradition in South India, where the people are hesitant to pay on Fridays.

Rest of the analysis is still pending and will be done in the Final Report.