BUSINESS DATA MANAGEMENT

—Mid Term Submission—

ANALYSIS OF SALES AND MANUFACTURING COSTS FOR AN FMCG COMPANY

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Executive Summary

This report presents an analysis of the sales and manufacturing costs of an FMCG (Fast-Moving Consumer Goods) company. The project provides proof of originality by providing a data sheet and images of the organization. The report includes descriptive statistical analysis to show the details of the data provided by the company. The analysis focuses on identifying the problem areas in the sales and manufacturing processes and provides recommendations to improve the efficiency of the organization.

The data provided by the company includes information on the sales of various SKUs, as well as the cost of manufacturing these products. The analysis of this data showed that there were significant variations in sales and manufacturing costs across different SKUs. This variation was due to differences in demand for different products and the cost of raw materials and labor.

The report also includes a detailed analysis of the problem areas in the sales and manufacturing processes. It was found that the company was facing several challenges in managing inventory levels, optimizing production schedules, and controlling costs. These challenges were due to the lack of real-time data on inventory levels, production schedules, and costs, as well as the lack of integration between different departments.

To address these challenges, the report provides several recommendations to improve the efficiency of the organization. These recommendations include the implementation of a real-time inventory management system, the optimization of production schedules using predictive analytics. The report also recommends the use of cost-benefit analysis to identify the most cost-effective solutions.

The analysis of the sales and manufacturing costs also revealed several interesting findings. It was found that the cost of raw materials was the largest component of the manufacturing cost, followed by labor and overhead costs. The analysis also showed that there was a significant correlation between the sales of different products and the cost of manufacturing these products. This correlation was due to differences in the complexity of the manufacturing process and the cost of raw materials for different products.

In conclusion, the analysis of the sales and manufacturing costs of an FMCG company provides valuable insights into the efficiency of the organization. The report identifies the problem areas in the sales and manufacturing processes and provides recommendations to address these challenges. The report also provides several interesting findings related to the cost of manufacturing FMCG products. These findings can be used by the company to improve its operations and profitability.

Proof of Originality

- Name of Organization
  - Sudha Confectionery aka Shyam Namkeen
- Owner's Name
  - Mr. Anuj Kumar, Mr. Anurag Kumar
- Organization's Location
  - Pratapgarh, Uttar Pradesh
- Primary Data

Image 1: Manufacturing division of Sudha Confectionery

- Other Photographs
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  -
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  -
- Letter from Organization
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- Video

Meta Data

The data collected pertains to a period of three months, spanning from April 1st, 2022 to June 30th, 2022.

- **Stock**
  - Chana Dal
    - Opening Stock, Purchased Quantity, Price (Per Quintal), Processed Quantity, Closing Stock
  - Maida
    - Opening Stock, Purchased Quantity, Price (Per Quintal), Processed Quantity, Closing Stock
  - Mungfali Dana
    - Opening Stock, Purchased Quantity, Price (Per Quintal), Processed Quantity, Closing Stock
  - Refined Oil
    - Opening Stock, Purchased Quantity, Price (Per Tin), Processed Quantity, Closing Stock
  - Masoor Dal
    - Opening Stock, Purchased Quantity, Price (Per Quintal), Processed Quantity, Closing Stock
- **Manufacturing**
  - The quantity of each ingredient used, including besan (gram flour), mungfali dana (peanuts), refined oil, chana dal (split chickpeas), masoor (red lentils), and spices, amount of processed namkeen. After processing, some of the namkeen may be damaged or unusable, so this quantity is subtracted from the total amount produced to arrive at the exact finished quantity. This finished quantity is then moved to the packaging stage.

- **Sales**
  - Quantity came from packaging
  - Opening Stock
  - Sales
  - Closing Stock
- **Sales Breakdown**
  - Total Sales
  - Pocket pack sales
  - Regular pack sales (500g)
  - Family pack sales (1 kg)
  - Large pack sales (3 g)

Descriptive Statistics

Upon reviewing the descriptive statistics table, it is apparent that the mean of pocket-size packs is noticeably different from other pack sizes. Furthermore, the standard error is also quite high for this category. The skewness indicates that all the pack sizes are right-skewed, which could be attributed to increased sales in May and June compared to April.

Pocket Packs		*Regular Packs (500g)*		*Family Pack (1kg)*		*3 kg Pack*	
Mean	61.47252747	Mean	7.043956044	Mean	15.26373626	Mean	18.79120879
Standard Error	9.130813543	Standard Error	0.993373907	Standard Error	2.185189082	Standard Error	3.339025048
Median	24	Median	0	Median	5	Median	0
Mode	0	Mode	0	Mode	0	Mode	0
Standard Deviation	87.1024098	Standard Deviation	9.476183113	Standard Deviation	20.84537527	Standard Deviation	31.85226888
Sample Variance	7586.829792	Sample Variance	89.7980464	Sample Variance	434.5296703	Sample Variance	1014.567033
Kurtosis	1.521301027	Kurtosis	0.382441589	Kurtosis	2.93061333	Kurtosis	4.474948364
Skewness	1.533004812	Skewness	1.179069388	Skewness	1.681049272	Skewness	2.114872671
Range	360	Range	37	Range	100	Range	150
Minimum	0	Minimum	0	Minimum	0	Minimum	0
Maximum	360	Maximum	37	Maximum	100	Maximum	150
Sum	5594	Sum	641	Sum	1389	Sum	1710
Count	91	Count	91	Count	91	Count	91

Figure 1: Descriptive Statistics of different SKUs produced by Sudha Confectionery

The sum column demonstrates the total sales distribution across different SKUs. Notably, there is a significant gap between pocket-size packs and regular 500g packs, suggesting a possible opportunity to expand the product line to bridge this gap.

To summarize, the descriptive statistics table highlights a considerable difference in the mean of pocket-size packs compared to other pack sizes, and there is a high standard error. The right-skewed distribution is likely a result of increased sales in May and June. The sales distribution analysis suggests a potential opportunity to bridge the gap between pocket-size and regular 500g packs by expanding the product line.

Chana Dal	
Mean	6183.901099
Standard Error	3.316626813
Median	6180
Mode	6200
Standard Deviation	31.63860334
Sample Variance	1001.001221
Kurtosis	-0.68561445
Skewness	-0.08909875
Range	130
Minimum	6120
Maximum	6250
Sum	562735
Count	91

Figure 2: Descriptive statistics of Chana Dal

Maida	
Mean	2643.076923
Standard Error	4.399723345
Median	2650
Mode	2680
Standard Deviation	41.97068574
Sample Variance	1761.538462
Kurtosis	-0.79912637
Skewness	-0.31225693
Range	160
Minimum	2560
Maximum	2720
Sum	240520
Count	91

Figure 3: Descriptive statistics of Maida

Upon analyzing the descriptive statistics table for the raw materials, it is evident that the range for chana dal, mungfali dana, maida, and masoor dal falls between 130 to 250. However, refined oil displays a range of 487, which can be attributed to a substantial fluctuation in its price. This variation in the price of refined oil is significantly higher than the other raw materials, and it could be the sole reason for the significant price variation.

Mungfali Dana	
Mean	6675.384615
Standard Error	5.582782909
Median	6680
Mode	6670
Standard Deviation	53.2563547
Sample Variance	2836.239316
Kurtosis	-0.37185184
Skewness	-0.17078401
Range	250
Minimum	6540
Maximum	6790
Sum	607460
Count	91

Refined Oil	
Mean	2273.362637
Standard Error	13.06387535
Median	2295
Mode	2370
Standard Deviation	124.6214282
Sample Variance	15530.50037
Kurtosis	0.450731431
Skewness	-1.09472329
Range	487
Minimum	1958
Maximum	2445
Sum	206876
Count	91

Masoor Dal	
Mean	5908.901099
Standard Error	3.316626813
Median	5905
Mode	5925
Standard Deviation	31.63860334
Sample Variance	1001.001221
Kurtosis	-0.68561445
Skewness	-0.08909875
Range	130
Minimum	5845
Maximum	5975
Sum	537710
Count	91

Figure 4: Descriptive Statistics of Peanut, Refined oil and Masoor dal.

In simpler terms, the table shows that the prices of chana dal, mungfali dana, maida, and masoor dal fall within a narrow range, while the price of refined oil has a wider range. This difference in the range of prices indicates that the price of refined oil has a higher likelihood of fluctuating, which could have a significant impact on the overall cost of the end product. Therefore, it is crucial to monitor the price of refined oil carefully to manage the final product's cost effectively.

Detailed Analysis

SKU Dominance: Leveraging Other Products for Better Sales Performance.

Our graphical analysis revealed a significant disparity between the pocket-sized pack and the standard 500g pack, resulting in the company relying heavily on a single SKU. Despite the wedding season, which typically sees a surge in sales of the larger 3kg pack, the consistency of the pocket pack's sales remains steady, accounting for approximately 65% of total sales. However, further examination reveals that this particular SKU is the most time-consuming and least profitable due to its small size,

resulting in high packaging and labor costs. The only way to handle fluctuations in demand for the pocket pack is by adjusting its weight, as its market price is already fixed at Rs 10. Introducing a new SKU in between the pocket and standard sizes could reduce the company's dependence on a single SKU and increase sales and profits. This move would also help the company gain a greater share of the market.

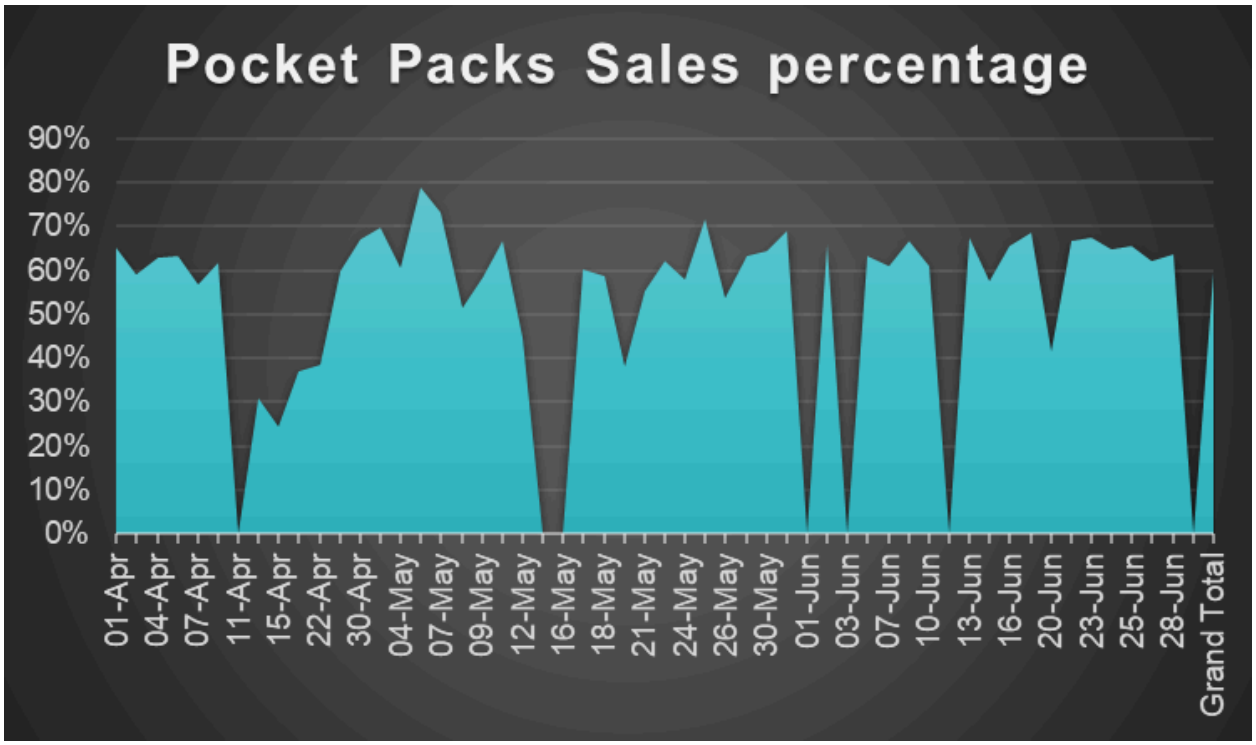

Figure 5: Area chart representing sales of Pocket Packs(Rs 10/- packs)

Time Constraints Impede Production Goals: Overcoming Manufacturing Challenges.

Given the current constraints of 7-8 days available for manufacturing and packaging, the company could consider hiring skilled laborers who can perform both tasks simultaneously. This will not only increase efficiency but also eliminate the need to hire unskilled laborers who may not be as productive.

By hiring skilled laborers, the company can ensure that manufacturing and packaging are done in a timely and efficient manner. Additionally, if the laborers are skilled enough to do both tasks, they can alternate between manufacturing and packaging on different days. This will ensure that the company has a continuous workforce for nearly all 30 days of the month, leading to better productivity and profitability.

Moreover, this approach can also create job opportunities for skilled laborers who may be looking for work. Instead of relying on daily-wage workers, the company can offer more stable employment opportunities that pay at the end of the month. This can be beneficial for both the company and the laborers, as it provides a steady income source and allows the company to focus on other capital expenditures during the month.

Overall, hiring skilled laborers who can perform both manufacturing and packaging tasks can be a win-win situation for the company and the workers involved. It can increase efficiency, productivity, and profitability while also providing stable employment opportunities for skilled workers.

Raw Material Price Fluctuations: Navigating Challenges in Consistent Production Costs and Pricing.

It is true that fluctuating prices of raw materials can pose a challenge for any competitive company, especially for small-scale businesses with limited capital. The provided data suggests that this small-scale company purchases raw materials once or twice a week, which means that they may face difficulty in managing their pricing schemes.

However, upon analyzing the price ranges of Chana Dal and Mugfali dana, it appears that there is a slight pattern of troughs that can be taken into consideration while buying raw materials. The price ranges for these materials fall within a range of Rs 300, which can provide some stability in the company's pricing strategy.

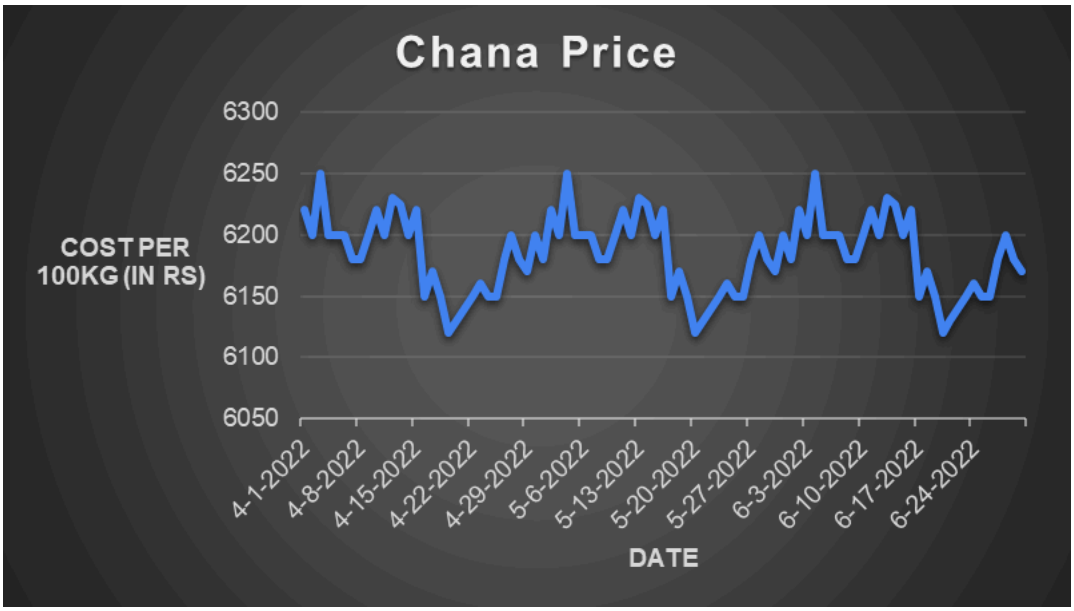

Figure 6: Line graph representing fluctuation in price of Chana Dal

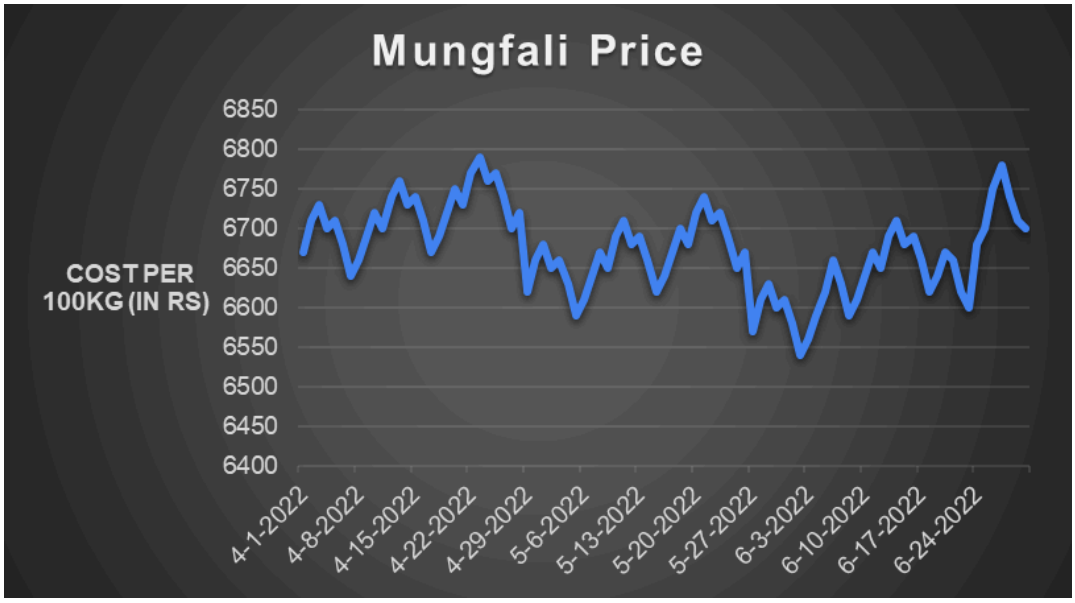

Figure 7: Line graph representing fluctuation in price of Peanut

To make a more informed decision, it is essential to check for other materials as well and identify any patterns or trends that could influence the company's purchasing strategy. By carefully analyzing the data, the company can make more informed decisions about when to purchase raw materials, how much to buy, and how to price their products to remain competitive in the market.

Results and Findings

After conducting the analysis so far, the following observations have been made:

- The company's sales are heavily reliant on one SKU, and it is recommended that measures be taken to ensure that the product mix follows the Pareto principle 80:20 ratio.
- Refined raw materials exhibit significant price fluctuations compared to other raw materials, and the company needs to identify a pattern to determine when the price is at a minimum. This would enable the company to purchase raw materials cost-effectively.
- Due to the company's location and the inability to exceed working hours, the owners must focus on ensuring that labor is consistently available to maintain regular manufacturing.