

Business Data Management Capstone Project

Enhancing Profitability and Sales Growth: Data-driven Analysis and Strategies for Patanjali Chikitsalaya

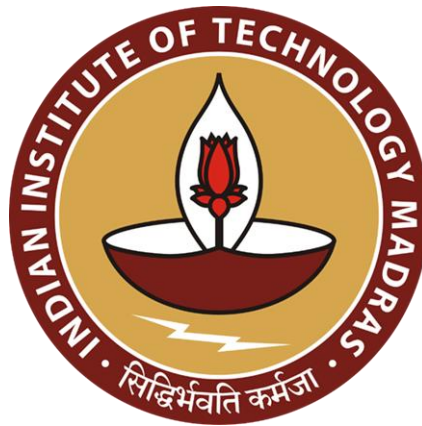
The Final Report for the BDM Capstone Project

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1. Executive Summary

This final report presents the culmination of the Business Data Management Capstone Project to improve profitability and sales growth for Patanjali Chikitsalaya, the establishment operates as a B2C Patanjali Ayurveda limited franchise, specializing in the sale of high-quality Patanjali products. Additionally, the store offers the services of an Ayurvedic practitioner, who guides customers in selecting appropriate products based on their specific Ayurvedic needs.

A comprehensive diagnostic phase, including detailed discussions with the store owner, enabled me to identify critical problems that hampered store performance. Foremost among these problems was the decline in sales triggered by the economic recession. Additionally, I identified the pressing need for inventory management. The project scope also encompassed cost-efficient marketing strategies and a deeper grasp of the software ecosystem provided by Patanjali Ayurveda Limited for comprehensive sales and inventory oversight.

My strategic approach was characterized by data preprocessing, exploratory data analysis (EDA), and a meticulous assessment of sales and inventory datasets. The strategic employment of Excel facilitated meticulous sales analysis, while Power BI emerged as the keystone for conducting inventory assessments. As a result of My efforts, a diverse range of noteworthy insights were generated.

For sales analysis my investigation encompassed an in-depth exploration of an entire year's worth of data, yielding essential metrics including the cumulative sales figure, yearly profits, average profit margins, monthly sales patterns, and profit trends. Additionally, we comprehensively analyzed how profits were distributed across various product categories. This meticulous approach enabled us to pinpoint the top-performing sub-categories and flagship products, consequently providing a strong foundation for strategic decision-making aimed at optimizing sales performance.

In terms of Inventory Analysis, we engaged in a comprehensive analysis of purchase quantities, meticulously identifying products with lower sales volumes, and meticulously highlighting those items that commanded the highest price points. Our analysis further encompassed precise assessments of quantity, total amount, and individual unit pricing data. These intricate insights have significantly enriched our inventory management strategies, enabling us to foster better allocation and utilization of resources.

Elevating our analysis, we harnessed the potency of machine learning. Our predictive model, trained by historical sales data, proactively forecasts product sales, Empowering the establishment with forward-thinking inventory planning capabilities. This model was seamlessly operationalized through a Flask web application, ensuring real-time insights availability. Furthermore, our sentiment analysis model deciphers customer feedback sentiment, thereby facilitating data-driven service enhancement strategies.

2. Detailed Explanation of Analysis Process

The analysis process undertaken for the Business Data Management Capstone Project revolving around Patanjali Chikitsalaya represents a holistic and meticulous endeavor that encompasses a multifaceted approach. This approach, spanning data preprocessing, exploratory data analysis (EDA), the development of machine learning models, the creation of dynamic dashboards, and the deployment of a web application, constitutes a comprehensive framework for extracting meaningful insights and enhancing decision-making within the context of this enterprise.

Data Preprocessing:

The initial phase of the analysis journey involves meticulous data preprocessing to ensure the quality and integrity of the datasets under scrutiny. Several critical steps were taken to ready the data for further analysis:

- **Handling Missing Values:**

Invariably, datasets exhibit missing values, and addressing these gaps is paramount to maintaining data integrity. This project was no exception, as we encountered instances of missing sales values and incomplete item name information within the dataset. In order to tackle this challenge, employing effective imputation techniques was crucial. By carefully selecting and applying appropriate imputation methods, we were able to successfully fill these voids and ensure that the dataset remains both complete and informative. This not only prevented potential biases in our analyses but also enhanced the overall quality of the data-driven insights we derived from the project.

- **Standardized Date Format:**

The consistency of date formatting is essential for meaningful temporal analysis. The date format in the data, initially presented in a string format, underwent a transformation to a standardized dd-mm-yyyy format. This adjustment streamlined subsequent temporal analysis and facilitated insights into sales trends over time.

- **Numeric Data Transformation:**

Within the dataset, a notable challenge arose from the presence of numeric data stored as strings, potentially hindering accurate quantitative analysis. To overcome this hurdle, a pivotal preprocessing step was undertaken, involving the transformation of these numeric strings into their genuine numeric formats.

- **Data Integration:**

Acknowledging the fact that we had data related to both sales and inventory, it became crucial to bring these two sets of information together. This integration played a vital role

in fostering a comprehensive understanding of the underlying business operations. Leveraging the capabilities of Power BI, a sophisticated approach was adopted to harmonize these disparate datasets. This strategic alignment not only facilitated the merging of data but also unlocked the potential for analyses.

- **Data Transformation:**

Within the sphere of machine learning, the conversion of categorical data into a numerical format holds paramount significance. The employment of label encoding, a technique wherein categorical data is transmuted into numeric representations, played a pivotal role in the meticulous preparation of data for subsequent employment within predictive modeling frameworks.

- **Handling Irrelevant or Redundant Variables:**

Data columns that do not contribute significantly to analysis were identified and excluded. In the sales data, columns like Category, Sub Category, Order Date, Qty in PCs, Profit, Sales, MRP, and others proved pivotal.

Similarly, in the inventory dataset, columns such as Division, Vertical, Brand, Item Code, Qty in Pcs, MRP, Cost Price, and Net Cost were retained for focused analysis.

Exploratory Data Analysis (EDA):

Initial insights into the data were acquired through the application of Exploratory Data Analytics (EDA) methodologies. Descriptive statistical measures encompassing central tendencies and variability were employed to analyze the datasets. Additionally, visualization aids like line charts and clustered column charts were utilized to pinpoint noteworthy trends and patterns within sales and profit data. This encompassed a suite of techniques and strategies aimed at procuring preliminary data-driven understandings.

Sales Analysis:

The heart of the analysis process lay in analyzing the sales data, with a keen focus on generating actionable insights:

I have created an interactive Excel dashboard, consolidating critical metrics and insights into a coherent view. This dashboard bridged the gap between complexity and accessibility, offering a comprehensive understanding of the data.

1. **Total Sales and Profits:**

Excel pivot tables were employed to calculate total sales and profits, revealing a fiscal year's total sales of 9,949,353.97 Rs and a profit of 6,01,552.95 Rs. These figures laid the foundation for gauging financial performance and tracking business growth.

2. **Average Profit Margin:**

To understand the overall profitability of the sales transactions, I calculated the average profit margin across all transactions. This was found to be 6.05%.

3. **Monthly Trends Visualization:**

The visualization of monthly sales and profit trends was executed with a strategic utilization of bar charts and area charts. These sophisticated graphical representations offered a nuanced depiction of the temporal evolution of sales and profit dynamics. The comprehensive insight provides a profound understanding of seasonal patterns and growth trajectories.

4. **Category-Wise Profit Analysis:**

A waterfall chart provided a vivid representation of category-wise profit contributions, enhancing the understanding of each category's financial impact on the overall profit. This analysis informed strategic decisions regarding product categories.

5. **Sales Distribution Visualization:**

A donut graph showcased the distribution of sales across categories, encapsulating each category's revenue contribution. This visual representation shed light on market dynamics and revenue diversification.

6. **Top Sub-Categories and Products:**

The identification of the top 5 sub-categories by sales and the top 5 most sold products provided granular insights for strategic decision-making. These findings offered a foundation for optimizing inventory, marketing, and resource allocation strategies.

Inventory Analysis:

For comprehensive inventory analysis, I designed a dynamic Power BI dashboard that provided a consolidated view of crucial inventory insights.

1. **Category-wise Purchases:**

I used a funnel chart to show the most purchased quantity by category. This helped me to improve stock management by identifying which categories were selling well and which ones were not. I could then adjust the inventory levels accordingly to ensure that I always had the right amount of stock on hand.

2. **Expensive Products:**

By visually presenting the distribution of costs across various products, these charts became instrumental in refining the pricing strategies for the most expensive products. This data-driven approach provided a granular understanding of the cost structure, empowering strategic decision-making aimed at optimizing pricing for enhanced profitability.

3. Quantity, Total Amount, and Unit Price Analysis:

Utilizing scatter plots, I intricately mapped Quantity, Total Amount, and Unit Price Analysis. The product name held value, quantity spanned the x-axis, and total sales adorned the y-axis. Categories were colorfully layered as legends, while point size correlated with the sum of unit prices. This composite visualization succinctly revealed the interplay of quantity, revenue, and unit price within categories, guiding pricing strategies and resource allocation.

4. Top Sub-category Sales:

I identified the top three most sold sub-categories based on quantity sold, helping prioritize inventory and sales efforts. Also identifying the top three most sold sub-categories can help me to identify trends in customer behavior.

5. Least Sold Products:

By highlighting the least sold products, I was able to guide inventory management strategies. This prevented overstocking and financial strain. Overstocking can occur when a store orders too much of a product, which can lead to financial losses if the product does not sell. By highlighting the least sold products, I was able to help the store to avoid overstocking these products.

Machine Learning:

The incorporation of machine learning infused the project with predictive capabilities and forward-looking insights.

I have made two machine-learning models:

1. The sales prediction model:

Predictive analytics and machine learning were used to create a model that could forecast product sales trends. This model was powered by a year's worth of sales data, which allowed it to anticipate sales patterns.

The model could be used to project future sales revenue by analyzing historical data and identifying trends. This information could then be used to make informed decisions about pricing, marketing, and inventory levels. The model could also be used to identify potential challenges, such as changes in the market or the introduction of new products by competitors. This information could then be used to develop strategies to mitigate these challenges.

2. The sentiment analysis model:

An exemplar of natural language processing and machine learning extended its grasp on customer reviews. This model assessed customer sentiment, fostering an in-depth understanding of customer satisfaction, identification of pain points, and informed decision-making aimed at elevating the customer experience. The model was able to provide the company with valuable insights into customer satisfaction and pain points.

link of the Sentiment Analysis Model: [Sentiment analysis model](#)

link of the Sales Prediction Model: [Sales prediction model](#)

Web Application:

A technologically advanced web application was created to provide real-time insights. This application was the culmination of expertise in Flask, HTML, CSS, and Bootstrap. It materialized the deployment of a sales prediction machine learning model in real time. This application empowered store owner with instantaneous sales forecasts, which underpinned agile decision-making.

The application was able to provide real-time insights by collecting data from sales transactions. This data was then analyzed by the machine learning model to generate predictions about future sales.

The GitHub link to the web app: [web application GitHub link](#)

The link to the website: [Patanjali Chikitsalaya's Sales Prediction Website](#)

Website's pictures

Patanjali Chikitsalaya's Sales Prediction
Using Machine Learning and Data Analysis

Enter Item Weight

Category

Sub-category

Brands of Product

Item Name:

Profit Percentage:

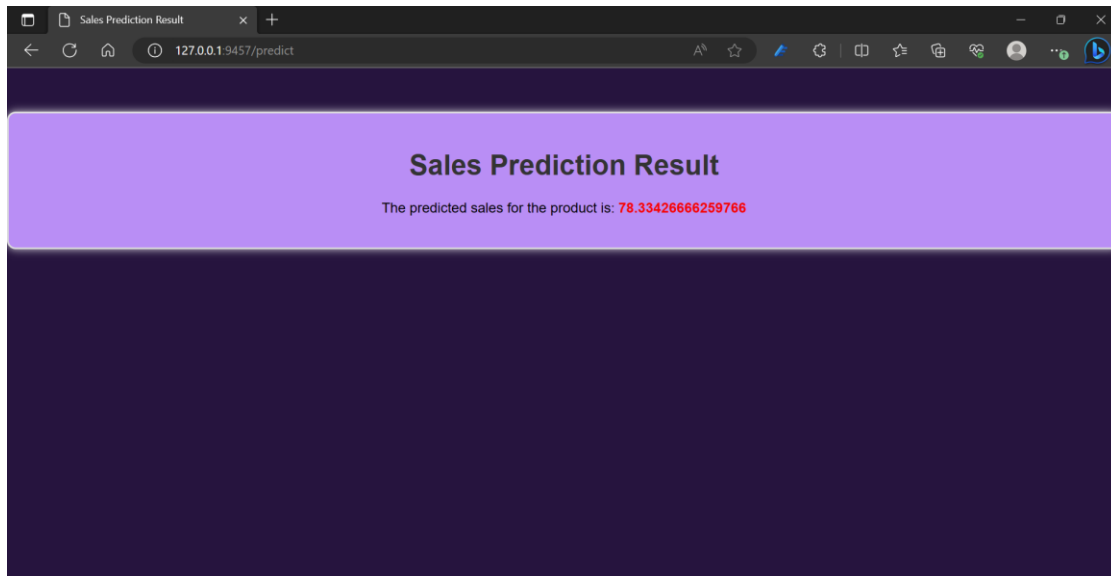
Item Net Amount:

Profit:

Net Cost:

Quantity:

Home page

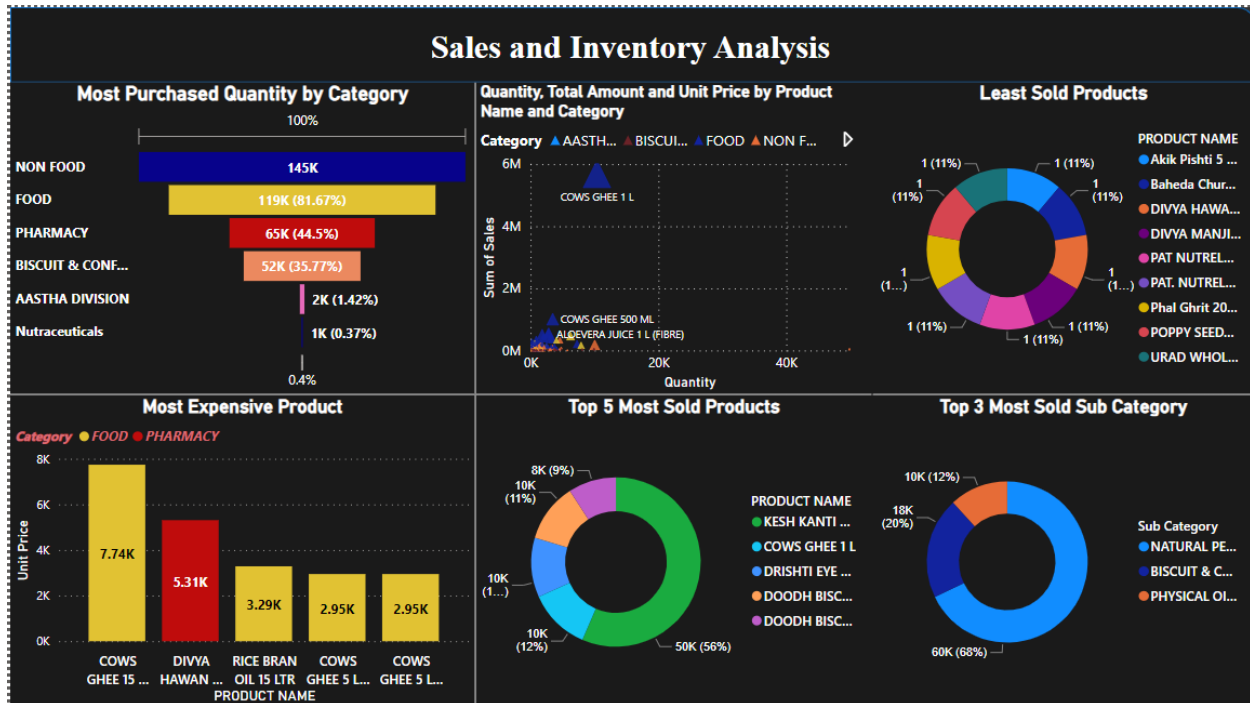


Result page



Excel Dashboard

Link of Excel sheet with Dashboard: [Excel Dashboard](#)



Power BI Dashboard

Link of Power BI Dashboard: [Power BI Dashboard](#)

3. Results and Findings:

Sales Data Analysis:

1. Total Sales and Profit:

Total Sales: The total sales value for the fiscal year 2022-2023 was 9,949,353.97 Rs, according to the sales data analysis. This figure represents the total revenue generated by the store's operations during this time period.



These are the KPIs I have created in the Excel Dashboard with the trend line

Total Profit: The total profit from these sales transactions was Rs. 6,01,552.95. This is the net income after all expenses have been deducted.

2. Average Profit Margin:

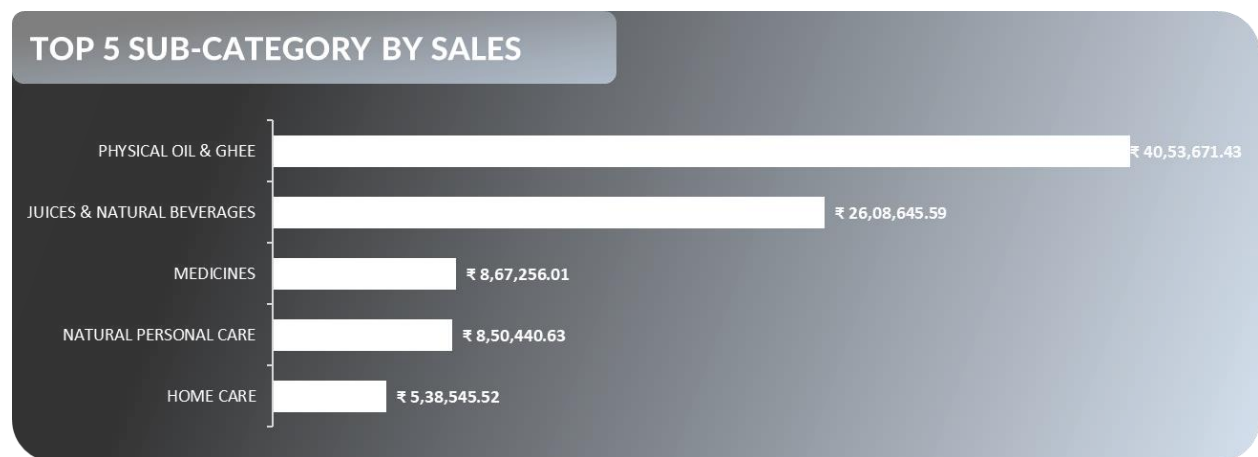
Average Profit Margin: The average profit margin for all transactions was calculated to be 6.05%. This percentage represents the average profitability of each sale, demonstrating the store's ability to generate profit from its products.



The profit margin with the trend line

3. Top Sub Categories by Sales:

The bar graph showed the top 5 subcategories by sales, with "Physical Oil and Ghee" leading the way at 40,53,671.43 rupees.



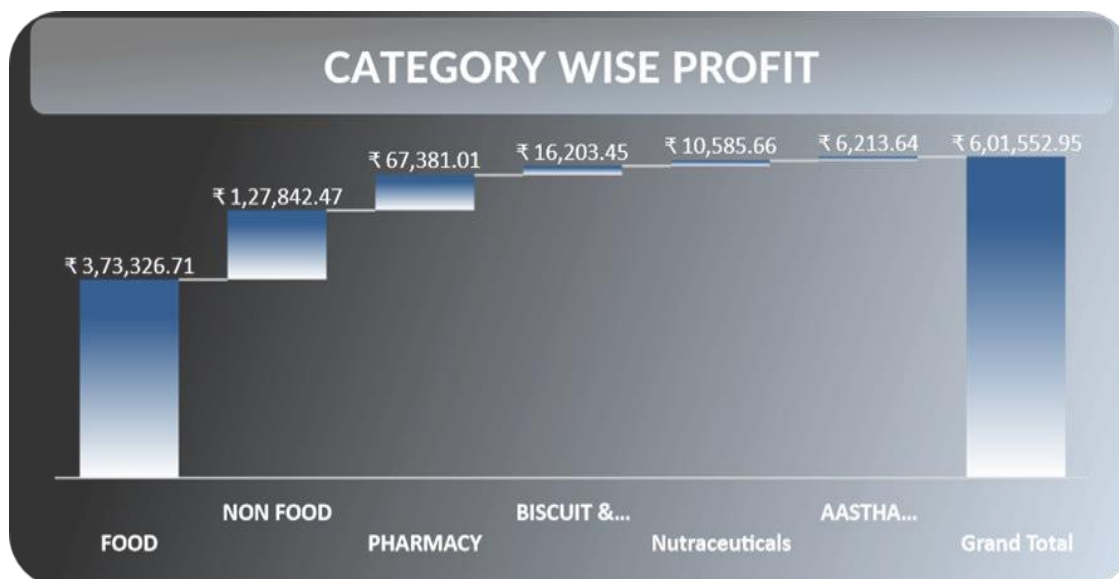
The top 5 sub-categories are:

1. Physical Oil & Ghee with sales of 40,53,671.43 Rs
2. Juices & natural beverages with sales of 26,08,645.50 Rs
3. Medicines with sales of 8,67,256.01 Rs
4. Natural personal care with sales of 8,50,440.63 Rs
5. Home care with sales of 5,38,545.52 Rs

This graph indicates that "Physical Oil and Ghee" and "Juices & natural beverages" products were the most significant contributors to the overall sales revenue, suggesting a high demand for these items during the fiscal year.

4. Category Profit Waterfall:

A waterfall chart depicted category-wise profits, with "Food" being the most profitable at 3,73,326.71 Rs.



The key findings from the graph are as follows:

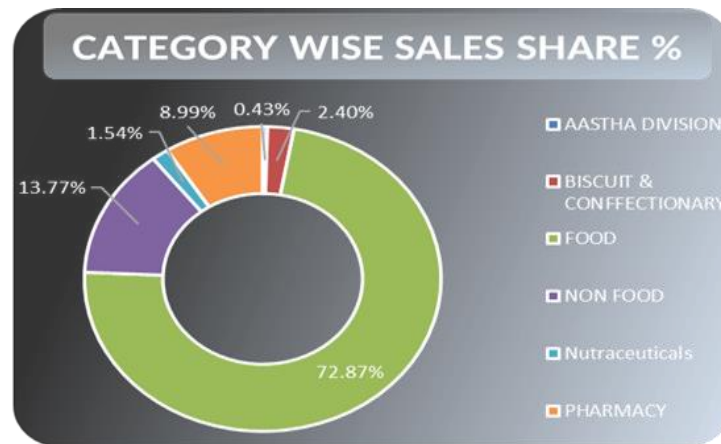
- The company's overall profit is 6,01,552.95 Rs.
- The food category has the highest profit of 3,73,326.71 Rs., which is more than half of the total profit.
- The non-food category has the second-highest profit of 1,27,842.47 Rs.
- The pharmacy category has the third highest profit of 67,381.01 Rs.
- The biscuit and confectionary category has the fourth-highest profit of 16,203.45 Rs.
- The Nutraceuticals category has the fifth highest profit of 10,585.66 Rs.
- The Aastha division category has the sixth-highest profit of 6213.64 Rs.

The food category is the most profitable category, followed by the non-food category, the pharmacy category, the biscuit and confectionary category, the Nutraceuticals category, and the Aastha division category.

The waterfall chart shows how different product categories contributed to the overall profit. "Food" stood out as the most profitable category, indicating that this category was a major driver of the store's profitability.

5. Category Sales Distribution:

A donut chart visually represented the distribution of sales across various categories.



The donut chart shows that the Food category has the largest share of sales, with 72.87%. The Non-food category is the second largest, with 13.77%. The Pharmacy category is the third largest, with 8.99%. The Biscuit & Confectionary category is the fourth largest, with 2.40%. The nutraceuticals category is the fifth largest, with 1.54%. The Aastha Division category is the smallest, with 0.43%.

Here are some key findings from the Graph:

- The Food category has the largest share of sales, which suggests that it is the most popular category for customers.
- The Non-food category is the second largest, which suggests that it is also a popular category for customers.
- The Pharmacy category is the third largest, which suggests that it is a less popular category for customers.
- The Biscuit & Confectionary category is the fourth largest, which suggests that it is a less popular category for customers.
- The nutraceuticals category is the fifth largest, which suggests that it is a growing category for customers because of the Growing demand for natural remedies and Increased awareness of the importance of preventive health.

The Aastha Division category is the smallest, which suggests that it is a new or niche category for customers.

5. Sales and profit Analysis:

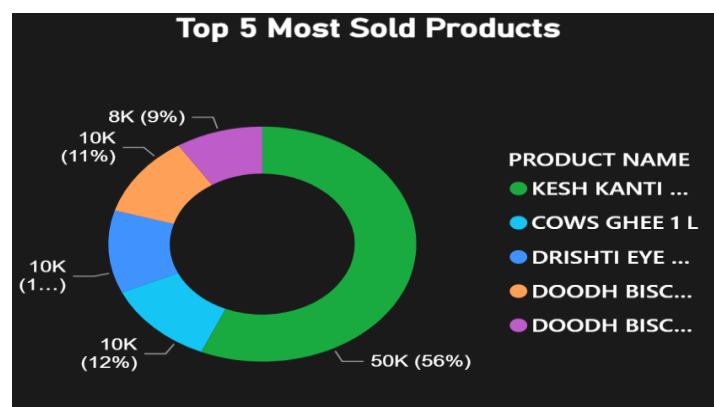
The graph shows the annual sales and profit of the Store for the months of January to December.



The following are the results and findings of the graph:

- The Store had its highest sales in the month of January and November, with a total of 11,72,321.54 and ₹ 11,67,966.35.
- The company's profit peaked in the month of November, with a total of ₹ 85,136.43.
- The company's sales and profit are highest in the last quarter of the year.
- There is a slight dip in sales and profit in the month of April
- The company's sales are more volatile than its profit. This suggests that the company's costs are relatively fixed, so changes in sales have a greater impact on profit.
- The company's profit margin (profit divided by sales) is highest in the month of December i.e. 9.36%, and the second highest profit margin is 8.25% in the month of February.
- The company's sales and profit are cyclical, with a peak in the last quarter of the year and a dip in the second quarter of the year. This is likely due to seasonal factors, such as the holiday season.

5. Top-sold product:



The graph shows the top 5 most sold products. The top 5 products are:

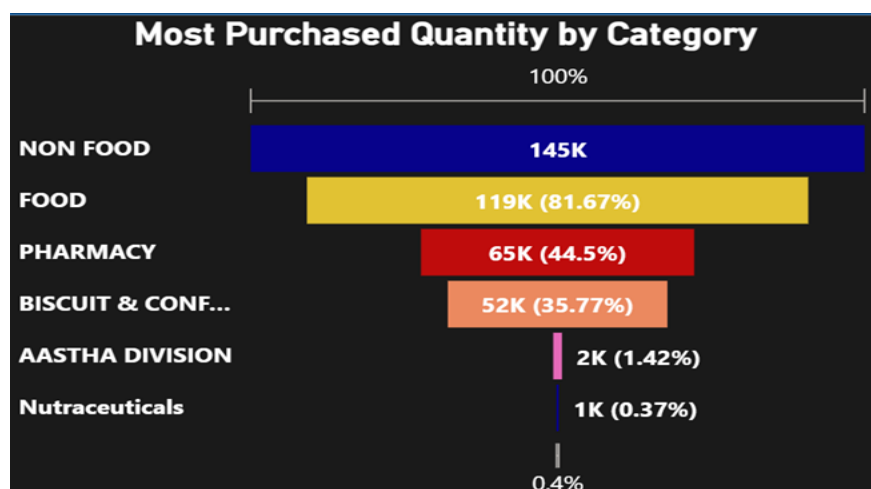
1. Kesh Kanti hair cleanser natural 5.5 ml (56%): This is the most sold product in the store, with a share of 56%. Kesh Kanti hair cleanser natural 5.5 ml is a type of hair oil that is used to promote hair growth and prevent hair loss. It is a popular herbal hair oil in India.
2. Cows ghee (12%): This is the second most sold product, with a share of 12%. Cows ghee is a type of clarified butter made from cow's milk. It is a popular ingredient in Indian cuisine and is also used for religious purposes.
3. Drishti Eye Drops (11.36%): This is the third most sold product, with a share of 11%. Drishti eye drops are a type of eye drops that are used to treat eye dryness, redness, and irritation. They are a popular over-the-counter medication in India.
4. Doodh Bisc 35 gm (11.23%): This is the fourth most sold product, with a share of 11.23%. Doodh biscuit is a type of milk biscuit made with milk, sugar, and wheat flour. It is a popular snack food in India and is also used as a breakfast item.
5. Doodh Bisc 45 gm (9.16%): This is the fifth most sold product, with a share of 9.16%. Doodh biscuit is a type of milk biscuit made with milk, sugar, and wheat flour. It is a popular snack food in India and is also used as a breakfast item.

The graph also shows that the top 5 products are all relatively affordable, which makes them accessible to a wider range of consumers.

Inventory Data Analysis:

1. Most Purchased Category:

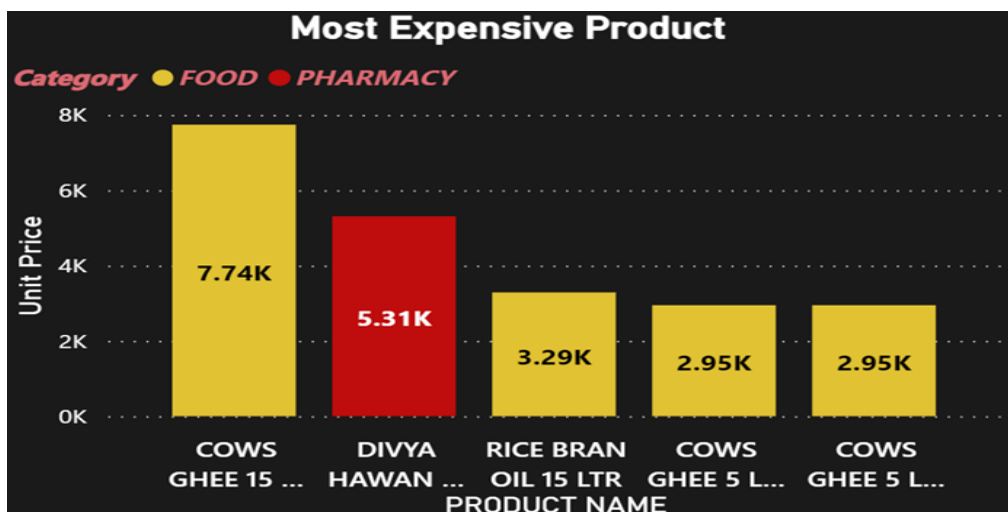
A funnel chart illustrated the most purchased quantity by category, with "Non-Food" leading at 145,000 pcs.



The funnel chart demonstrates that "Non-Food" items were the most frequently purchased products. This suggests a high demand for non-food items within the store's inventory.

2. Most Expensive Product:

A stacked column chart identified the most expensive product as "Cows Ghee 15 Liter" within the "Food" category, priced at 7,741.07 Rs.

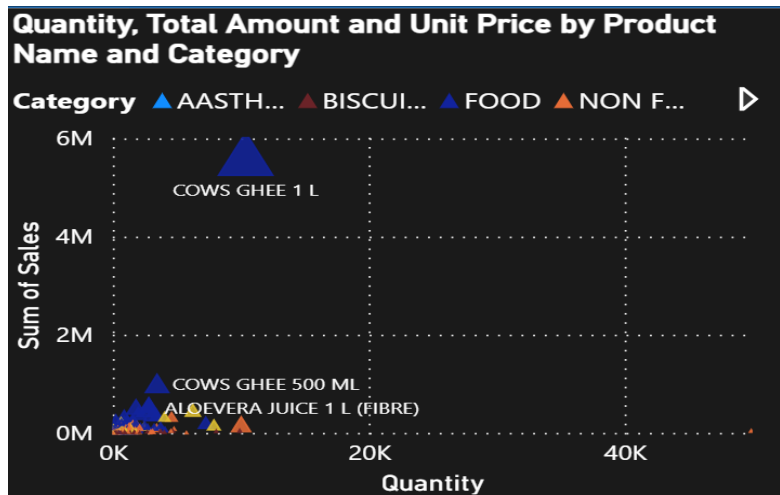


Here are some key findings from the image:

1. The most expensive product in the food category is Cows Ghee 15Ltr, which costs 7.74k Rs. This suggests that Cows Ghee is the most expensive product in the Store.
2. The most expensive product in the pharmacy category is Divya Hawan Samagri, which costs 5.31k Rs. This suggests that Divya Hawan Samagri is the second most expensive product in the store.
3. The most expensive product in the non-food category is Rice Bran Oil 15Ltr, which costs 3.29k. This suggests that Rice Bran Oil is the third most expensive product.
4. The most expensive product in the nutraceuticals category is Cows Ghee 5Ltr, which costs 2.95k Rs.

The stacked column chart highlights the price of the most expensive product, which is "Cows Ghee 15 Liter." This information is crucial for inventory management and pricing strategies.

3. Quantity, Total Amount, and Unit Price Analysis:

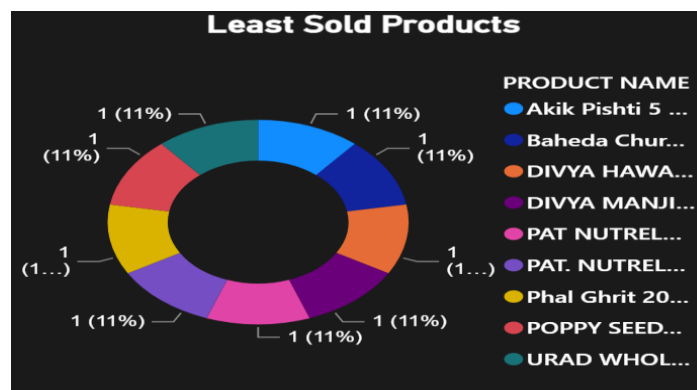


Here are the result and findings from the graph:

1. Top Quantity Product: The product "KESH KANTI HAIR CLEANSER NATURAL 5.5 ML" claimed the spotlight, recording the highest quantity sold at an impressive 49,896 units.
2. Top Sales Product: "COWS GHEE 1 L" emerged as the leader in sales, commanding a significant revenue of 56,83,544.64 rupees.
3. Top Quantity Category: Among categories, "NON-FOOD" took the lead, registering the highest quantity sold with a notable 2,40,959 units.
4. Top Sales Category: Conversely, the category "FOOD" showcased remarkable sales, amassing a substantial revenue of 1,07,35,012.08 rupees.
5. Common Sales and Quantity Threshold: Most products, on the other hand, exhibited sales below 37,809.36 rupees and quantity sold below 535 units.
6. Overall Standouts: In a nutshell, "KESH KANTI HAIR CLEANSER NATURAL 5.5 ML" stood out as the most popular product, reigning with the highest units sold and securing the second-highest sales. "COWS GHEE 1 L" clinched the title for the highest sales. The category "NON-FOOD" led in terms of units sold, while "FOOD" took the lead in sales.

4. Least Sold Products:

The graph shows the least sold products in the store.

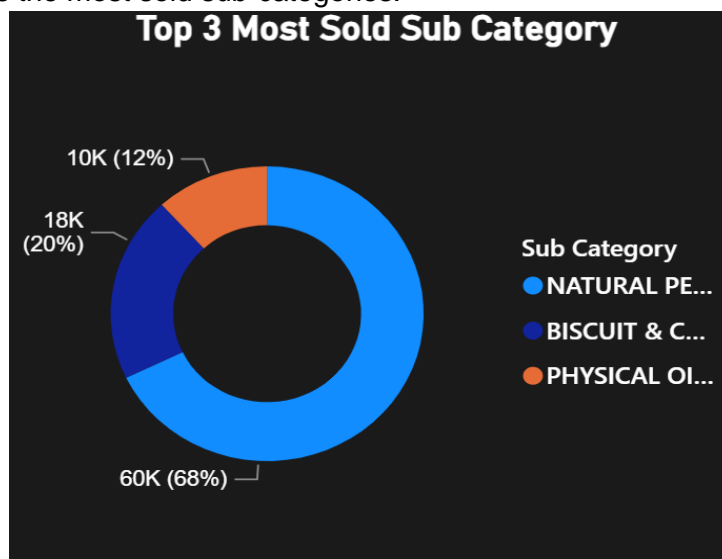


All PRODUCT NAME had a total Quantity of 1.

1. Akik Pishti 5 gm (11%): This is a type of herbal medicine that is used to treat a variety of ailments, including fever, cough, and cold. It is a relatively affordable product, but it is not very well-known.
2. Baheda Churna 25 gm (11%): This is a type of herbal powder that is used to treat a variety of ailments, including constipation, diarrhea, and indigestion. It is a relatively affordable product, but it is not very well-known.
3. Divya Hawan Samagri kit - T (11%): The Divya Hawan Samagri kit - T is a package that contains all the necessary items needed for performing a Havan ceremony. But it is not used frequently.
4. Divya Manjistha Churna 100 gm (11%): This is a type of herbal powder that is used to treat a variety of skin ailments, including acne, psoriasis, and eczema. It is a relatively affordable product, but it is not very well-known.
5. Pat Nutrela (11%): This is a type of herbal supplement that is used to improve energy levels and boost immunity. It is a relatively affordable product, but it is not very well-known.
6. Phal Ghrit 200 gm (11%): This is a type of herbal ghee that is used to improve digestion and boost immunity. It is a relatively affordable product, but it is not very well-known.
7. Poppy Seed 50 gm(11%): This is a type of seed that is used to make poppy seed oil and poppy seed milk. It is a relatively affordable product, but it is not very well-known in India.
8. Urad Whole 500 gm (11%): This is a type of lentil that is used to make urad dal. It is a relatively affordable product, but it is not very well-known in India.
9. Pat Nutrela weight gain powder (11%): Weight gain powders like Pat Nutrela can be used for individuals who want to increase their calorie intake in order to gain weight.this product brand is not very well-known.

5. Most sold sub-categories:

The pie chart shows the most sold sub-categories.



The top 3 most sold sub-categories are:

1. NATURAL PERSONAL CARE (60K)
 2. BISCUIT & CONFECTIONARY (18K)
 3. PHYSICAL OIL & GHEE (12K)
- NATURAL PERSONAL CARE Dominates Quantity: The category "NATURAL PERSONAL CARE" emerged as the leader in terms of quantity, boasting the highest total Quantity of 59931 units.
 - BISCUIT & CONFECTIONARY: Following closely, "BISCUIT & CONFECTIONARY" secured the second spot with a noteworthy total Quantity of 18007 units.
 - PHYSICAL OIL & GHEE: "PHYSICAL OIL & GHEE" secured the third position with a substantial total Quantity of 10384 units.
 - NATURAL PERSONAL CARE: "NATURAL PERSONAL CARE" held a dominant presence, accounting for a substantial 67.86% of the total Quantity, underscoring its significance in the overall sales landscape.

4. Interpretation of Results and Recommendation:

Interpretation of Results:

1. Total Sales and Profit:
 - The total sales for the fiscal year were 9,949,353.97 Rs, generating a total profit of 6,01,552.95 Rs. The store's operations are profitable, indicating successful revenue generation and cost management.
2. Average Profit Margin:
 - The average profit margin of 6.05% suggests that, on average, the store earns a profit of 6.05 Rs for every 100 Rs in sales.
 - This is a healthy profit margin, indicating efficient cost management and pricing strategies.
3. Top Sub Categories by Sales:
 - "Physical Oil and Ghee" and "Juices & natural beverages" were the top contributors to sales.
 - These categories have high demand, making them key areas for targeted marketing and inventory management.
4. Category Profit Waterfall:
 - "Food" is the most profitable category, contributing significantly to the overall profit.
 - Non-food, pharmacy, and other categories also contribute to the store's profitability.
5. Category Sales Distribution:
 - "Food" is the largest sales category, indicating its popularity among customers.
 - Non-food and pharmacy categories also contribute significantly to sales.

6. Sales and Profit Analysis:
 - Sales and profit are highest in the last quarter of the year, suggesting seasonality or holiday-related trends.
 - Profit margin varies throughout the year, with December and February having the highest margins.
7. Top-Sold Product:
 - "Kesh Kanti hair cleanser natural 5.5 ml" is the most sold product, with "Cows ghee" and "Drishti Eye Drops" following.
 - Affordable products seem to have higher sales and accessibility.
8. Most Purchased Category:
 - The funnel chart indicates that "Non-Food" items were most frequently purchased. This highlights a potential area for business growth, as non-food items seem to have high demand.
9. Most Expensive Product:
 - "Cows Ghee 15 Liter" is the most expensive product, knowing the most expensive products is crucial for pricing strategies and inventory management, ensuring that high-value items are properly managed and priced.
10. Quantity, Total Amount, and Unit Price Analysis (Inventory Data Analysis):
 - "KESH KANTI HAIR CLEANSER NATURAL 5.5 ML" is the most sold product.
 - "COWS GHEE 1 L" leads in sales.
 - "NON-FOOD" category leads in both quantity and sales.
 - The analysis provides insights into the top quantity, sales, and categories. This information can help identify the most popular products and categories, as well as provide a basis for optimizing pricing and stock management.
11. Least Sold Products:
 - The least sold products can be evaluated for potential improvements in marketing, visibility, or positioning within the store.
12. Most Sold Sub-Category:
 - The pie chart reveals the dominance of the "Natural Personal Care" sub-category in terms of quantity sold, showcasing the preferences of customers towards these products.

Recommendation:

1) To Increase Profit and Revenue:

Leverage Top-Selling Categories: Focus on promoting and expanding the "Physical Oil and Ghee" and "Juices & natural beverages" categories, as they contribute significantly to sales. Consider introducing new variations or related products within these categories to capitalize on their popularity.

Strategic Pricing: Adjust pricing strategies for premium products like "Cows Ghee 15 Liter" to maximize profit margins, while maintaining competitive pricing for more affordable products.

Cross-Selling and Upselling: Implement cross-selling and upselling techniques by suggesting complementary products to customers during their purchase journey. For example, recommend related natural personal care products when a customer buys "Kesh Kanti hair cleanser natural 5.5 ml."

2) Analyze SKUs - Best and Worst:

Best-Selling SKUs:

Identify the top-selling SKUs, such as "Kesh Kanti hair cleanser natural 5.5 ml" and "Cows ghee," and prioritize them in marketing efforts.

Feature these products prominently in promotions and campaigns to capitalize on their popularity and further increase sales.

Worst-Selling SKUs:

Evaluate the underperforming SKUs, including "Akik Pishti 5 gm" and "Baheda Churna 25 gm," to understand the reasons behind their low sales.

Assess whether lack of awareness or other factors are impacting their performance.

Consider updating marketing strategies for these products to enhance their visibility and appeal.

If certain products consistently have low demand, assess the feasibility of discontinuing them to streamline inventory.

3) Enhanced Inventory Management:

Leverage Top-Selling SKUs: Apply the sales prediction model to anticipate demand for popular SKUs like "Kesh Kanti hair cleanser natural 5.5 ml" and "Cows ghee."

Prevent Shortages: Use insights to avoid stockouts of high-demand products, ensuring customer satisfaction and revenue retention.

FIFO Implementation: Adopt First-In-First-Out (FIFO) rotation for products like "Doodh Bisc 45 gm" and "Doodh Bisc 35 gm."

Minimize Obsolescence: FIFO minimizes losses by selling older inventory first, reducing the risk of outdated or expired products.

Informed Ordering: Employ demand forecasts for precise inventory orders, avoiding rushed purchases and optimizing costs.

4) Increasing Average Sales per Month:

Seasonal Promotions: Capitalize on the peak sales months (e.g., January and November) by designing special promotions and offers. Use data from the sales and profit analysis to identify the factors contributing to these peak months and replicate successful strategies.

Customer Engagement: Engage customers through loyalty programs, personalized offers, and email marketing campaigns. Use insights from sentiment analysis to tailor marketing messages that resonate with customer preferences.

5) Comprehensive Marketing Strategy:

Content Marketing:

Educational Content: Develop blogs, videos, and guides on product categories.

Social Media Engagement:

Direct Connection: Utilize social media for interactive customer engagement.

Showcase Community: Share testimonials, insights, and relatable content.

Referral Programs:

Customer Advocacy: Encourage existing customers to refer their friends and family to your store by offering incentives or special discounts.

Word-of-Mouth Boost: Use word-of-mouth marketing to spread the word about your store and build loyalty.

6) Integrating data-driven applications:

By integrating insights from the web application and machine learning models, the store's marketing and analyzing strategy gains a data-driven edge.

5. Conclusion

This Project presents valuable insights and actionable recommendations to elevate sales and operational performance for Patanjali Chikitsalaya. By applying the identified findings and executing the suggested strategies, Patanjali Chikitsalaya can effectively enhance inventory management, drive sales growth, and ensure the realization of its objectives.

-----End of the Report-----