CAPSTONE PROJECT PROPOSAL FOR BUSINESS DATA MANAGEMENT

A CASE STUDY

OF

BISHNUPUR ROWTARA

PRIMARY AGRICULTURAL CO-OPERATIVE SOCIETY LIMITED

FERTILISER OUTLET TO ASSIST IN

OPTIMISING OUTLET LOCATION FOR EFFICIENT CUSTOMER DELIVERY

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1. Executive Summary :

Bishnupur Rowtara Primary Agricultural Cooperative Society (BRPACS) is facing a dip in the number of customers due to the springing up of the private fertiliser shops. The private fertiliser shops are close to the farming fields or occupational area. The farmers are drawn towards those agencies to reduce the transportation costs. Due to COVID and inflation when farmers do not have cash at hand, they resort to the private shops which sell the fertilisers at an inflated rate but offer the customers to pay later. This is impacting the sale of BRPACS and therefore they want to ensure that they can keep a good relationship with their customers by providing them with the fertilisers.

This problem could be easily solved by having operational outlets in the high volume sale areas but there is another constraint. Being a co-operative society, BRPACS has to maximise the numbers of farmers they serve with the limited human resources available to them in the fertiliser department.

To solve this, the sales data has been collected and analysed from BRPACS. The data includes information about products, sales volumes, customer demographics, and locations. Analysing this data, has helped uncover valuable insights that can help BRPACS optimise its operations and be more successful.

The specific focus is to identify areas where new outlets can be strategically located to improve delivery services using techniques like data visualisation and statistical analysis.

These findings will help BRPACS enhance its delivery services and better serve its customers. Overall, the mid-term report aims to use excel to make informed decisions based on the volume and seasonality of demand of the customers.

2. **Proof of originality of the Data**

a. **Photograph of the Organisation -** Photograph of the Fertiliser Outlet at the Head Office, it opens at 06:00 am and closes at 12:00 noon. These photographs are taken at 08:30 am in the morning.

b. **Letter from the Organisation -** Authorisation letter to collect the Data from Fertiliser Unit as received on 10th April, 2023 from Executive Officer.

a. **Photograph of the Fertiliser Department Employee -** This is a photograph with the Fertiliser Department Employee. It is followed by an excerpt of the conversation with the same person.

b. **Link to the Conversational Video -** [BDM Capstone Conversation Excerpt](#)

3. **Metadata and Descriptive Statistics**

- **Data Collection -** When there are more farmers coming to buy fertilisers, the data is written in a page as a rough entry due to paucity of time. It is followed by entering the data into Cash Memos after 12:00 noon when the fertiliser department closes. For this project the data was collected from the Cash Memo.

- **Contents of Original Data** - The original data contents the following details :
    1. Items
    2. Quantity
    3. MRP
    4. Rate
    5. Tax
    6. Amount

Sometimes the data also contains Batch No. , Expiry Date and Manufactured Date for certain products which are sold in small containers.

- **Data collected for Project -** The following data was collected for the project from the Cash Memo.

  1. Serial Number
  2. Invoice Number
  3. Date
  4. Name of Customer
  5. Invoice Amount
  6. Address

1	949	03-01-2023	Karim Mondal	₹1,090.00	Bishnupur
2	950	03-01-2023	Pori Mondol	₹18,546.00	Monipota
3	951	03-01-2023	Suprava Biswas	₹139.00	Bishnupur
4	952	03-01-2023	Manta Khatun	₹860.00	Simultala
5	953	03-01-2023	Manu Mallick	₹530.00	Simultala
6	954	03-01-2023	Manik Biswas	₹1,435.00	Monipota
7	955	05-01-2023	Subho Dey	₹950.00	Shyampur
8	956	05-01-2023	Ghorui	₹350.00	Shyampur
9	957	05-01-2023	Supratim Mondol	₹650.00	Gangabas
10	958	05-01-2023	Rup Mollick	₹510.00	Sebagram
11	959	05-01-2023	Rup Khatun	₹10,210.00	Shyampur
12	960	05-01-2023	Rupali Bhowmik	₹3,127.00	Monipota

- **Data relevant for Analysis** - The objective of the project is to classify the areas or zones in terms of Volume and Number of Customers. Therefore the data collected for this project contains the following :

  1. Date
  2. Customer Name if available else denoted by "Cash Sale"
  3. Invoice Amount
  4. Address
  5. Volume of Sales

After cleaning the data it is maintained for analysis in this format.

SL. No.	DATE	CUSTOMER	INVOICE AMT	ADDRESS	VOL of SALES (in kg)
1	03-05-2023	GURU DEY	₹5,880.00	Jahangirpur	200.00
2	03-05-2023	FITTAJ ALI SEKH	₹13,894.00	Churnipota	867.00
3	03-05-2023	RASHID SEKH	₹20,883.00	Nijampur	1070.00
4	03-05-2023	JIYARUL SEKH	₹6,735.00	Monipota	458.50
5	03-05-2023	KALAM MONDAL	₹2,655.00	Gournagar	450.00
6	08-05-2023	GURU DEY	₹700.00	Shyampur	2.00
7	08-05-2023	BRAHMANAGAR S.K.U.S LTD	₹10,500.00	Simultala	25.00
8	08-05-2023	ABUBAKKAR BISWAS	₹11,826.00	Bishnupur	801.00
9	08-05-2023	SUJIT MAHAJAN	₹3,120.00	Bishnupur	7.50
10	12-05-2023	SUBHASH GHOSH	₹7,406.00	Bamanpur	466.00
11	12-05-2023	SUBHASH GHOSH	₹1,580.00	Monipota	8.00

4. **Explanation of Analysis Method**

   a. **Zonal Division -** The area of operation of BRPACS is divided into 4 zones for the ease of analysis and classification. Taking a note of the addresses of the farmers, it was seen that they come from different villages in a radius of 3 - 5 kms from BRPACS. Therefore the addresses were identified with 16 localities from which farmers come to buy the fertilisers. These localities were further clustered into 4 zones based on their locations. Zone 1 consists of the Northern localities, while Zone 2 consists of the Eastern localities; Zone 3 consists of the localities in the Southern side and Zone 4 consists of the Western localities.

ZONE 1	Shyampur	Gangabas	Subarnabehar	Amghata
ZONE 2	Churnipota	Jahangirpur	Simultala	Sebagram
ZONE 3	Bishnupur	Monipota	Raotara	Kundapara
ZONE 4	Nijampur	Bamanpur	Bhramhanagar	Gournagar

   b. **Monthly Sales Analysis -** The sales were recorded from January to May from all the locations. Bar charts indicating the number of customers in this 5 month

duration in different locations are shown. This helped us understand the seasonality of demand in different locations on a monthly basis.

5. Results and Findings

a. **Location-Wise Sales Contribution -** This chart studies the location wise customer footfall all throughout the months of January to May. Independent of the volume of sales, the number of customers in a span of five months from Jan to May show a pattern. The highest number of customers were from Monipota, Churnipota, Shyampur, Gangabas whereas Amghata, Raotara and Bhramanagar have the lowest count of customers. Calculating the outcome as to whether to set up an outlet or not is quite difficult from this data alone because it ranges from a lowest count of 8 to highest count of 31. Therefore we need to take an informed decision keeping in mind the volume of sales in the respective location or the zone.
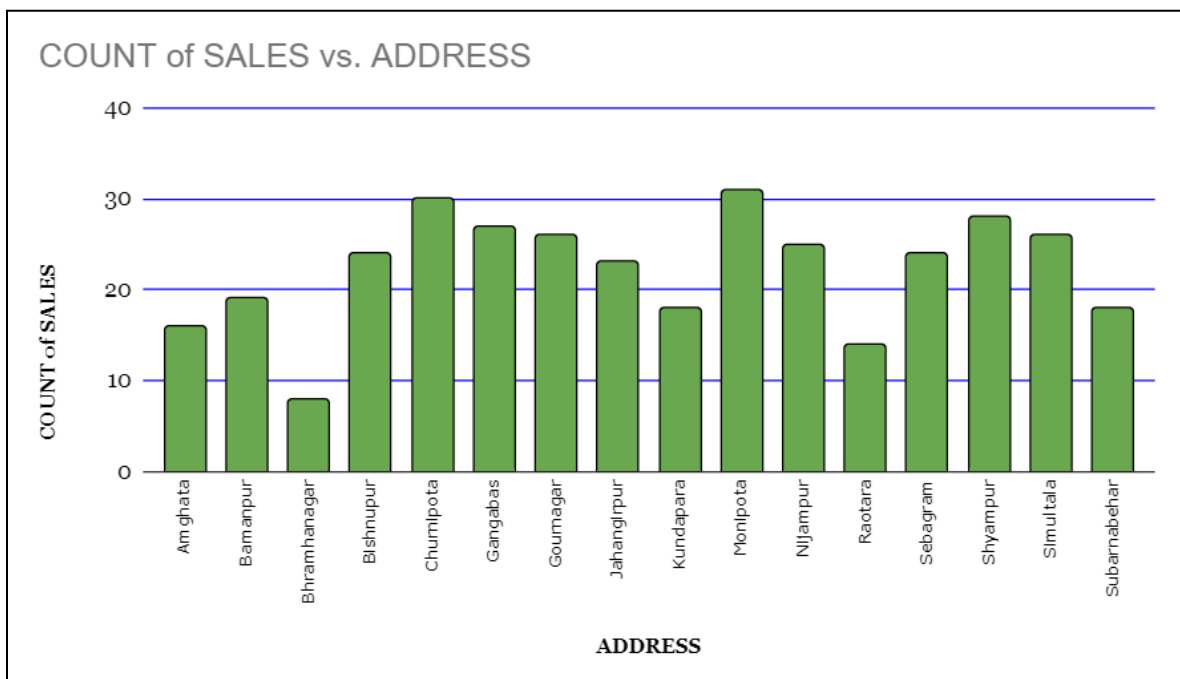

b. **Monthly Sales Contribution -** Here are the graphs on the volume of sales in every location in the respective months. It is seen that some of the locations have been consistent in demand throughout the months whereas some locations have

inconsistent demands. The locations with a consistent demand throughout the five months are the places where BRPACS can plan to have a permanent outlet and a one-day delivery system in the other places.

In the month of April, there is very little demand for fertilisers all throughout the locations with minor exceptions. With this seasonality of demand it is not pragmatic to open a fully functional outlet in any of the four zones as the cost-benefit ratio is not maintained throughout the year. It is mainly based on cropping patterns that the farmers follow. The monthly average sales volume in a location ranges from 7000 kgs to 550 kgs approx. Locations such as Shyampur(Zone 1), Bamanpur(Zone 4), Bhramanagar(Zone 4) have shown the least volume of sales whereas Subarnabehar(Zone 1) is the largest contributor to the volume of sales which acts as a balancing factor in the average demand of Zone 1. In the next phase of analysis, the final recommendations will come after striking the right balance between volume of sales and seasonality of demand.
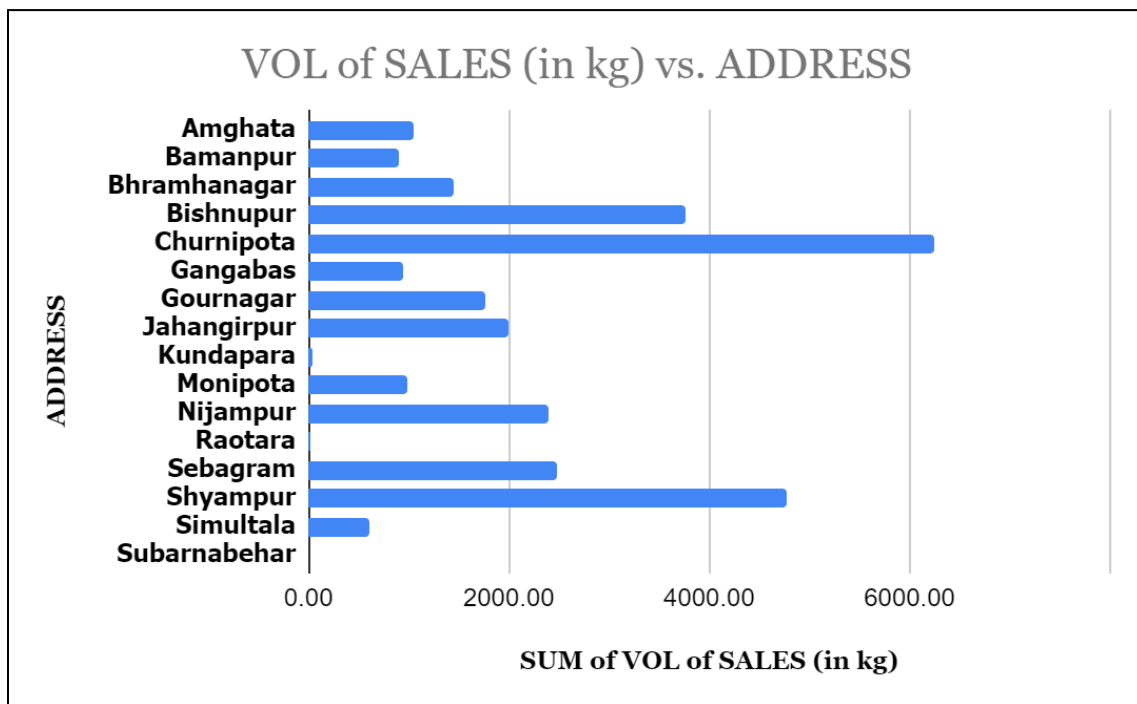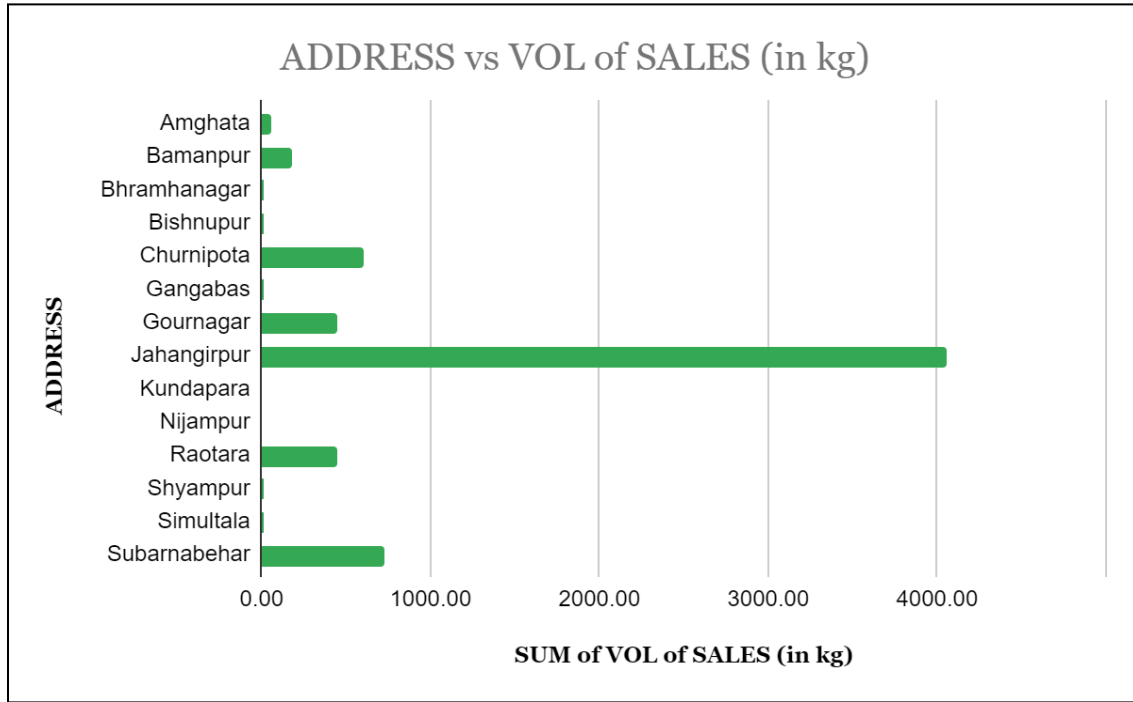
  i. Location wise sale for January
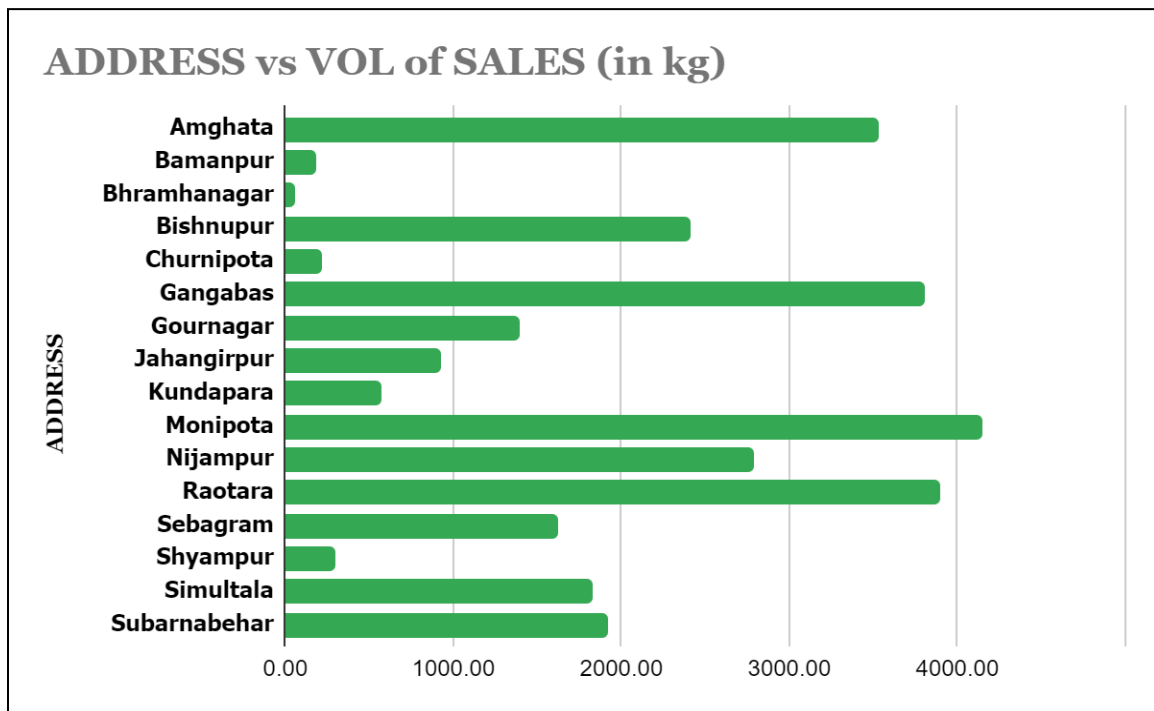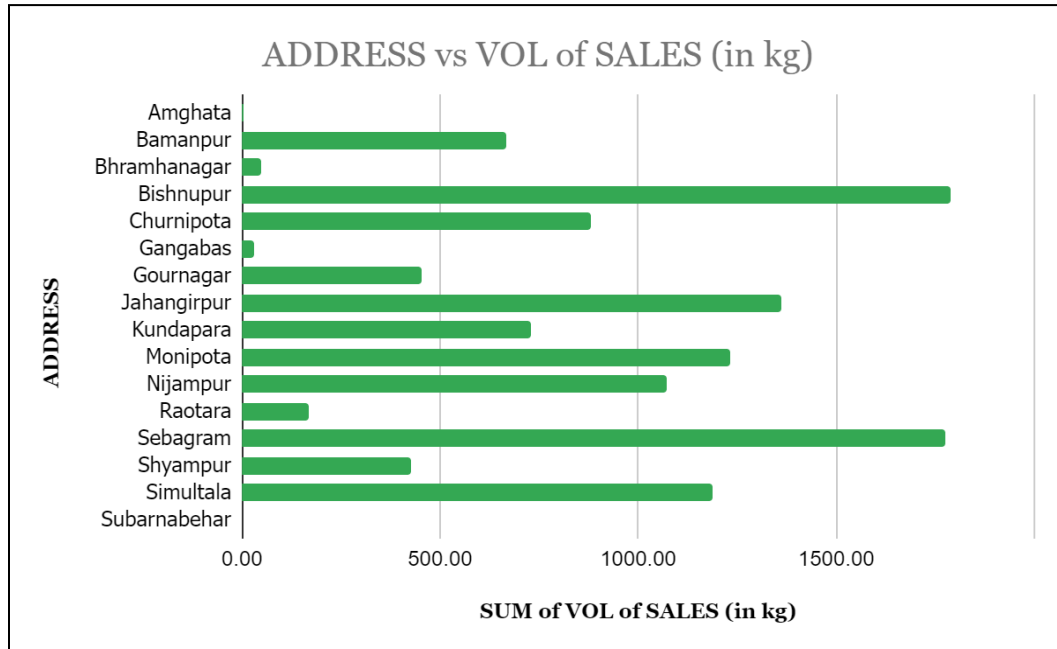
ii.   Location wise sale for February
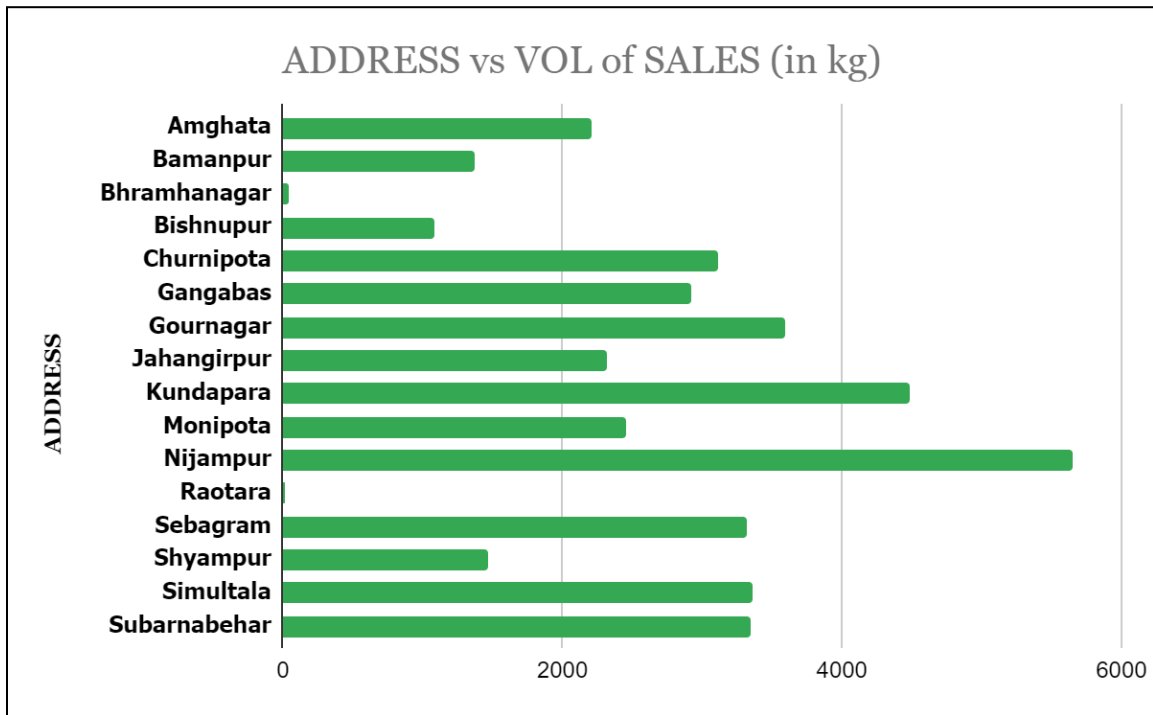
iii.   Location wise sale for March

iv.   Location wise sale for April

v.   Location wise sale for May

6. **Conclusion -** To find the best possible solution there is the need to find a common intersection ground among three factors that are dominating the problem statement. The three factors are :

   a. Seasonality of Demand

   b. Volume of Sales

   c. Number of Customers

According to the cropping patterns and farming techniques in this area, after every three months there is a dip in the demand of the fertilisers as it is harvest season. Therefore any outlet which is fully functional will still remain almost non-functional three of the twelve months of a year. The best way to reap the full benefits is to have seasonal outlets according to the demand of the customers. In the last phase of the analysis, i.e. the final report we will have to identify the common ground and devise a solution to this issue.