Capstone Project

Final Submission:

Strategic Solution for Dish Washing (Scrubber) Business problem

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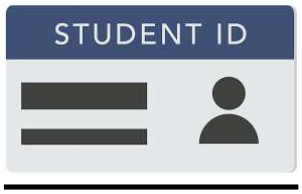

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Executive Summary & Title

Introduction

This business data management capstone project focuses on SLR Scrubber Sales Company, a successful wholesale shop specializing in the distribution of scrubber products in the Jaipur District of Rajasthan, India. The company, founded three years ago, operates on a B2B model and has established a strong presence in the market due to its efficient business model.

The company specializes in selling scrubber products to shop owners, operating under a B2B business model. With nearly three years of successful operation, SLR has established itself as a reputable supplier of various types of scrubbers, including Steel Scrubber, Plastic Scrubber, Foam Scrubber, Steel Foam Scrubber, and Green Scrubber pads. Among of them their main product is Steel Scrubber and rest of them are just to provide varieties in Scrubbers.

Mr. Suraj Mal, the owner of SLR Scrubber Sales Company, personally visits various villages and towns to sell scrubber packets to shop owners. While this approach has been successful, the business faces challenges in delivering products to numerous villages and determining the optimal quantity of Steel Scrubber product to carry.

Problem Identification and Clarification

The first step in addressing the challenges is to clearly identify and understand the issues at hand. SLR Scrubber Sales Company faces two primary problems:

a) **Delivery Challenges**: The company operates across a diverse array of villages, towns, and cities, presenting logistical challenges in delivering products to each location efficiently.

b) **Product Quantity Planning**: One of the key challenges faced by SLR Scrubber Sales Company is the difficulty in determining the appropriate quantity of Steel scrubber product to carry during sales visits. This challenge stems from the need to satisfy all customers with an optimal quantity of products, ensuring that neither excess inventory nor stockouts occur.

Goals Definition

The next step involves defining the goals to be achieved through this project. The goals are as follows:

a) To address the challenge of efficiently delivering products to a vast number of villages while focusing on generating maximum revenue and profit, SLR Scrubber Sales Company will develop an optimized strategy that prioritizes specific villages with high revenue and profit potential. This strategy will ensure effective delivery to these targeted villages, leading to improved customer reach and increased business performance.

b) Implement a data-driven approach to determine the ideal quantity of each product to carry during sales visits. The primary goal of product quantity planning is to achieve optimal inventory management. This involves ensuring that the company carries an appropriate quantity of each scrubber product during sales visits, minimizing stockouts while avoiding excess inventory holding costs. The aim is to strike a balance between meeting customer demand and optimizing inventory levels.

Execution of the Plan

The resolution plan will be executed through the following steps:

a) Utilize data analysis tools like MS Excel, Python, and SQL to process and analyse collected datasets.

b) Find out the Goal of Identifying Profitable Target Villages for Efficient Product Delivery.

c) Develop inventory management systems and models using statistical and mathematical techniques.

Results and Outputs

The project has successfully identified the villages that offer the maximum revenue and profit potential for SLR Scrubber Sales Company. The results and findings have been presented both verbally and graphically, providing a comprehensive understanding of the data. Additionally, inventory management has been addressed, focusing on optimizing the number of products the owner can carry using statistical techniques such as 25% percentile,mean,etc.. Furthermore, the project offers general suggestions to enhance overall business performance.

Detailed Explanation of Analysis Process/Method

To ensure a thorough and efficient analysis process, it is essential to break it down into well-defined steps that keep the analysis on track and yield effective outcomes for the organization. The following steps outline a professional approach to conducting a successful analysis:

Step 1: Identify the Problem

Step 2: Clarify the Problem

Step 3: Define the Goals

Step 4: Identify the Root Cause of the Problem and Develop the resolution plan

Step 5: Execute steps in analysis

Step 1: Identify the Problem

The first step is to recognize the problems faced by SLR Scrubber Sales Company, which include delivery challenges and product quantity planning difficulties. The beginning and severity of the problems are assessed, and data is collected to resolve and prevent their recurrence.

Step 2: Clarify the Problem

SLR Scrubber Sales Company is currently grappling with two main issues:

Delivery Challenges: As a business operating across various villages, towns, and cities, SLR Scrubber Sales Company faces hurdles in effectively delivering products to each location. The diverse geographical landscape and scattered customer base present logistical challenges that need to be addressed to ensure efficient and timely deliveries.

Product Quantity Planning of main Product: SLR Scrubber Sales Company struggles with determining the right quantity of scrubber products to carry during sales visits. It is essential to strike a balance between meeting customer demands and avoiding issues like excess inventory or stockouts. Finding the optimal quantity for Steel Scrubber (main product) is crucial to ensure customer satisfaction while managing inventory effectively.

Step 3: Define the Goals

a) The goals of SLR Scrubber Sales Company revolve around maximizing profit and revenue while maintaining a strong reputation through efficient and timely product delivery. By focusing on these objectives, the company aims to achieve sustainable growth and establish itself as a leader in the market.

b) Another key goal for SLR Scrubber Sales Company is to optimize the quantity of Steel Scrubbers carried by the owner during visits to villages. This objective is aimed at ensuring that the company effectively meets customer demand without the risk of losing customers due to stockouts or carrying excess inventory. By achieving this goal, SLR Scrubber Sales Company can enhance customer satisfaction, improve operational efficiency, and maintain a competitive advantage.

Step 4: Identify the Root Cause of the Problem and Develop the resolution plan

a) The root cause of the problem faced by SLR Scrubber Sales Company is identified as the extensive number of locations where products are sold. To address this challenge, the resolution plan entails removing focus from the places that yield minimal profit or generate significantly low revenue. Instead, the focus will be directed towards the specific locations that offer high profit and revenue potential. By implementing this resolution plan, SLR Scrubber Sales Company aims to optimize its operations and enhance the efficiency of product delivery.

   In a professional approach, the resolution plan involves conducting a thorough assessment of the profitability and revenue generated from various locations. By carefully analysing sales data, financial records, and market trends, SLR Scrubber Sales Company can identify the specific places that contribute minimally to its profitability and revenue targets. These locations can be prioritized for removal focus or revaluation in terms of their sales potential.

   By streamlining the distribution network and concentrating efforts on the places with high-profit potential, SLR Scrubber Sales Company can allocate its resources more effectively. This strategic focus will enable the company's owner to deliver products more efficiently, as they can direct their attention, time, and resources towards the locations that yield substantial profits and revenue.

This approach ensures that SLR Scrubber Sales Company optimizes its operational efficiency, reduces logistical complexities, and maintains a strong financial performance. By strategically removing less profitable locations and emphasizing those that provide higher profit and revenue, the company can enhance its overall business performance and achieve its goals of maximizing profitability and revenue while delivering products efficiently.

b) It is observed that one of the root causes of the problem faced by SLR Scrubber Sales Company is the variation in customer demand across different regions. To address this challenge, the resolution plan involves utilizing the average sales of steel scrubbers as a baseline for determining the quantity to be carried during sales visits.

Root Cause:

The root cause of the problem is the lack of precise information on customer demand and sales patterns, leading to challenges in determining the right quantity of scrubber products to carry during sales visits.

Resolution Plan:

Data Collection: Collect more comprehensive and accurate data on customer demand and sales patterns. This can be done by implementing a robust sales tracking system that captures real-time sales data, including quantity sold, geographical location, and time period.

Data Analysis: Analyse the collected sales data to identify trends, patterns, and seasonality in customer demand. Use statistical techniques such as time series analysis, regression analysis, and clustering to uncover hidden insights and correlations that can inform quantity planning decisions.

In a professional approach, the resolution plan takes into account the average daily sales of steel scrubbers as a representative measure of customer demand. This provides a benchmark for estimating the optimal quantity to carry during visits to different regions.

By employing this data-driven approach, SLR Scrubber Sales Company can optimize its inventory management and align its product quantity planning with regional demand variations. This enables the company to strike a balance between avoiding stockouts and minimizing excess inventory, thereby improving overall operational efficiency and customer satisfaction.

Step 5: Execute steps in analysis

To gain a deeper understanding of the data and its structure, it is essential to examine its format and characteristics. By assessing the given data, SLR Scrubber Sales Company can obtain a comprehensive overview of the information and its potential implications for the analysis. The data provided for analysis likely includes key variables such as sales figures, places and product types. These variables allow SLR Scrubber Sales Company to explore various aspects of its business operations, including sales performance across different regions and the demand for specific product categories.

```
data = pd.read_csv('/content/Project--.csv')
```

```
a = data.head()
a.transpose()
```

	0	1	2	3	4
Date	03-02-2022	04-02-2022	05-02-2022	07-02-2022	09-02-2022
Steel Scrubber	51	51	51	51	51
Plastic Scrubber	5.0	1.0	5.0	5.0	5.0
Foam Scrubber	5	6	4	2	4
Steel Foam Scrubber	5.0	3.0	4.0	3.0	5.0
Green Scrubber pads	4.0	5.0	2.0	0.0	5.0
Total Revenue	5139	4135	4355	4220	4832
Fuel Expenditure	324	232	232	265	281
Net Profit	1400	1250	1250	1400	1500
Places	Daulatpura+Kukas	Kaladera+Chomu	Loharwada+Chomu	Chomu	Harota+Samod

Image-1

- Two places are separated by “+” sign

Data Attributes:

Date: The specific date on which scrubber packets were sold.

Steel Scrubber: The number of packets sold from the steel scrubber category.

Plastic Scrubber: The number of packets sold from the plastic scrubber category.

Foam Scrubber: The number of packets sold from the foam scrubber category.

Steel Foam Scrubber: The number of packets sold from the steel foam scrubber category.

Total Revenue: The overall revenue generated on the given day.

Fuel Expenditure: The expenditure incurred on fuel for the corresponding day.

Net Profit: The net profit obtained on the particular day.

To enhance the analysis, a new attribute called "T_place" has been added to each entry in the dataset. This attribute is calculated by counting the number of "+" signs in the "Places" field and adding 1. The "number of places" attribute provides valuable information on the total number of places covered in a day. This addition strengthens the dataset and enables a more comprehensive analysis of SLR Scrubber Sales Company's operations and distribution reach.

To enrich the analysis, additional attributes have been created, including "In_Sales" (Individual Sales), "In_Revenue" (Individual Revenue), and "In_Profit" (Individual Profit) of one place for each entry in the dataset. These attributes provide insights into the sales, revenue, and profit generated by each place covered in a day.

The "In_Profit" attribute is calculated by dividing the net profit of a day by the "T_places" attribute. This calculation assumes that the profit is uniformly distributed among the places visited, allowing for the determination of the individual profit of each place covered in a day. *See the below Image-2*

Steel Scrubber	Total Revenue	Net Profit	Places	T_place	In_Revenue	In_Profit	In_Steel
51	5139	1400	Daulatpura+Kukas	2	2569.5	700	25.5
51	4135	1250	Kaladera+Chomu	2	2067.5	625	25.5
51	4355	1250	Loharwada+Chomu	2	2177.5	625	25.5
51	4220	1400	Chomu	1	4220	1400	51
51	4832	1500	Harota+Samod	2	2416	750	25.5
51	4460	1300	Gudliya+Singod+Khejroli	3	1486.666667	433.3333	17
51	4715	1350	Manoharpur +Shahpura	2	2357.5	675	25.5
51	4420	1300	Ajithgarh	1	4420	1300	51
24	2840	900	Reengus+Renwal	2	1420	450	12
51	4783	1450	Jalpali Mod	1	4783	1450	51
26	2620	850	Parasrampura RICCO	1	2620	850	26
51	4210	1300	Reengus	1	4210	1300	51
51	4460	1250	Reengus+Mahroli+Shri Madho	3	1486.666667	416.6667	17
51	4178	1300	Shri Madhopur	1	4178	1300	51
51	4545	1500	Choti Chomu+Palsana	2	2272.5	750	25.5
51	4505	1200	Ranoli	1	4505	1200	51

Image-2

The "Places" column has been split into multiple columns based on the "+" sign. Each new column has been given a specific name such as "Place1," "Place2," "Place3," and so on. This restructuring enables a more organized representation of the individual places visited, facilitating further analysis and insights into SLR Scrubber Sales Company's sales and distribution activities. *See the below Image-3*

M	N	O	P
T_place	Places1	Place2	Place3
2	Daulatpura	Kukas	
2	Kaladera	Chomu	
2	Loharwada	Chomu	
1	Chomu		
2	Harota	Samod	
3	Gudliya	Singod	Khejroli
2	Manoharpur	Shahpura	
1	Ajithgarh		
2	Reengus	Renwal	
1	Jalpali Mod		
1	Parasrampura RICCO		
1	Reengus		
3	Reengus	Mahroli	Shri Madhopur
1	Shri Madhopur		
2	Choti Chomu	Palsana	
1	Ranoli		
1	Khatushyamji		
2	Khatushyamji	Lapuwa	

Image-3

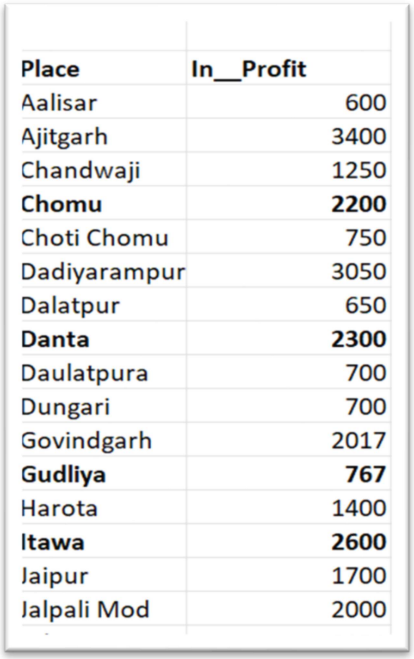
Three pivot tables have been created using the columns "Place1," "Place2," and "Place3," with the "In_Profit" attribute as the value to analyze. The pivot tables are organized by placing the places in the row labels, and the values displayed in the pivot tables represent the sum of the individual profits (In_Profit) for each respective place. *See the below Image-4*

A	B	C	D	E	F	G	H
places1			place2			Place3	
Row Labels	**Sum of In_Profit**		**Row Labels**	**Sum of In_Profit**		**Row Labels**	**Sum of In_Profit**
Aalisar	600		Ajitgarh	550		Chomu	466.6666667
Ajithgarh	3400		Badhal	525		Khejroli	766.6666667
Chandwaji	1250		Chomu	2775		Shri Madhopur	416.6666667
Chomu	2200		Danta	1350		**Grand Total**	**1650**
Choti Chomu	750		Gudlia	450			
Dadiyarampura	3050		Harsoli	650			
Dalatpur	650		Itawa	333.3333333			
Danta	2300		Jobner	550			
Daulatpura	700		Kaladera	1766.666667			
Dungari	700		Khendala	1050			
Govindgarh	2016.666667		Kukas	700			
Gudliya	766.6666667		Lapuwa	850			
Harota	1400		Mahroli	416.6666667			
Itawa	2600		Malikpur	500			
Jaipur	1700		Pachar	1125			
Jalpali Mod	2000		Palsana	750			
Jobner	2850		Phulera	850			

Image-4

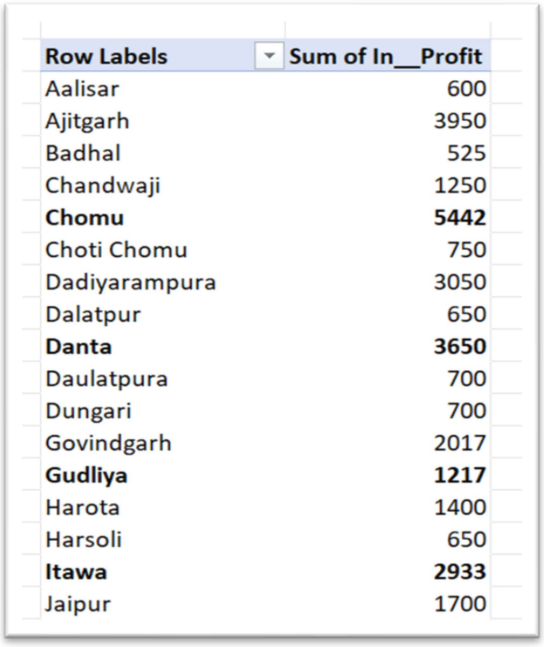
By creating two columns named "Place" and "In_Profit," and copying the values from "Place1," "Place2," and "Place3" into the "Place" column and their corresponding sum of "In_Profit" values into the "In_Profit" column, a new dataset is formed (*See Below Image-5*). This dataset allows for the creation of a pivot table to analyse profit region-wise over the 3.5 months of data.

Using the newly created "Place" and "In_Profit" columns, a pivot table is generated, with the "Profit" as the row label and the sum of "In_Profit" as the values *(See below Image-6).* This pivot table provides a concise and organized representation of the profit distribution across different regions over the 3.5 months period. It enables SLR Scrubber Sales Company to gain valuable insights into regional profitability trends, aiding in strategic decision-making and resource allocation.



Place	In__Profit
Aalisar	600
Ajitgarh	3400
Chandwaji	1250
Chomu	**2200**
Choti Chomu	750
Dadiyarampur	3050
Dalatpur	650
Danta	**2300**
Daulatpura	700
Dungari	700
Govindgarh	2017
Gudliya	**767**
Harota	1400
Itawa	**2600**
Jaipur	1700
Jalpali Mod	2000

Image-5



Row Labels	Sum of In__Profit
Aalisar	600
Ajitgarh	3950
Badhal	525
Chandwaji	1250
Chomu	**5442**
Choti Chomu	750
Dadiyarampura	3050
Dalatpur	650
Danta	**3650**
Daulatpura	700
Dungari	700
Govindgarh	2017
Gudliya	**1217**
Harota	1400
Harsoli	650
Itawa	**2933**
Jaipur	1700

Image-6

The differences are highlighted in bold for the respective places in Image-5 and Image-6.

The steps performed in Image-4, Image-5, and Image-6 are identical and have been repeated to calculate two additional attributes: "In_Revenue" and "In_Sales." These attributes provide insights into the revenue and sales of steel scrubbers region-wise over a 3.5-month period.

To gain further insights from the data, advanced analysis techniques were employed using the pandas library in Python. Functions such as "describe" and "correlation" were utilized to extract valuable information and identify statistical patterns and relationships within the dataset. Additionally, the pandas_profiling tool was employed to generate comprehensive reports and gain in-depth insights into the data, including summary statistics, data distributions, and correlation matrices.

Results and Findings

For Problem of Delivery Challenges:

By analysing the data I found that the correlation coefficient between Total Profit and Net Profit over the 3.5-month period is 0.825, indicating a strong positive correlation. This suggests that increasing Net Revenue is likely to result in an increase in Net Profit. I calculate it by using correlation function in pandas library in Python Programming Language (*See below Image-7*)

```
[7]  feature1 = data['Net Profit']
     feature2 = data['Total Revenue']

     correlation = feature1.corr(feature2)
     print("Correlation between Profit and Revenue:", correlation)

     Correlation between Profit and Revenue: 0.8256493281662042
```

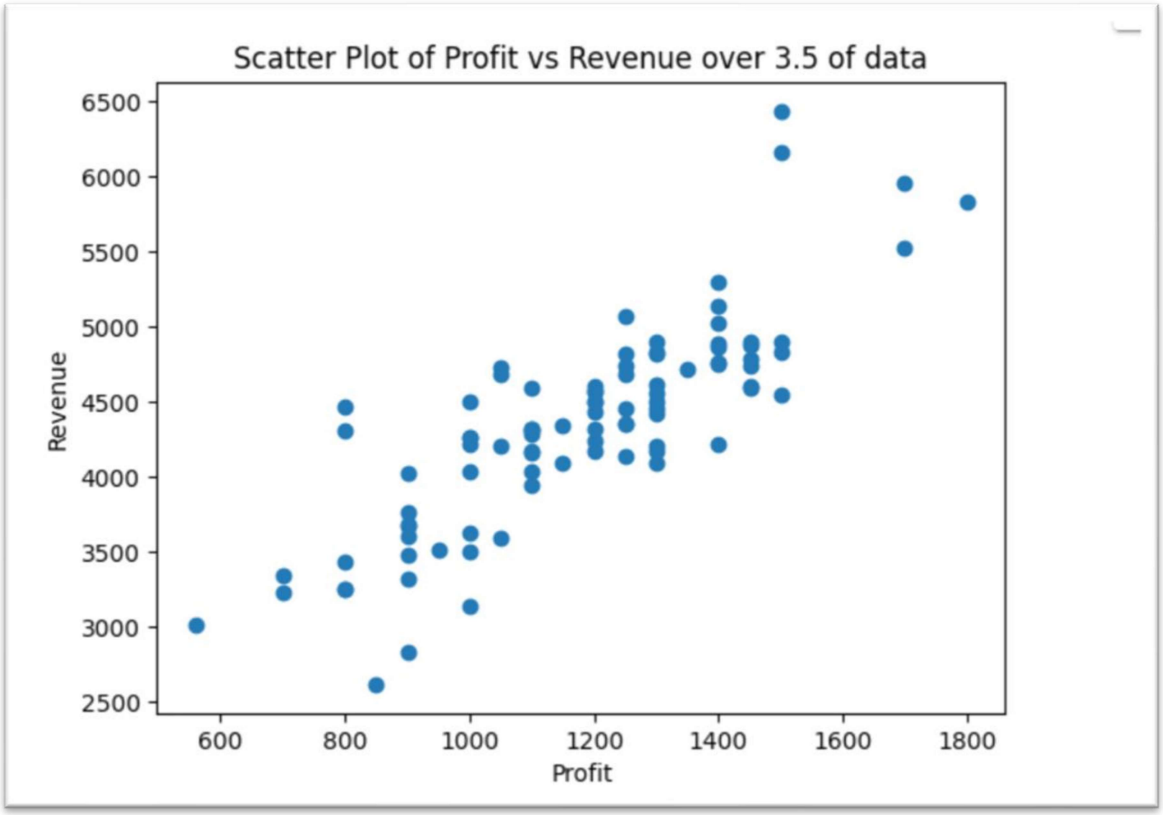
Image-7

To gain insights into the correlation between profit and revenue over a 3.5-month period, a scatter plot was generated. This plot visually depicts the relationship between profit and revenue, allowing SLR Scrubber Sales Company to observe any patterns or trends between these variables.

To generate the scatter plot between profit and revenue over a 3.5-month period, the matplotlib library in Python (*See below Image-8*) was utilized.

```
import matplotlib.pyplot as plt
plt.scatter(feature1, feature2)
plt.xlabel('Profit')
plt.ylabel('Revenue')
plt.title('Scatter Plot of Profit vs Revenue over 3.5 of data')
plt.show()
```

Image-8



Graph-1

In Graph-1, the x-axis represents profit, while the y-axis represents revenue. The correlation coefficient of 0.825 indicates a strong positive correlation between profit and revenue. This suggests that increasing profit is directly associated with an increase in revenue, and vice versa. The correlation coefficient value further strengthens the understanding that changes in profit and revenue tend to occur in tandem. This insight enables us to recognize the interconnectedness of these variables and make informed decisions to optimize both profit and revenue simultaneously.

To organize the data more effectively, three tables have been created, each consisting of 14 rows. The tables are arranged in decreasing order of profit, region-wise. These tables contain two main columns: "Place" and "Net Profit," providing a clear overview of the profitability of each region

Names for these tables are:

1. "Top 14 Profitable Regions" - This table showcases the 14 regions with the highest net profit.
2. "Mid-tier 14 Profitable Regions" - This table displays the 14 regions with moderate net profit.
3. "Bottom 14 Profitable Regions" - This table presents the 14 regions with the lowest net profit.

Top 14 Profitable Regions

S.No.	Places	Net Profit
1	Khatushyamji	₹12,850
2	Renwal	₹9,300
3	Reengus	₹7,047
4	Chomu	₹5,442
5	Pachar	₹4,575
6	Palsana	₹4,425
7	Shri Madhopur	₹4,297
8	Kaladera	₹4,292
9	Ajitgarh	₹3,950
10	Danta	₹3,650
11	Jobner	₹3,400
12	Phulera	₹3,250
13	Ranoli	₹3,225
14	Dadiyarampura	₹3,050

Mid-tier 14 Profitable Regions

S.No.	Places	Net Profit
1	Itawa	₹2,933
2	Samod	₹2,450
3	Khendala	₹2,100
4	Govindgarh	₹2,017
5	Jalpali Mod	₹2,000
6	Shahpura	₹1,725
7	Jaipur	₹1,700
8	Sargod	₹1,450
9	Mahroli	₹1,417
10	Harota	₹1,400
11	Malikpur	₹1,400
12	Manda	₹1,350
13	Kukas	₹1,275
14	Chandwaji	₹1,250

Bottom 14 Profitable Regions

S.No.	Places	Net Profit
1	Gudliya	₹1,217
2	Khejroli	₹1,217
3	Lapuwa	₹850
4	Parasrampura RICCO	₹850
5	Choti Chomu	₹750
6	Udaipuria Mod	₹750
7	Daulatpura	₹700
8	Dungari	₹700
9	Manoharpur	₹675
10	Dalatpur	₹650
11	Harsoli	₹650
12	Loharwada	₹625
13	Aalisar	₹600
14	Badhal	₹525

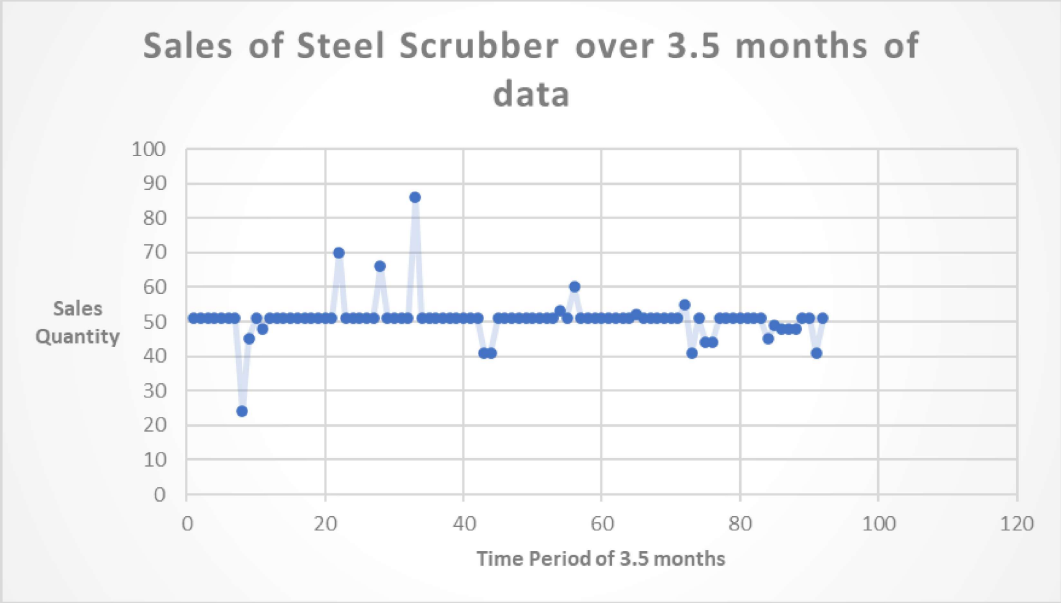
- The formula used to calculate the percentage is: (value/total value)×100%

  - The "Top 14 Profitable Regions" table represents regions that contribute significantly to the company's net profit. These top regions account for approximately 67% of the total net profit.
  - The "Mid-tier 14 Profitable Regions" table encompasses regions that contribute to a significant portion of the company's net profit. These mid-tier regions account for approximately 23% of the total net profit.
  - The "Bottom 14 Profitable Regions" table represents regions that contribute a smaller portion of the company's net profit. These bottom regions account for approximately 10% of the total net profit.
  - The cumulative net profit generated by the Top 14 Profitable Regions and Mid-tier 14 Profitable Regions accounts for approximately 90% of the total net profit. This analysis emphasizes the significance of these regions in driving the company's financial performance.

In summary, the strong correlation coefficient of 0.825 between profit and revenue suggests that focusing on profit aligns with a focus on revenue, indicating their interconnectedness. A scatter plot was generated to visualize this relationship. Using profit data calculated under the assumption of identical distribution for each place visited, three tables were created in decreasing order of profit, allowing SLR Scrubber Sales Company to identify regions for strategic focus and potentially streamline regions delivery. These insights aim to enhance operational efficiency and guide decision-making on resource allocation of deliveries in particular regions.

For Problem of Product Quantity Planning:

To gain a closer understanding of the Sales of Steel Scrubber over a 3.5-month period, we will use a scatter plot in Excel to visualize the data. This graphical representation allows us to visually examine the relationship between variables and identify any patterns, trends, or outliers in the data. By analysing the scatter plot, we can obtain a better feel for the distribution, dispersion, and potential correlations within the Sales of Steel Scrubber data, leading to valuable insights for decision-making and strategic planning.



Graph-2

Graph-2 represents the sales of steel scrubbers over a 3.5-month time period. The x-axis displays the quantity of sales of steel scrubber packets, divided into segments of 10 quantities. The y-axis represents the time period of 3.5 months, divided into segments of 20-day intervals. The graph showcases the sales trend throughout the observed time period.

Notably, the graph indicates a relatively stable pattern around the quantity of 51 steel scrubber packets over the entire 3.5-month period. This observation suggests a consistent level of demand for steel scrubbers during this time period. Analysing this static trend provides valuable insights into the sales dynamics and assists in understanding customer preferences and potential inventory management strategies.

To gain further insights and clarify the sales data of steel scrubbers over a 3.5-month period, descriptive statistical analysis is conducted. This analysis provides a comprehensive overview of the key statistical measures, such as measures of central tendency (mean, median) and measures of dispersion (standard deviation, range), shedding light on the distribution and variability of the sales data. By examining these descriptive statistics, we can better understand the average sales, the typical range of values, and the level of variation within the dataset. These insights contribute to informed decision-making, identifying trends, and formulating strategies to optimize sales performance for steel scrubbers.

```
[ ] b = data.describe()
    b.transpose()
```

	count	mean	std	min	25%	50%	75%	max
Steel Scrubber	92.0	49.728261	7.123870	24.0	51.00	51.0	51.00	86.0

Image-9

The descriptive statistics of the sales data for Steel Scrubbers over a 3.5-month period reveal insightful findings. The dataset consists of 92 entries, indicating the availability of sufficient data for analysis. The average sales quantity per day is 49.728, showcasing the overall level of sales during this period.

The dataset exhibits a symmetrical distribution, demonstrated by the 25th percentile, 50th percentile (median), and 75th percentile, all equating to a quantity of 51. This indicates a consistent sales trend around this value. The presence of outliers contributes to a standard deviation of 7.12, indicating some variability in the data. However, these outliers are potential and align with the observed minimum (24) and maximum (86) values.

The visual representation of the data through the graph reinforces these findings, with a relatively straight line observed at the quantity of 51. Furthermore, the 25th percentile, 50th percentile, and 75th percentile also align with this value. The mean value of 42.7, although slightly lower than the observed quantity, is still in close proximity, further supporting the overall insight derived from the dataset.

Considering these outcomes, it is reasonable to proceed with the identified sales quantity of 51 as it represents the central tendency of the data and aligns with various statistical measures, providing confidence in its relevance for decision-making and strategic planning.

Interpretation of Results and Recommendation

1. The correlation analysis reveals a strong positive relationship (correlation coefficient of 0.825) between profit and revenue. This indicates that focusing on increasing revenue is likely to result in higher profits, and vice versa. Therefore, strategies aimed at boosting revenue will have a positive impact on overall profitability.

2. The scatter plot between profit and revenue visually reinforces the strong correlation and highlights the interconnectedness of these variables. It provides a clear understanding that changes in profit and revenue tend to occur together. By monitoring and optimizing both profit and revenue, SLR Scrubber Sales Company can enhance its financial performance.

3. The analysis of profit region-wise over a 3.5-month period reveals distinct variations in profitability across different regions. By identifying the top 14 profitable regions, mid-tier 14 profitable regions, and bottom 14 profitable regions, SLR Scrubber Sales Company can focus its efforts and resources on the regions with the highest profit potential. This strategic approach will help maximize overall profitability and streamline delivery operations.

4. Descriptive statistical analysis of the sales data for Steel Scrubbers shows a symmetrical distribution, with a consistent sales trend observed around the quantity of 51 packets. This indicates a stable demand for Steel Scrubbers over the 3.5-month period. The presence of outliers suggests some variability, but they are within a reasonable range.

5. Based on the data analysis, it is recommended to maintain a sales quantity of around 51 packets of Steel Scrubbers during sales visits. This quantity aligns with the median and quartile values, indicating the average demand and providing a balance between meeting customer requirements and avoiding excess inventory.

6. The identified top 14 profitable regions account for approximately 67% of the total net profit, while the mid-tier 14 profitable regions contribute around 23%. These regions should be given priority in terms of resource allocation, marketing efforts, and delivery optimization. By focusing on these regions,

SLR Scrubber Sales Company can maximize its profitability and overall business performance.

7. The cumulative net profit of the top 14 profitable regions and mid-tier 14 profitable regions amounts to approximately 90% of the total net profit. This emphasizes the significance of these regions and highlights the potential for targeted strategies and efficient resource allocation, especially in delivery management systems.

8. To further enhance decision-making and resource allocation, ongoing monitoring and analysis of sales data, profitability trends, and customer preferences are recommended. This will enable SLR Scrubber Sales Company to adapt its strategies, identify emerging opportunities, and make data-driven decisions to optimize sales performance and maintain a competitive edge in the market.

9. Additionally, SLR Scrubber Sales Company should continue leveraging data analysis tools, such as pandas and matplotlib in Python, to gain insights and refine its understanding of the business data. Regular analysis, visualization, and interpretation of data will enable the company to make informed decisions and drive sustainable growth.

10. Additionally, SLR Scrubber Sales Company should actively promote and encourage shop owners to place pre-orders for Steel Scrubbers. This can be done by emphasizing the benefits of pre-ordering, such as ensuring product availability and avoiding potential stockouts. By encouraging pre-orders, SLR Scrubber Sales Company can gather valuable insights into customer demand, enabling them to carry an appropriate quantity of Steel Scrubbers during sales visits. Pre-orders will help streamline inventory management, reduce carrying costs, and enhance overall operational efficiency.

Presentation and legibility of the report

1. Use clear and concise language throughout the report, avoiding jargon or technical terms that may be difficult to understand for non-experts.

2. Use headings, subheadings, and bullet points to organize the content and make it easy to navigate.

3. Ensure proper formatting and spacing for readability. Use appropriate font sizes and styles, and leave sufficient white space between paragraphs and sections.

4. Include relevant visual aids such as tables, graphs, and charts to support the analysis and findings. Ensure that they are properly labelled and referenced within the text.

5. Use a consistent and professional writing style throughout the report. Proofread the content to eliminate any spelling or grammatical errors.

6. Include an executive summary at the beginning of the report, summarizing the main points and findings for easy reference.

7. Clearly define and explain any technical terms or concepts used in the report to ensure understanding by the readers.

8. Use a logical flow of information, starting with an introduction and problem identification, followed by the analysis process and findings, and concluding with recommendations.

9. Provide explanations and rationale for each step of the analysis process, making it easy for readers to follow the logic and understand the methodology used.

10. Summarize the key results and findings in a separate section, highlighting the most important insights and implications for the company.

11. Present the recommendations in a clear and actionable manner, specifying the steps or actions that SLR Scrubber Sales Company should take based on the analysis and findings.

12. Include a conclusion that summarizes the main points of the report and reinforces the recommendations.