Optimizing Inventory Management and Sales Strategies in Fertilizer Shop

Final-Term report for the BDM capstone Project

Submitted by

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INDEX	
Topic	Page No.

Executive Summary

The Project focused on IFFCO BAZAR, a fertilizer retail outlet located in Doulthabad, Hathnoora Mandal, Sangareddy District, Telangana State. IFFCO BAZAR operates B2C business, serving the local agricultural Community by providing wide range of agricultural fertilizer products. This IFFCO BAZAR is working under IFFCO (Indian Farmers Fertilizers Cooperative Limited). This Shop exclusively sells the IFFCO manufactured fertilizer products.

The main problem IFFCO BAZAR facing is stockouts during the Kharif (Monsoon) and Rabhi Seasons. These stockouts, particularly during sowing period, result lose sales due to inefficient inventory Management. Due to stockouts in the shop customers are moving to another business and this shop unable to sell the available products also. This shop is not increasing sales of newly released fertilizer products. Due to these problems the shop is not performing well and the company population also not increasing in the shop located area.

The main objectives include implementing a data-driven approach to Inventory Management, identifying top-selling products and categories, and pinpointing revenue generators using Pareto charts. Inventory data was analyzed to identify which categories frequently face stockouts and the reasons behind them. Sales and revenue trends were analyzed using various charts to understand business performance during these three months. By utilizing Excel and Python IFFCO BAZAR seeks to streamline data processing and decision-making, optimize stock levels, and minimize wastage and stockouts. Additionally, strategies for educate customers about new products usage, safety precautions and expected outcomes of product were explored.

The expected outcomes include enhanced inventory management, reduced wastage, and improved customer satisfaction.

Detailed Explanation of Analysis Processes and methods

The problem in this business was identified through interactions with the owner. To address the issue, Daily Sales data from January – March 2024 was collected. The owner provided the data in 90 PDFs. After receiving the data, the PDFs were converted into Excel sheets. All the Excel sheets were aggregated, cleaned, and organized into single table. From this aggregated data, Sales data, Revenue data, and Inventory data were separated into three distinct tables. Excel tools, including pivot tables were used to summarize the data for further analysis. The data analysis was done based on the category of different fertilizer products. By using weekly trends and monthly trends of sales and revenue we can understand more about the data.

Explanation of Fields in the Cleaned Data:

Weekly Sales Data & Weekly Revenue Data Fields:

CATEGORY	UOM	PRODUCT NAME	SKU	WEEK-1	WEEK-2	WEEK-3	WEEK-4..

Table: Different types of fields used in the sales and revenue Data.

CATEGORY: Product Category. UOM: Indicates the Unit in which the product measured, example KG, Pieces. PRODUCT NAME: Indicates the Name of the fertilizer product example Urea, Sagarika Gold etc. SKU: Unique identifier for the Product example for Complex Category has 3 different fertilizers so SKU are C1, C2, C3. WEEK-1, WEEK-2….: Indicates Weekly Sales Volume or Revenue in currency for each week and for each fertilizer.

Daily Inventory Data Fields:

CATEGORY	UOM	PRODUCT NAME	SKU	DAY-1	DAY-2	DAY-3	DAY-4….

Table: Different types of fields used in the daily inventory data.

Here Day-1 to Day-90 columns was used to store the daily closing stock of each fertilizer in the shop.

Analysis Process and Methods

Pareto Analysis:

- A pareto chart is a type of bar chart that represents the frequency or impact of causes in a process. It is based on the pareto principle which states that roughly 80 percent of the effects come from 20 percent of the causes.
- For Inventory Management, a pareto chart helps identify the most significant items contributing to sales and Revenue.
- It allows to prioritize which inventory items need the most attention, enable better resource allocation.
- It is more effective than other methods in identifying and focusing on the most critical items in inventory of fertilizer, ensuring that efforts are directed towards the areas that will yield the most significant benefits.
- Data was aggregated based on product categories, with all product sales and revenue under each category combined over three months.
- Excel tools were used to create Pareto charts for both sales volume and sales revenue.

Analysing the Top-Selling categories and Top-Revenue generating Categories of Fertilizers:

- Separate analysis of Top-Selling and Top-Revenue categories provides more information about the individual fertilizer's performance.
- After doing this analysis, we would know which products are more dominating in individual categories in terms of sales volume and revenue generation.To do this analysis, a bar graph is more appropriate.
- From the daily sales and daily revenue data, filter the top-performing categories of fertilizers, and sum the sales and revenue over three months.
- Using this data, create two individual graphs: one for total sales of each fertilizer in top-selling categories and another for total revenue generated by each fertilizer in top-revenue generating categories.
- The two graphs were created using Python's seaborn library to provide bar graphs more effective way.

Identifying Top 20 Fertilizers in terms of Sales generation:

- To allocate inventory effectively for the Kharif season, it is crucial to identify the top selling fertilizers that generate the highest sales and revenue. By understanding which fertilizers perform well, the shop owner can ensure adequate inventory levels to meet demand.
- Data preparation for this analysis: From the sales data, 20 fertilizers based on sales volume was filtered. Excel VLOOKUP function was used to aggregate revenue data for each fertilizer in the top 20.
- An ordered bar graph is the most appropriate choice for this analysis, as it clearly displays the ranking of fertilizers based on sales. A combination of line and bar graphs is used to better visualize both sales volume and revenue. The bar graph represents the sales volume, while the line graph overlays the revenue data.
- Using Excel's charting tools, combination of line and bar graph was created to visualize the sales and revenue of the top 20 fertilizers.

Analysis of Urea Sales Trend:

- Urea is the most common fertilizer for this shop, often encountering stockouts in every season. A separate analysis of the Urea sales trend can provide more insights into its sales and demand patterns.
- A line chart is the best choice for this analysis, as it effectively displays the trend of Urea sales over time.
- For this analysis sales volume of Urea fertilizer over weeks was filtered out using weekly sales data.
- Using Excel's charting tools, a line chart was created to visualize the sales volume of Urea.

Comparative Analysis of Average price vs Total sales of categories:

- Understanding both total number of sales per each category and the average price per item in the category across all categories provides critical insights for business.
- Total sales of categories in the graph provide category popularity and market demand. Average price per item in the category can provide which category of fertilizers are more important for profitability.
- By understanding total sales for categories and Average price per fertilizer, it will useful for managing the inventory like which category of fertilizer need inventory more.
- This analysis was done using bar chart, in that for each category two bars used as side-by-side for easy comparison. For this chart data was aggregated based on the total sales and total revenue of each category of fertilizer and Average price per item was calculated dividing total revenue by total sales. The chart was created using Excel charting tool.

Sales Performance Breakdown over weeks:

- To show the sales volume for each category in each week, a stacked column chart is a suitable and effective choice.
- This type of chart allows to visualize the total sales volume for each week while also displaying the contribution of each category to the weekly total.
- It provides clear comparison of weekly trends. It clearly shows how the sales volume for each category varies from week to week.

- It helps in identifying which categories are driving the sales in different weeks.
- to draw this chart organized the data into table in which weeks are in rows and categories of Total Sales on columns.
- Used Excel's stacked column chart tool to create a chart based on this data.

Weekly Sales Analysis:

- Line Chart: Line chart use lines to represent data points, making it easy to compare sales for each week directly. The position of each point corresponds to the sales volume, providing a clear visual comparison between weeks.
- Trend Identification: By plotting sales data for each week on a line chart, trends such as increasing or decreasing sales over time can be easily seen. This helps in understanding seasonal variations or the impact of specific marketing activities.
- Data-Driven Decision Making: Visualizing weekly sales data with a line chart aids in making data-driven decisions. For example, if consistent low sales are noticed during certain weeks, potential issues such as insufficient stock or marketing inefficiencies can be investigated and addressed.
- For this analysis, data is organized in a table with the first column used for the week number and the second column for the total sales of each week. Line charts are created using the chart types provided in Excel.

Weekly Revenue Analysis:

- A Line chart is ideal for showing the trend of Revenue over time. It effectively highlights changes in Revenue, enabling easy identification of upwards or downward trends.
- This chart clearly displays how revenue fluctuates over different weeks, allowing for straightforward analysis of patterns and trends.
- To draw this chart, organize the data into a table with weeks in rows and corresponding revenue values in columns.
- Utilized Excel’s line chart tool to create a chart based on organized data.

Identifying Fertilizers with no sales for Inventory Management:

To identify fertilizers with zero sales over three months to improve inventory management and reduce the wastage.

- By identifying these fertilizers shop can reduce the wastage by not ordering fertilizers that are not in demand.
- This enables the shop to order fertilizers based on actual sales data.
- To identify fertilizers with no sales, the first was filtering fertilizers has zero sales over three-month period from the daily sales data. Some fertilizers were listed, which have no sales daily but not physically stocked in the shop. So, they were excluded from the zero sales group. To ensure accuracy, data was cross-checked with the inventory data, specifically filtering out fertilizers that consistently showed zero closing stock on all recorded days. This refinement allowed to pinpoint fertilizers physically present in the shop yet not generating any sales, this provided a clear identification of these fertilizers.
- To visualize the fertilizers which have no sales, Table is the most appropriate option.

Analyzing Fertilizers Stockout Frequency for Inventory Optimization:

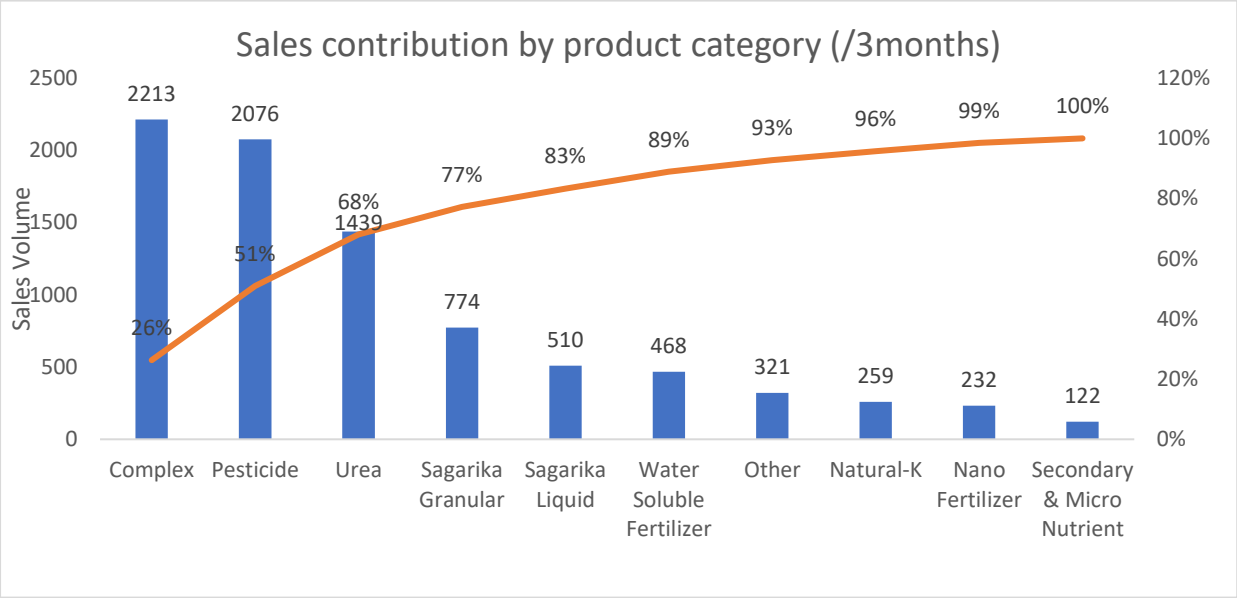
To enhance inventory management and ensure product availability, identifying the number of zero inventory days for fertilizers is crucial.

- This analysis aims to determine which fertilizers faced stockouts (Zero inventory) on some days while having inventory on other days. This helps to understanding supply issues and improving ordering practices.
- Preventing Stockouts: By identifying fertilizers with frequent stockouts, the shop can take steps to ensure these products are restocked promptly, preventing lost sales due to unavailability.
- Optimizing inventory levels: This analysis enables the shop to maintain optimal inventory levels, ensuring that popular fertilizers are always available while minimizing overstock.
- Data Preparation: For this analysis, dataset with each row represent a fertilizer and columns represent daily inventory levels over three-month period was used.
- Excel COUNTIF function was used to count number of days each fertilizer had zero inventory. From these fertilizers, the fertilizers which has greater than 10 days of stockout was filtered. A Bar graph was used to illustrate the number of zero inventory days for each fertilizer, it was helped to identify those with most frequent stockouts.

Results, Findings, and Interpretation of Results

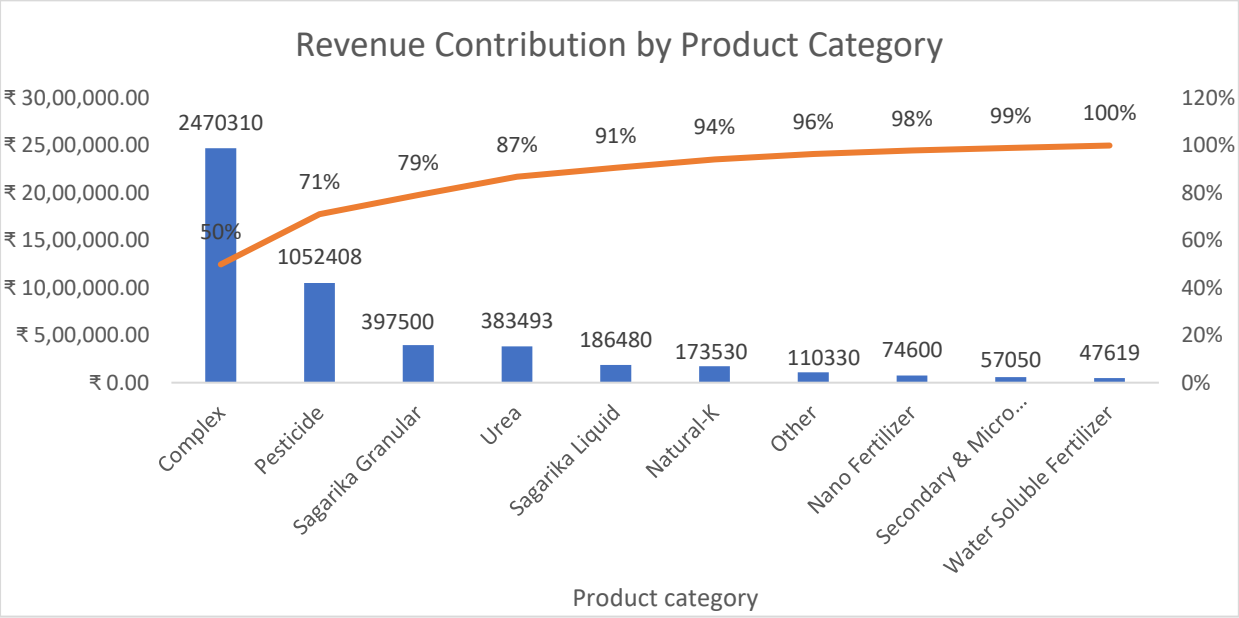
Pareto Analysis:

1.Sales Volume Analysis



Graph -1: Sales contribution by product category over 3 months.

2. Revenue Pareto Analysis

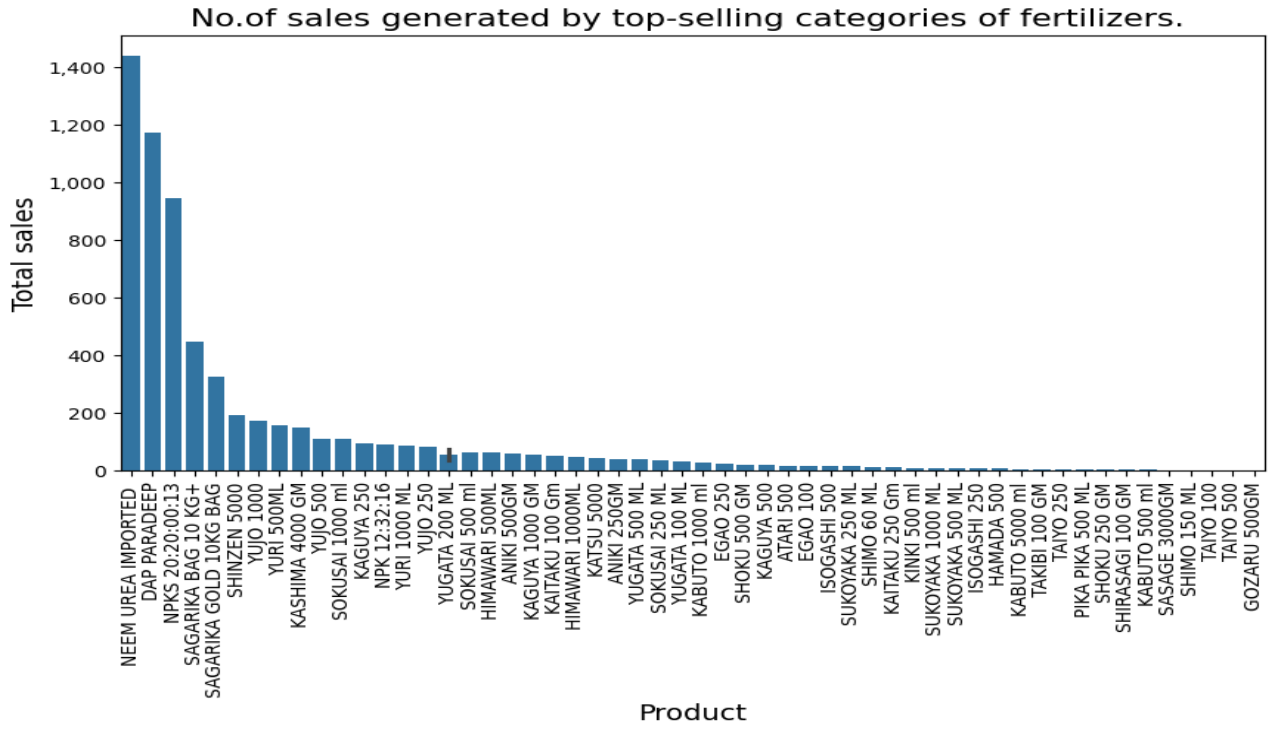


Graph-2: Revenue contribution by each product category over 3 months.

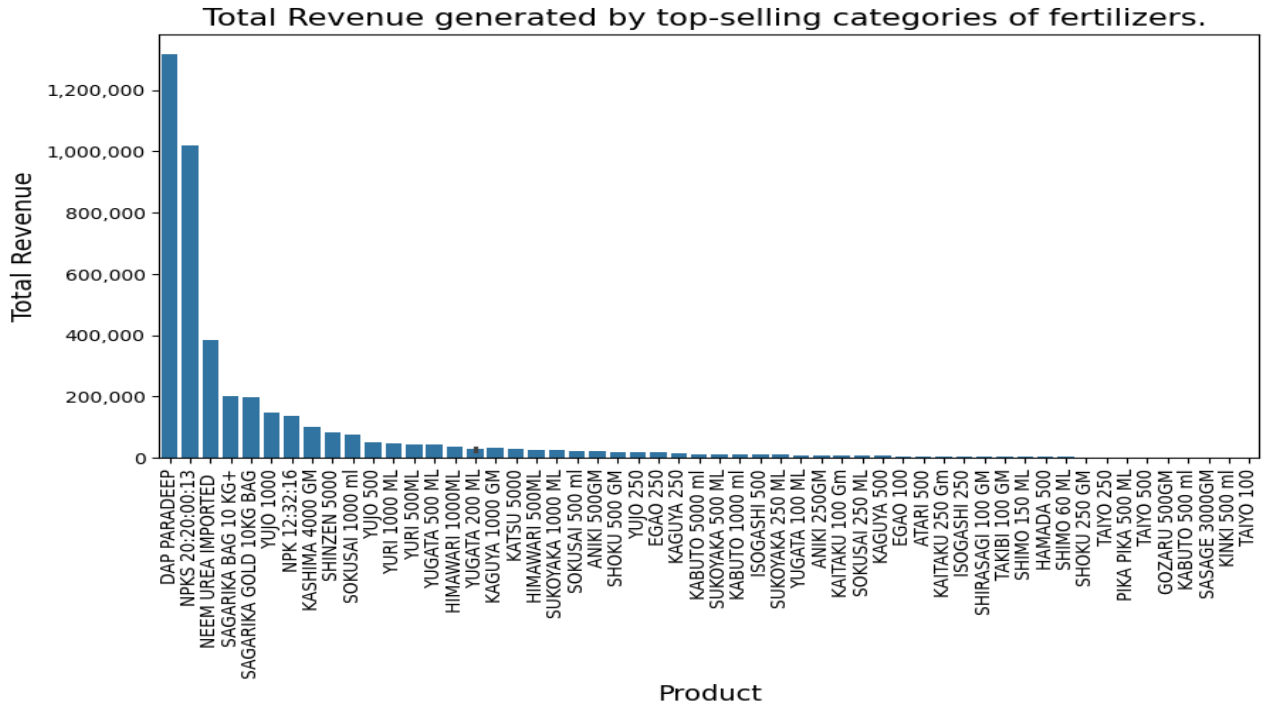
Observations from Sales Volume Pareto chart and Revenue Pareto chart over the period of 3 months.

- The shop was sold 8415 items from January-March 2024. On an average approximately the shop was able to sell 93 items per day.
- The shop is generating ₹4,95,53,410 of Revenue over the period of January-March 2024. On an average approximately shop was generating ₹55,05,93.4 per day.
- The top-selling categories with the highest number of sale items are Complex fertilizer (2213), Pesticides (2076), Urea (1439), and Sagarika Granular (774) items collectively constituting of approximately 80% of the total items sold.
- The highest revenue-generating items were complex fertilizer (₹24,70,310), Pesticides (₹10,52,408), and Sagarika Granular (₹3,97,500) which is 79% of total Revenue.
- Both charts identified Complex, Pesticides, and Sagarika Granular are the critical categories. These categories not only leading in sales volume but also in generating significant revenue, so they are most important for business.
- Sagarika Liquid and Water-soluble fertilizer categories are moderate sales contributors. Urea and Sagarika Liquid have moderate revenue contributions. These categories are stable and valuable, though not top performers.
- Natural-K, Others, Nano-fertilizer, Secondary & Micro Nutrient and Water-soluble fertilizer categories have low sales and low revenue. Among low performing categories Water-soluble fertilizer has almost no sales.

Analyzing the Top-Selling categories and Top-Revenue generating Fertilizers:



Graph-3: Total sales generated by top-selling categories of fertilizers.



Graph-4: Total Revenue generated by top-selling categories of fertilizers.

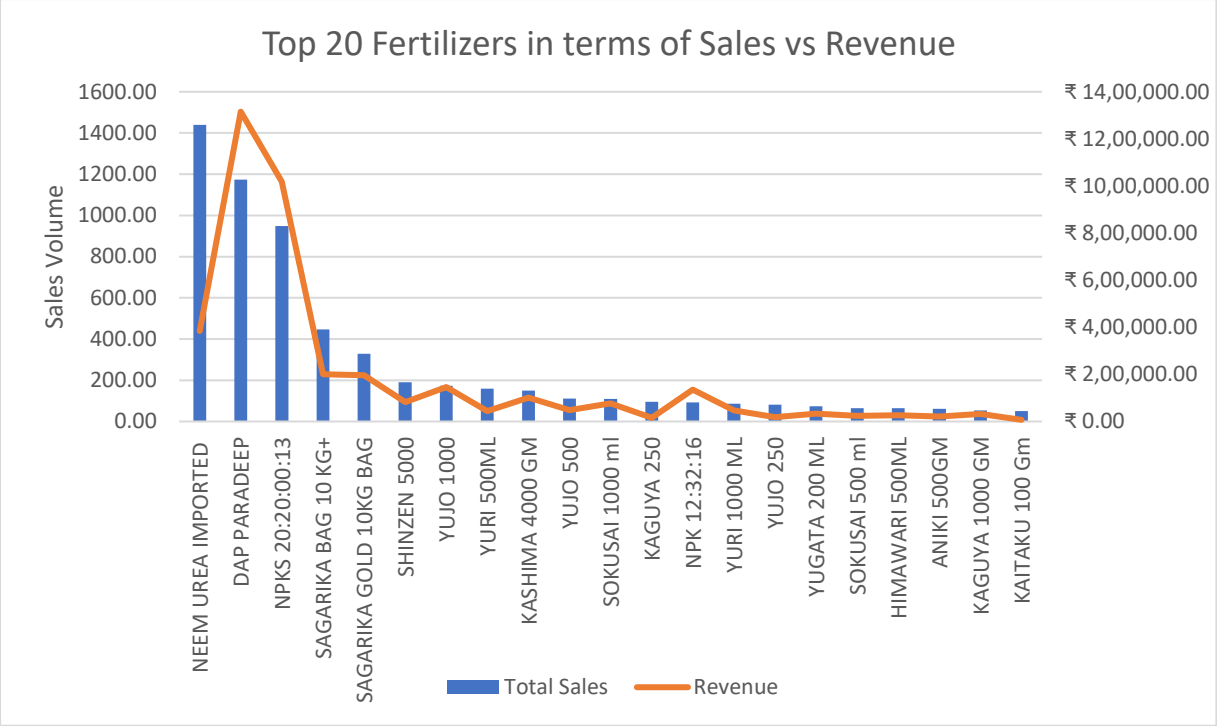
Among the top 80% sales-generating categories the quantity of NEEM UREA IMPORTED (Urea category) sold is the highest, with 1,439 packets sold at a price of ₹ 266 per packet, resulting in a total revenue of ₹ 383,493. The second highest-selling fertilizer is DAP PRADEEP (Complex category) with 1,173 packets sold at a price of ₹1,121 per packet, generating a total revenue of ₹1,315,690. Although the quantity of NEEM UREA IMPORTED sold is high, the revenue from DAP PRADEEP is significantly greater.

In Pesticides category, the highest-selling product is SHINZEN 1000with 191 bottles sold, followed by YUJO 1000with 174 bottles sold. Despite SHINZEN 1000having higher sales, the revenue from YUJO 1000is higher, totaling ₹ 146,160. In the Sagarika Granular category, highest sales and revenue come from SAGARIKA 10KG BAG+ with 446 packets sold, generating revenue of ₹200,700.

It is important to note on the Pesticide category, because Pesticide category has 71 different SKU's by combining all SKU's sales and revenue over three months it is performing well. But some SKU'S have least sales and some are having no sales over the period of three months. IRUKA, KAZASHI, TOKACHI, ANIKI, SHINZEN PLUS, ZAKIYAMA, and RYUSEI these pesticide types having no sales in the shop.

From these observations, it can be concluded that farmers are heavily utilizing fertilizers to enhance crop growth and productivity to achieve higher yields. Additionally, there is a significant use of pesticides to protect their crops. The high sales volume of fertilizers and pesticides indicates their critical role in modern agricultural practices.

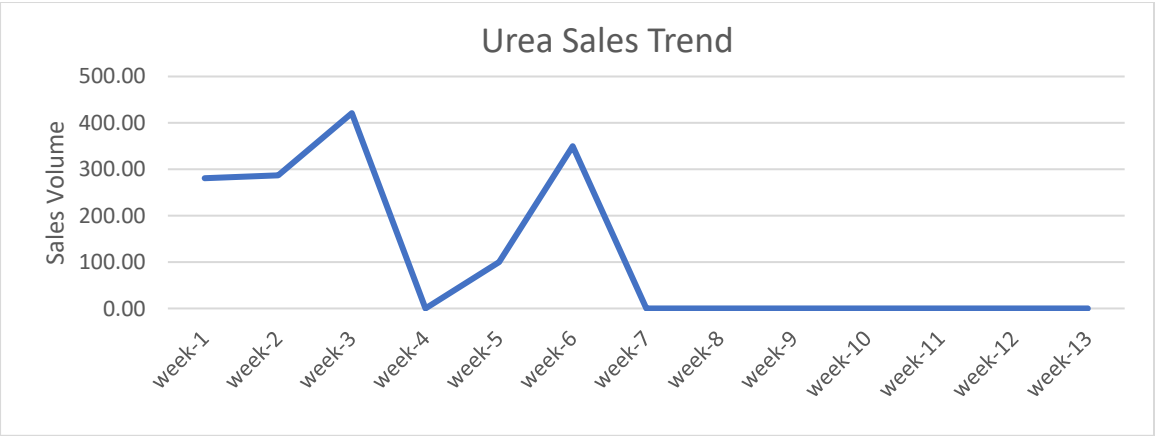
Top 20 Fertilizers in terms of Sales:



Graph-5: A combination of Bar Graph and Line Graph for Top 20 Fertilizers in terms of Sales vs Revenue

- From the above graph top 10 fertilizers in terms of sales among all categories of fertilizers: NEEM UREA IMPORTED (1439) from Urea category, DAP PRADEEP (1173) from Complex fertilizer category, NPKS 20:20:00:13(948) from Complex category, SAGARIKA BAG (446,328) from Sagarika Granular category, SAGARIKA 500 ML+(273) from Sagarika Liquid category, NATURAL-K (259), WSF SOP (229), CALCIUM NITRATE IMP (216) from Water Soluble fertilizer category, SHINZEN 5000(191) from Pesticides category.
- These 20 fertilizers contribute 70.74% of total fertilizer sales.
- The total revenue generated from these fertilizers is ₹39,75,333, which is 80.25% of the total revenue.
- It is observed from the graph that fertilizers with high sales do not necessarily generate high revenue.

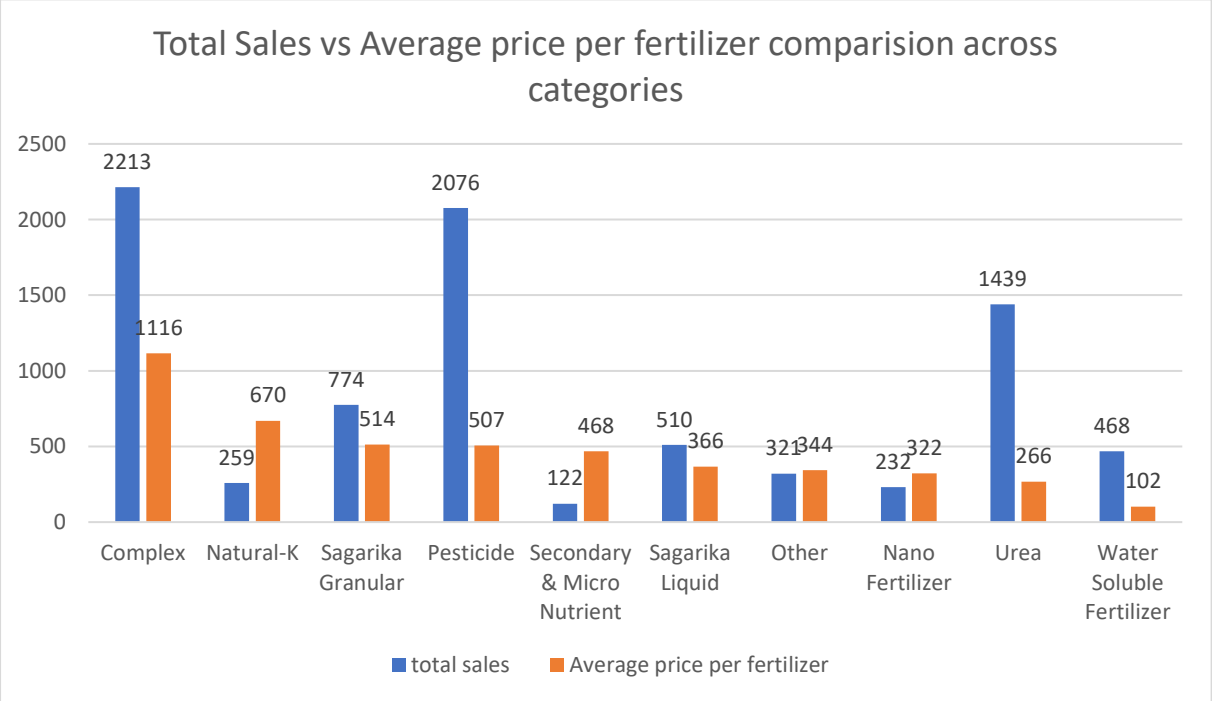
Urea Sales Trend:



Graph-6: Line chart of Urea Sales Trend.

- Urea sales start at a moderate level in Week 1 and increase to a peak in Week 4, indicating strong initial demand.
- There are notable spikes in sales during Week 4 and Week 7, suggesting these periods had higher demand or possibly restocking events.
- After the spike in Week 7, there is a sharp decline to zero sales from Week 8 to Week 13, indicating either a lack of stock or decreased demand.
- Urea is commonly used around 45 days after seedbed transplantation. Hence, farmers likely purchase it early in the season (January) to ensure they have it when needed.
- The absence of sales in March (Week 10 onwards) aligns with the agricultural cycle, where farmers are focused on crop harvesting rather than fertilization.
- The high sales at the start of the season (Week 1 to Week 5) may be driven by government subsidies, encouraging farmers to buy urea early to avoid stockouts and benefit from the subsidy.

Comparative Analysis of Average Price vs Total Sales:

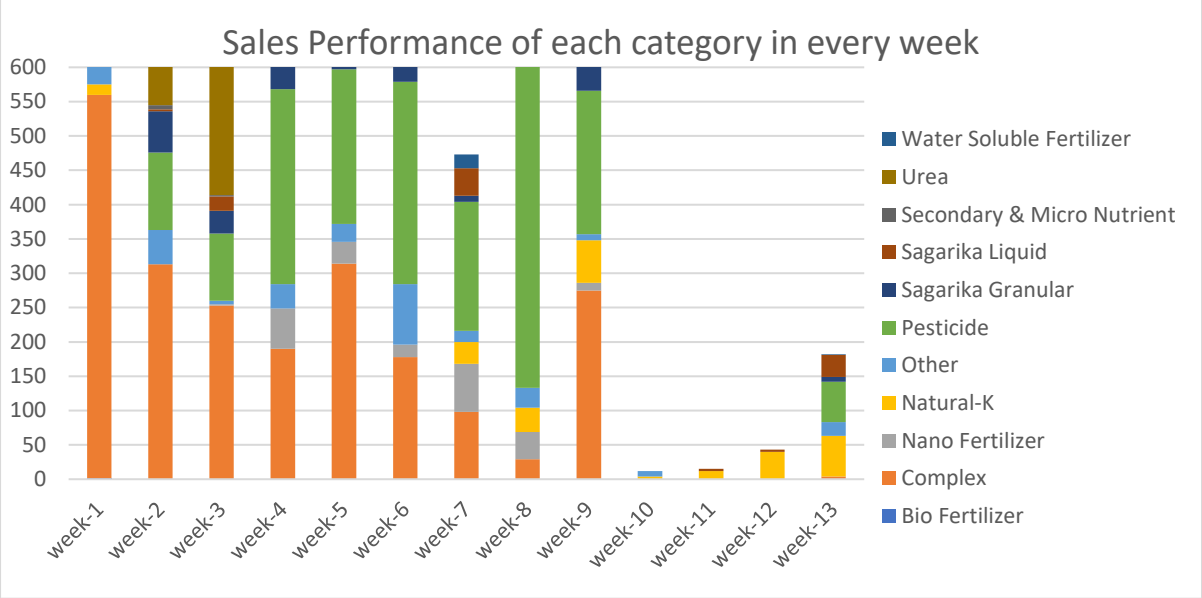


Graph-7: Analysis of Average Price vs Total Sales.

- From the above graph categories with high sales are Complex and Pesticide, Urea also has significant sales, though lower than Complex, Pesticides.
- Categories with high Average Price per fertilizer: Complex with highest price of ₹ 1,116. The second highest average price fertilizer category is Natural-k.
- Complex fertilizer has high sales and high average price so it is most important category for inventory management as well as Revenue. Pesticides high sales but low average price (₹ 507) so, shop should focus on maintaining the stock of pesticides.

- Water soluble Fertilizer have the low average price (₹ 102) and moderate sales. Urea sales are high but low average price (₹ 266), but it is most important fertilizer for inventory tracking.
- Top 5 categories with highest Average price are Complex, Natural-K, Sagarika Granular and Pesticides. These are high value fertilizer categories.

Sales Performance Breakdown over weeks:

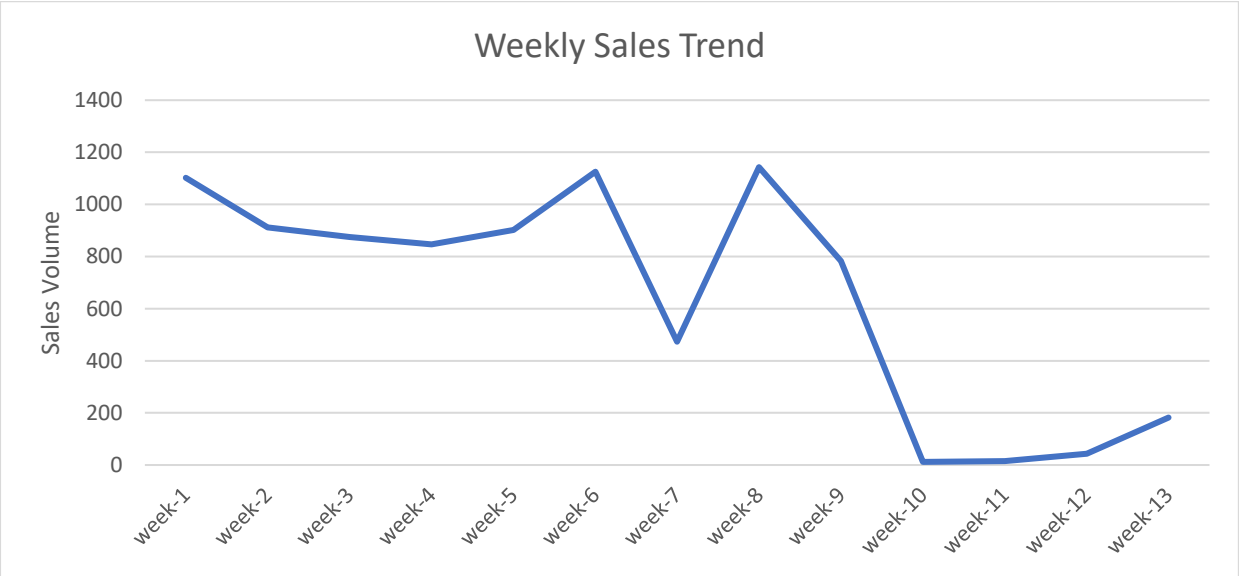


Graph-8: Stacked column chart of Sales Performance of each category in every week.

- Complex fertilizer sales initially show a high level, then gradually decrease over time. Complex fertilizer sales are observed up to week 9 because farmers use NPK fertilizers before planting to supplement soil nutrients. These fertilizers are also used after planting to increase plant growth. In the week-1 most of the sales came from the Complex fertilizer (559 packets).
- Urea sales, on the other hand, are observed only in January week-1 and week-2. Urea is used 45 days after transplantation of seedbeds, but due to its frequent shortage, farmers purchase Urea in January itself.
- The Pesticide category sales start from week 2 and continue until the last week. This is because pesticides are used for seedbed growth and after transplanting seedbeds, based on the condition of the plants. Pesticides can control pests and plant disease vectors. That's why this shop has a greater number of products in the pesticide category.
- Sagarika Granular sales start from week 2 and continue until the last week. It is a newly released fertilizer exclusively manufactured by IFFCO company. It is used after transplantation to enhance plant growth. Its sales are moderate compared to others due to most farmers not being aware of this fertilizer.
- In week 1, most of the sales come from complex fertilizer products. Pesticide sales commence in week 2 with an initial low volume, gradually increasing until week 8, where they reach a peak. In week 8, the majority of sales are attributed to pesticide products.

- Nano fertilizer product sales are observed in weeks 4, 5, 6, and 8. Among these weeks, sales are notably high in weeks 4 and 7 because it is used to enhance crop growth and production. However, compared to urea and pesticides, its sales are relatively low.
- Sales of water-soluble fertilizer took place from mid-January to the beginning of February, spanning weeks 2 to 6.

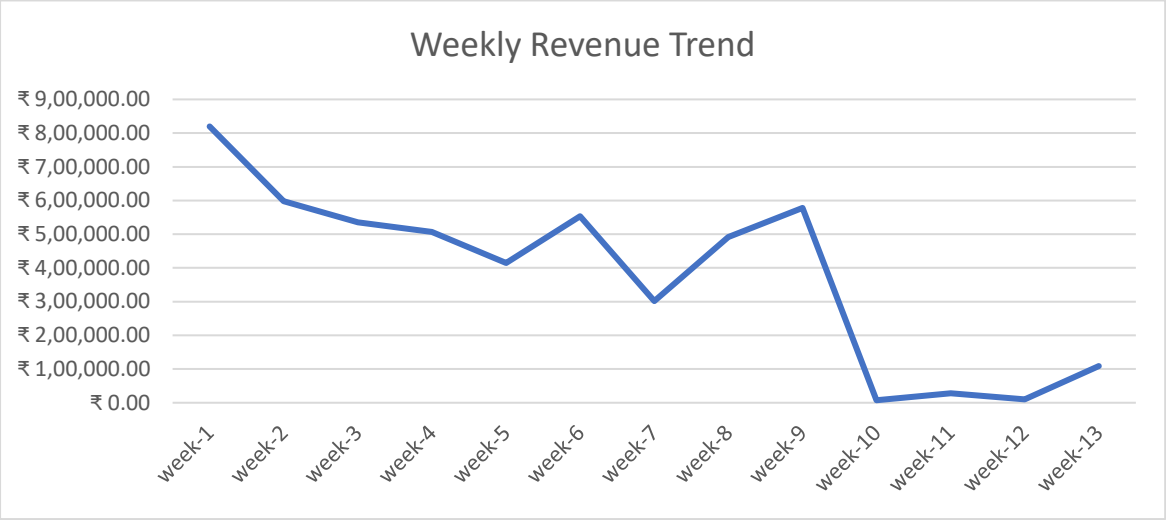
Weekly Sales Trend Analysis:



Graph-9: A Bar graph of Total Sales of all categories over weeks.

- High sales at the beginning of January likely reflect farmers purchasing Urea, Complex fertilizers, DAP fertilizer bags, and other inputs needed for land preparation.
- Moderate sales from Week 2 to Week 5 indicate that while sales remain relatively high, they are slightly lower than in Week 1.
- The spike in sales in Week 6 suggests increased purchases of fertilizers to support the initial growth of crops.
- The highest sales in Week 8 (1,143 items sold) suggest that from mid-February to the end of February, farmers focus on protecting their young crops by applying pesticides to prevent damage. The second highest sales were in Week 1 with 1,102 items sold. After Week 1, Week 6 and Week 2 saw 1,126 and 912 items sold, respectively.
- Weeks 10, 11, and 12 had the least sales. Before the harvesting period, farmers do not use any fertilizers on the crops. Instead, they prepare the soil for harvesting and allow it to dry.

Weekly Revenue Trend Analysis:



Graph-10: A Line Graph of Weekly Revenue Trend.

- The above Revenue trend line chart suggests that in the initial weeks, revenue is high and then starts decreasing up to week 5.
- There are two spikes in the week 6 and week 9 revenue, in these weeks Revenue is high for this shop. Week 10 and 12 the Revenue is too low.
- In March, there are fewer sales and less revenue. Shop is generating high Revenue in the January and February months. This indicates a seasonal pattern for this shop.

Identifying Fertilizers with No Sales for Inventory Management:

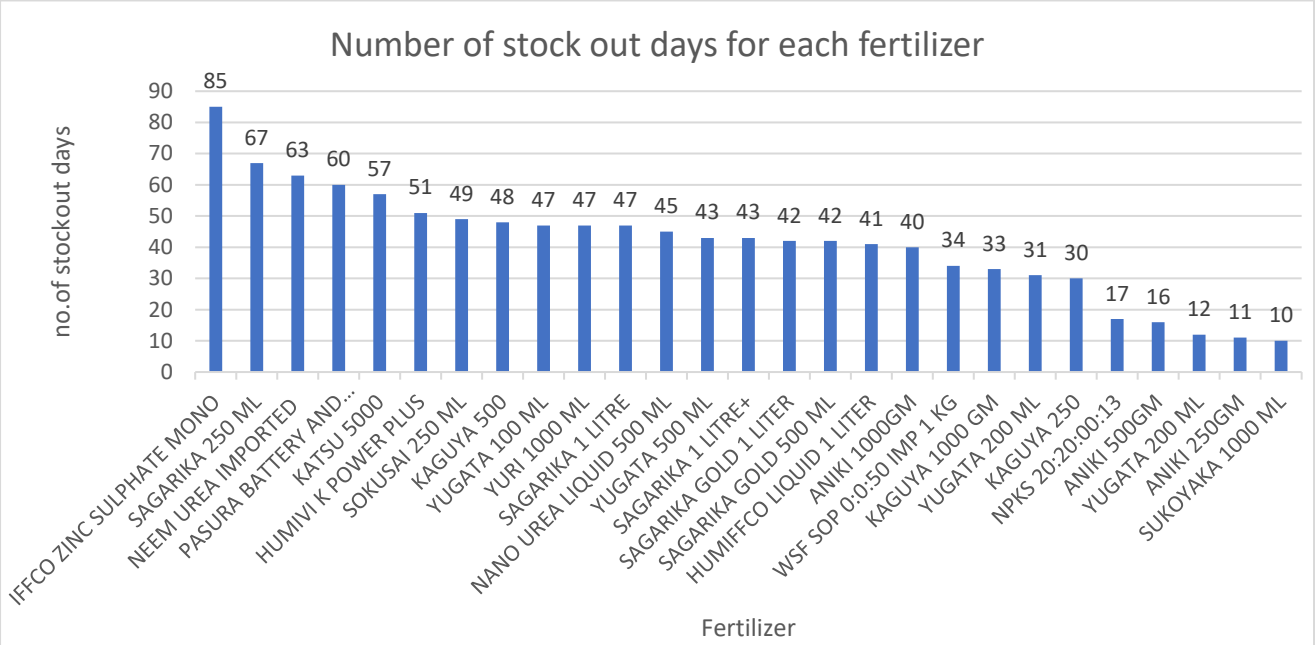
Fertilizer with no Sales	Stock in the Shop
WSF 19:19:19 1 KG	2326 (packets)
PHOSPHATE SOLUBLIZING BACTERIA 500 ML KL	221 (bottles)
SULPHUR BENTONITE (IMPORTED) 5 KG	100 (packets)
MKP IMP (0:52:34) WSF 5 KG	76 (packets)
ZAKIYAMA 500 ML	55 (bottles)
ZAKIYAMA 1 litre	48 (bottles)
IRUKA 500ML	36 (bottles)
WSF 19:19:19 25 KG	34 (packets)
GOZARU 250GM	32 (packets)
IRUKA 200 ML	30 (bottles)
RYUSEI 500 ML	28 (bottles)
KAZASHI 500 ML	20 (bottles)
SAIKIN 120 Gm	18 (packets)
MAGIC SOIL 5KG	17 (packets)
RYUSEI 1 LITRE	7 (bottles)
NUTRI RICH 5KG	3 (packets)

Table: The Table shows the fertilizers that has no sales during three months.

The shop should focus on these fertilizers for the following reasons.

- Fertilizers not sold for a long period may get damaged due to environmental conditions. They occupy storage space that could be used for more demanded fertilizer inventory. Fertilizers have expiry dates and selling expired fertilizers is not permissible.
- Potential reasons for the lack of sales include: These fertilizers may be newly released products by the IFFCO company, and farmers might not be aware of them. These fertilizers may be intended for crops that are not cultivated in the area where the shop is located.

Analyzing Fertilizers Stockout Frequency for Inventory Optimization:



Graph-11: A ordered Bar Graph of Fertilizers which has more than 10 days of stock out.

- From the above graph we can classify the fertilizers based on number of days they had no stock in the shop. Frequent stockout fertilizers: Fertilizers with more than 50 stockout days. Moderate stockout fertilizers: Fertilizers with stockout days between 50 to 30. Occasional stockout fertilizers: Fertilizers with stockout days between 30 to 10.
- IFFCO ZINC SULPHATE MONO 33% 5kg was out of stock for 85 days. It is secondary and micro nutrient fertilizer category. It is a frequent stockout fertilizer. The shop sold 98 packets in the first 5 days of January and then had no stock. IFFCO ZINC SULPHATE MONOHYDRATE 33% 5kg was available but sold less. Despite the same chemical composition, customers prefer zinc sulphate mono as it is easier to apply by hand. The monohydrate requires mixing with water and spraying which is labor-intensive. Due to unavailability of zinc sulphate mono, the shop lost sales.

- SAGARIKA 250ml was out of stock for 67 days. However, this fertilizer is available in 500ml and 1000ml quantities. Sometimes, the shop still loses sales because farmers buy on their land size. If the required quantity is not available, they may go to another shop. Due to this shop may lose the sales of those customers.
- SAGARIKA GOLD is an updated version with additional benefits, acting as a bio-stimulant to increase crop yield naturally. It's a new product from IFFCO, so the shop owner should explain its benefits and usage to customers to boost sales and potentially replace regular Sagarika.
- SAGARIKA GRANULAR was in stock throughout the period. It's sales also very high in the shop and maintaining stock.
- NEEM UREA IMPORTED was out-of-stock for 63 days. It is a commonly used fertilizer for all crops, making it the most frequent stockout product. Despite high sales (1,439 bags was sold in a few days), its demand continued through January and February. The shop lost sales due to unavailability.
- All other out-of-stock products for some days are pesticide category. Pesticide category has 70 different sku's available so these products are manageable for inventory.

Recommendation for the Problems

KEY TAKEAWAYS:

Based on these insights the following recommendations was proposed for the shop better performance.

- **Complex Fertilizer:** From January to March, the Complex Fertilizer category has the highest sales volume and revenue. Therefore, it is the most important fertilizer category for the shop. The shop should prioritize and maintain the stock of Complex Fertilizer, especially during the first two months of every season. This fertilizer is essential before and immediately after the transplantation of seedbeds and during the early growth stages of crops. Ensure adequate stock at the start of both Kharif and Rabi seasons to meet the high demand during these critical periods.

Pesticides:

- **Maintain strong Marketing:** Pesticides have high sales and significant Revenue. Enhance the marketing efforts to boost sales further. Highlight the effectiveness and benefits of top selling pesticides like SHINZEN 1000ml, YUJO 1000ml.
- **Expand Product Variety:** Expand the variety of pesticides if customer demand supports it. Ensure a diverse range to cater to different issues.
- **Customer Interaction:** Farmers often don't know which pesticides to use for specific problems. Interact with customers to understand their crop issues and recommend suitable pesticides. Educate farmers on correct usage to increase the sales and build trust, because pesticides are harmful to human beings.
- **Stock Management:** Some pesticides have no sales in the shop such as ZAKIYAMA, GOZARU 250gm, SAIKIN 120gm. Reduce or avoid stocking pesticides with no sales. Maintain inventory in various quantities to meet customer need without overstocking.

Pesticides had demand in whole season because it is mostly used product for all types of crops.

- **Immediate Availability:** Environmental conditions affect pesticide demand. Be prepared to order suitable pesticides quickly in response to environmental changes. Ensure popular pesticides are always in stock to meet sudden demand.
- **Understand customer preferences:** Stock Pesticides in various package size to match different land sizes of shop customers. Avoid overstocking large quantity that may not sell preventing potential loss of sales.

Sagarika Fertilizers:

- **Increase the Awareness:** Sagarika Products are newly released by the IFFCO company. So, most of the farmers not aware of this fertilizer. For this use in-store promotions, flyers and demonstrations to increase the awareness. The shop owner should educate farmers about benefits of SAGARIKA GRANULAR, SAGARIKA LIQUID and SAGARIKA GOLD. Explain how these products can reduce chemical fertilizer use by 25% and increase the crop yield, especially for paddy and cotton crops. During three months of Kharif season shop sold 774 bags of Sagarika granular, and 510 bottles of Sagarika Liquid. By increasing popularity of this fertilizer shop can sell more volume of these products.
- Promote the fact that this shop is the only once in the area where farmers can get these products. Highlight the unique benefits of Sagarika products. Share the success stories from other states where Sagarika products have worked well. Use these stories to build trust with farmers.
- **Encourage Early Adaptors:** Farmers often follow the practices of other farmers. Encourage influential farmers in the community to try Sagarika products, once they see the benefits other farmers are likely to follow. The shop owner can receive incentives from IFFCO for increased sales.

Urea Fertilizer:

- Urea sold 1,439 bags during 3 months, generating ₹3,83,493. There was no stock from January-19 to January-31, resulting lost sales during peak time.
- **Ensure Adequate Stock:** Maintain sufficient stock of Urea, especially during peak seasons like January and February. This will prevent stockout and lost sales.
- **Advance Planning:** Identify high demand periods and order Urea will in advance to avoid shortages. Collaborate with IFFCO to ensure timely restocking.
- **Prioritize Regular Customers:** Sell Urea first to regular customers to build loyalty and make sure they always have the fertilizer when they need it.
- **Leverage Subsidies:** Highlight the government subsidy on Urea to attract more farmers and increase the sales.
- **Promote Eco-Friendly Fertilizers:** Ensure farmers to use Neem Coated Urea and Nano Urea, which are more eco-friendly than normal plain Urea. Explain their benefits such as better Nitrogen efficiency and reduced environment impact. Keep in close contact with IFFCO to quickly address any inventory shortage and ensure a steady supply of Urea.
- **Keep prioritizing high-sales and high-revenue fertilizers:** Maintain stock and focus more on top-performing categories like complex fertilizer, pesticides, urea, and Sagarika

Granular. These categories contribute significantly to sales and revenue. Categories with the highest average prices, such as Complex, Natural-K, Sagarika Granular, and Pesticides, should be highlighted and focused for getting high Revenue.

- **Ensure adequate stock of the top 10 fertilizers:** NEEM UREA IMPORTED, DAP PRADEEP, NPKS 20:20:00:13, SAGARIKA BAG, SAGARIKA 500 ML, NATURAL-K, WSF SOP, CALCIUM NITRATE IMP, and SHINZEN 5000. These fertilizers are crucial for the shop due to their high sales volume. Besides the revenue they generate, it's important to always have these high-sales and commonly used fertilizers in stock. This ensures customers can find all they need in one place, preventing them from going to other shops.
- **Use Sales Data for Future Planning:** Use weekly sales data to identify trends and plan inventory levels accordingly. Implement strategies to mitigate shortages and maximize sales opportunities based on historical sales performance.
- **Early January Stock Readiness**: Ensure high inventory levels of Urea, Complex fertilizers, and DAP bags at the start of January. Farmers prepare their land during this period, driving high sales for these products.
- **Optimize Inventory Management for Low Sales Weeks**: Weeks 10, 11, and 12 of February in Kharif season show the least sales as farmers prepare for harvesting and reduce fertilizer usage. Adjust inventory levels accordingly to avoid overstocking during this period.
- **Fertilizers with no Sales over three months:** Check if the unsold fertilizers are suitable for the crops commonly grown in the area where the shop was located. If these fertilizers are not for locally grown crops, think about reducing or stopping their stock. If the fertilizers are newly released products by IFFCO, increase efforts to educate farmers on their benefits and usage. Conduct workshops or informational sessions to introduce these products to farmers. Ensure that unsold fertilizers are stored in optimal conditions to prevent damage. Regularly check for signs of deterioration due to environmental factors. Regularly monitor the expiry dates of all fertilizers. Implement a first-in, first-out (FIFO) system to ensure older stock is sold before newer stock, reducing the risk of selling expired products.

Innovative Strategies to Educate Farmers on Newly Released IFFCO Fertilizers:

Personalized Assistance and Demonstrations:

- **Find the Field for testing:** The shop owner try to find the knowledgeable farmer in the community who understand the new fertilizer well. The shop owner should visit this farmers field to show how to use the fertilizer properly and explain necessary precautions because fertilizers are more harmful for human beings.
- **Monitor the Progress:** Regularly check the field to see how the crops are growing by applying new fertilizer. Take photos and notes to document the progress.
- **Group Demonstrations:** Arrange meetings where other farmers can come and see the results for themselves and listen to the experienced farmer’s feedback about the fertilizer.
- **Farmer Testimonials:** Record video testimonials from the experienced farmers and other satisfied customers by using new fertilizers to share in meetings, social media and in the shop.

Remote Assistance and Recommendations:

- **Photo-Based Consultations:** Encourage farmers to send pictures of their crops via messaging Apps. The shop owner can them provide suitable fertilizer for their problems.
- **Virtual Support:** Set up a helpline or WhatsApp group where farmers can ask questions and get instant support. Share videos and content through these Apps to the shop customers.
- **Instructional Materials:** Create easy to understand visual guides and leaflets that explain how to use fertilizer and expected benefits.
- **Product Demos:** Offer in-store demonstrations using computer systems or projectors where customers can see the new fertilizers in action. Provide sample for them to test.
- **TV Advertisements:** By Advertisements about the new fertilizers can be more useful for the farmers and Popularity of the new fertilizers will increase.

To ensure effective information about new fertilizers, it is crucial that the shop owner or IFFCO employee first attends all demonstrations and meetings regarding the newly released products conducted by IFFCO company. By gaining a thorough understanding of the fertilizers, they can accurately and confidently inform farmers about the benefits, usage, and precautions.

These recommendations are based on data-driven insights and are designed to improve sales volume, increase revenue, enhance customer satisfaction, and optimize fertilizer performance and inventory management. Implementing these strategies will enable better decision-making, ensuring that the right products are available at the right times and that customers are well-informed about their benefits and usage. This approach not only boosts operational efficiency but also strengthens customer trust and loyalty, ultimately driving business growth and success.

The Excel file link where I have done all the analysis, computed charts, and collected data:
[https://1drv.ms/x/c/dde39ec3046c7e63/EafazIacpnBLiFJhY5KVmPABmxHYS-BJWLN3_96kawLPbw?e=e7pfUx]