

A
Business Data Management Capstone Project End Term Submission

Entitled

Maximizing Profits for a Packaged Drinking Water Manufacturing Industry Through Proactive Customer Acquisition Strategies

Submitted by

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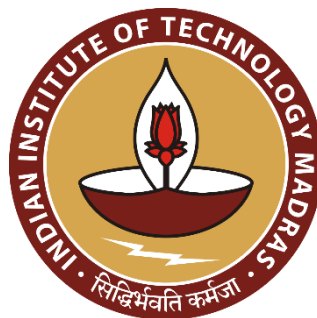
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1. Executive Summary:

Clean, mineral induced ozonized packaged drinking water in the market is easily the most important commodity that is consumed by the masses. The packaged drinking water industry in India has experienced significant growth and evolution over the past few decades. Fuelled by increasing urbanization, changing lifestyles, and growing health consciousness among consumers, the demand for safe and convenient drinking water has surged. This has led to a proliferation of packaged drinking water brands and products across the country, ranging from large multinational corporations to small-scale local players. The industry is characterized by intense competition, with players vying to differentiate themselves through factors such as product quality, packaging innovation, pricing strategies, and distribution networks.

M/S Maa Biraja Traders, a B2B (and B2C) company, offers housekeeping, food, and bio waste services, with "Sohit Fresh" as its new brand for packaged drinking water. Specializing in premium-quality filtered, mineral-infused, and ozonated water, "Sohit Fresh" launched in late 2023, providing various bottle sizes and utilizing dedicated distributors and a website (<https://sohitfresh.com>) for retail and business access. Given its nascent status, the industry encounters challenges pertaining to sales, inventory supervision, distributor logistics, and marketing strategies. The main issue for the enterprise is that the product is not reaching the consumers as compared to the other competitors (Bisleri, Kinley, Bubbles etc). The outlined proposal submitted last cycle for this project extensively addressed the crucial aspect of consumer acquisition within this emerging industry. In the Mid-term report, we saw a slow but gradual growth in company's sales, but it struggled with reaching the consumer due to inadequate product marketing, inefficiency in distributor chain and poor inventory management.

Through thorough data analysis and market study using inventory data of 6 initial months (from January to June 2024) of the business, the project aims to provide practical solutions to enhance business performance. The aim for the end term project involves the following:

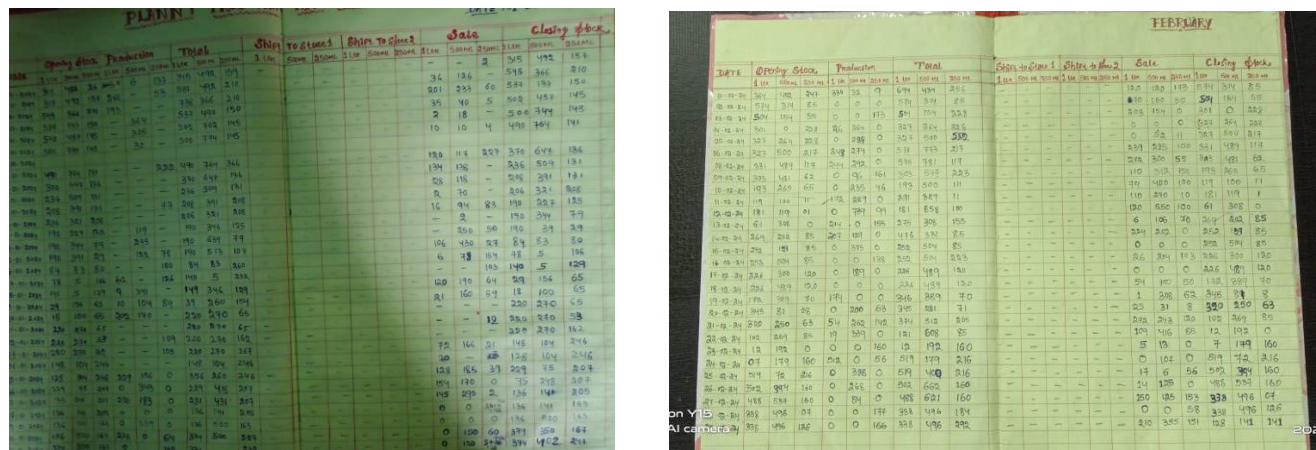
1. To study the inventory, i.e. the opening stocks, total production, total sales etc and to study the trends of revenue overtime.
2. To study the revenue trend of the enterprise over the time-period and come up with marketing and inventory management strategies to maximize profit.
3. Predict a sustainable exponential growth in sales and profit of the company.

2. Detailed Explanation of Analysis Method/Process

Data collection: I have collected the production, sales and stock data for the three primary SKUs of the company namely:

1. Sohit Fresh 1L bottle
2. Sohit Fresh 500mL bottle
3. Sohit Fresh 250mL bottle

Photos of the business record book:



[Fig 1: Production/Sale/Stock record of the SKUs for the month of January(left) and February(right) 2024]

Metadata: I have gathered the data of the respective SKUs for the duration of 6 months (January - June 2024) with prior permission of the owner and manager. I have visited the industry twice and interacted with the manager, assistant of the manager, bookkeeper and the workers to understand the workflow of the industry. Then I have collected the data from the record books of the company. After collecting the raw data, I made a detailed digital record of the same using Excel spreadsheets.

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Date	g	Stock_500ml	Opening Stock_250ml	Total Opening Stock	Production_1l	Production_500ml	Production_250ml	Total Production_1l	Total Production_500ml	Producti	Producti	Production Cost_1l(Rs)	Production C
2	1-4-2024	1806	901	202	2909	2000	3498	471	3806	4399	673	8878	163200	
3	2-4-2024	517	790	250	1557	1622	1782	265	2139	2572	515	5226	132355.2	
4	3-4-2024	18	316	189	523	4234	5000	100	4252	5316	289	9857	345494.4	
5	4-4-2024	327	726	271	1324	4578	3452	1000	4905	4178	1271	10354	373564.8	
6	5-4-2024	1123	688	270	2081	4278	4217	90	5401	4905	360	10666	349084.8	
7	6-4-2024	1182	1015	204	2401	3526	1767	150	4708	2782	354	7844	287721.6	
8	7-4-2024	380	604	158	1142	4428	5218	1782	4808	5822	1940	12570	361324.8	
9	8-4-2024	43	606	673	1322	5017	5523	1907	5060	6129	2580	13769	409387.2	
10	9-4-2024	433	1617	744	2794	4356	5672	1756	4789	7289	2500	14578	355449.6	
11	10-4-2024	166	1033	2333	3532	5890	2451	0	6056	3484	2333	11873	480624	
12	11-4-2024	1330	357	409	2096	3678	4527	1000	5008	4884	1409	11301	300124.8	
13	12-4-2024	777	3103	760	4640	0	0	0	777	3103	760	4640	0	
14	13-4-2024	777	3103	760	4640	0	0	0	777	3103	760	4640	0	
15	14-4-2024	777	3103	760	4640	0	0	0	777	3103	760	4640	0	
16	15-4-2024	777	3103	760	4640	5000	5000	1000	5777	8103	1760	15640	408000	
17	16-4-2024	1142	3847	1335	6324	4813	1890	278	5955	5737	1613	13305	392740.8	
18	17-4-2024	1646	947	990	3583	5678	1562	986	7324	2509	1976	11809	463324.8	
19	18-4-2024	1495	617	453	2565	1782	1891	2407	3277	2508	2860	8645	145411.2	
20	19-4-2024	121	370	1246	1737	3527	5463	625	3648	5833	1871	11352	287803.2	
21	20-4-2024	481	2051	393	2925	5000	1865	216	5481	3916	609	10066	408000	
22	21-4-2024	250	788	419	1457	4838	1537	3521	5088	2325	3940	11353	394780.8	
23	22-4-2024	1461	326	940	2727	4526	5000	71	5987	5326	1011	12324	369321.6	
24	23-4-2024	519	788	379	1686	5463	5342	89	5982	6130	468	12580	445780.8	
25	24-4-2024	554	941	397	1892	5362	6156	0	5916	7097	397	13410	437539.2	
26	25-4-2024	655	1607	136	2398	1261	1862	679	1916	3469	815	6200	102897.6	
27	26-4-2024	0	852	26	878	6000	896	615	6000	1748	641	8389	499600	
28	27-4-2024	1108	0	26	1134	2891	4908	0	3999	4908	26	8933	235905.6	
29	28-4-2024	237	1874	0	2211	5000	5000	1000	5237	6074	1000	13211	408000	

[Fig 2: Snapshot of the inventory data for the month of June 2024]

Descriptive Statistics: Descriptive statistics for each month is calculated using Python. The features I have in my dataset include Opening Stocks, Production Cost (of making one bottle in each segment), Total Production per day, Total Sale per day, Revenue and Profit/Loss per day. Here is the production cost breakdown of one bottle of water:

Cost(₹)	Preform	Cap	Label	Batch	Electricity	Water filtration +Filling cost	Shrink Wrap	Transport ation Cost	Other Cost	Total Production cost	Selling Price(₹)	Profit(₹)
Product(SKU)	Plastic			Code								
1L	3.5	0.24	0.35	0.05	0.3	0.16	0.7	0.5	1	6.8	8	1.2
500mL	2.05	0.24	0.23	0.05	0.15	0.07	0.25	0.5	0.25	3.79	5	1.21
250mL	1.15	0.24	0.15	0.05	0.03	0.04	0.17	0.5	0.17	2.5	4	1.5

[Fig 3: Production cost breakdown and distributor selling price (per 1 Unit) for individual SKUs]

The MRP of the individual products (per unit) in retail stores are 20₹, 10₹ and 8₹ for 1 Litre, 500 mL and 250 mL products, respectively.

These packaged drinking water bottles are bundled together as a pack and sent to the distributors. Each 1L pack contains 12 nos. 1L bottles, 500mL pack contains 24 nos. 500mL bottles and 250mL pack contain 35 nos. 250mL bottles.

The average production cost(APC), average selling price(ASP), Revenue and %Revenue for the individual SKUs(per pack) is provided below:

SKU	APC(₹)	ASP(₹)	Profit(₹)	%Profit
1L Bottle	81.6	96	14.4	15
500mL Bottle	93.6	120	26.4	22
250mL Bottle	87.5	140	52.5	37.5

[Fig 4 Average production cost, average selling price and revenue for individual SKUs]

I primarily utilized Excel and Python for data analysis, by collecting and examining the inventory data while ensuring it was devoid of any missing or undefined values. The cleaning process encompassed thorough checks for inconsistencies, missing values, and outliers that could potentially skew the results. Fortunately, no such anomalies were detected in the six months' worth of collected data apart from the zero production days and holidays. Subsequently, a range of descriptive statistical techniques were employed to aptly summarize and visually represent the data using various chart types.

2.1 Sales and Expenditure Analysis:

Analysing daily sales and expenditure gave me important insights into a company's financial health and future sustainability. Daily sales reveal market demand, customer preferences, and revenue flow, helping the company track growth and adapt to seasonal trends. By comparing sales with expenditure, the company can assess profit margins, manage cash flow, optimize inventory, and forecast future demand. Continuous monitoring of these metrics ensures the company can meet demand, control costs, and maintain long-term profitability and market position. After the midterm report, I talked to the manager and advised him to increase the production of the 1 litre and 500 ml units since 250 ml unit, although having a higher percentage of margin, is extremely seasonal as I observed in the trends of first two months. The following trendlines are the rolling averages of each product's production and sales columns. This computes the mean of the quantities every 30 days, which helps smooth out the day-to-day fluctuations, especially the zero production days. The trendlines show that the manager, trusted my advice and increased the production of the 1 litre and 500 ml products in the following months. The increase in sales indicate the increased demand that followed, which will be discussed in the following sections.

2.2 Revenue and Profit/Loss Analysis:

I utilized Pareto, bar, and pie charts to visualize revenue, profit, percentage contribution to profit (per SKU), and cumulative profit percentage, to quantify product sales, inventory levels, and monthly revenue generation.

The formula for revenue, profit and percentage profit is calculated using the following formula:

$$\text{Revenue per Pack} = \text{Selling Price per Pack} \times \text{No. of Packs Sold}$$

$$\text{Profit per Pack} = \text{Revenue per Pack} - \text{Production Cost per Pack}$$

$$\% \text{Profit per SKU} = \frac{\text{Profit per SKU}}{\text{Total Profit}} \times 100$$

I have used time series decomposition to identify patterns in the profits obtained for the respective SKUs such as trends, seasonality, and noise in the data. Time series decomposition has three important components such as, i) trend, ii) seasonality and iii) residuals. The formula for an additive time series decomposition is: $y(t) = \text{Observed} + \text{Trend} + \text{Seasonality} + \text{Residuals}$.

Pie chart was used to determine the percentage contribution of SKUs to revenue and profit, in order to check for the most selling product. By visually comparing the slices of the pie chart, we can quickly discern which SKU contributes the highest proportion to both revenue and profit. This analysis helps prioritize resources, marketing efforts, and inventory management strategies towards the most lucrative product, optimizing overall profitability and business performance.

1	Date	Revenue_1l(Rs)	Total Profit_1l	Revenue_500ml(Rs)	Total Profit_500ml	Revenue_250ml(Rs)	Total Profit_250ml	Total Revenue	Total Profit
2	1-1-2024	0	-25704	0	-46051.2	280	278	280	-71477.2
3	2-1-2024	3456	-18249.6	15120	15120	0	0	18576	-3129.6
4	3-1-2024	19296	3547.2	27960	27960	8400	8340	55656	39847.2
5	4-1-2024	3360	3360	4800	-29270.4	700	695	8860	-25215.4
6	5-1-2024	192	192	2160	-26388	0	0	2352	-26196
7	6-1-2024	960	960	1200	-1608	560	556	2720	-92
8	7-1-2024	0	0	0	0	0	0	0	0
9	8-1-2024	11520	11520	14040	14040	31780	31553	57340	57113
10	9-1-2024	12864	12864	16560	16560	700	695	30124	30119
11	10-1-2024	2688	2688	14160	14160	0	0	16848	16848
12	11-1-2024	192	192	8400	8400	0	0	8592	8592
13	12-1-2024	1536	1536	11280	11280	11620	11537	24436	24353
14	13-1-2024	0	0	240	-10898.4	6440	6394	6680	-4504.4
15	14-1-2024	0	0	29760	2148	7000	6950	36760	9098
16	15-1-2024	10176	10176	51600	40180.8	3780	3753	65556	54109.8
17	16-1-2024	576	576	9360	9360	21560	21406	31496	31342
18	17-1-2024	0	-5059.2	0	0	14420	14317	14420	9257.8
19	18-1-2024	11520	10785.6	22800	-9117.6	8960	8896	43280	10564
20	19-1-2024	2016	1200	19200	9465.6	12460	12371	33676	23036.6
21	20-1-2024	0	-16483.2	0	-15912	0	0	0	-32395.2
22	21-1-2024	0	0	0	0	1680	1668	1680	1668
23	22-1-2024	0	0	0	0	0	0	0	0
24	23-1-2024	6912	6912	19920	19920	2940	2919	29772	29751
25	24-1-2024	1920	1920	0	0	0	0	1920	1920
26	25-1-2024	12288	-6398.4	22200	7598.4	5460	5421	39948	6621
27	26-1-2024	14784	14784	20400	-11704.8	0	0	35184	3079.2

[Fig 5: Revenue and Profit/Loss analysis of the individual SKUs]

2.3 Inventory Analysis

During my last meeting with the manager after mid-term report, I noticed that he has been dissatisfied with the lack of sales and large stockpile of unsold units in the inventory. To analyse the trends of inventory I

have plotted the closing stocks of each day for the past 6 months (rolling average window of 7 days) as a line chart.

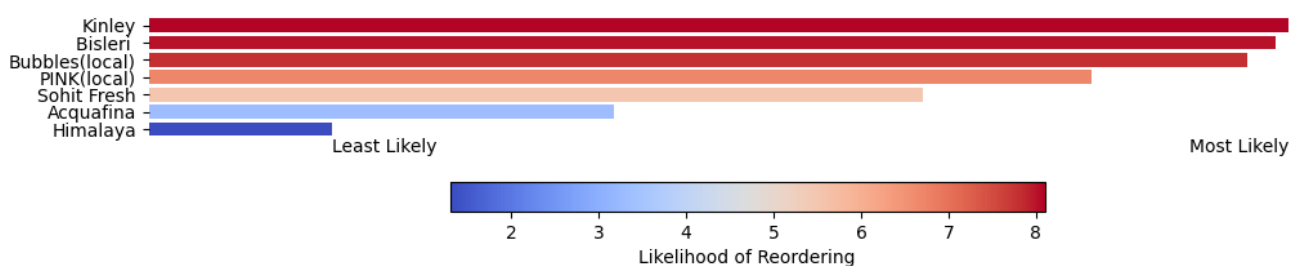
Furthermore, the manager told me that the production constraint is about 10000-12000 packs in total per day, which is subject to increase only if the sales see an increasing trend in future, which we observed in the past 6 months.

I have advised the manager to reduce, if not completely cut out the dependence on the distributors/middlemen, instead sell the units directly to the retailers/vendors in crowded bazar/chawk areas. And for the retail vendors to appropriate this product over the others in the market, the manager needs to offer the unsold 250ml units as a bonus with the purchase of 1 litre and 500 ml units in bulk.

The manager seemingly liked the idea and has tried to implement it over the next four months, although with some challenges.

2.4 Improving the Marketing Tactics

The industry's marketing strategies were needed to be improved since the products are relatively new and the brand recognition is not properly established among the general populace. The packaging bottles of the company and the label itself is a very good differentiator in the market as compared to the national level competitors like Bisleri, Kinley, etc. I found that the quality of preform plastics this company uses, is extremely good and sturdy. I conducted an anonymous on-field survey of few local retailers and at least 5 customers coming to that shop, where I showed them the images of few packaged drinking water bottle designs of big companies and that of "SohiT Fresh 1 Litre" randomly. The overall response was found to be mixed with some positive comments. Although the consumers liked the design of the bottle, but large consensus regarding the choice of drinking water that they would buy, was made based on brand. Majority of the participants opted to buy the drinking water of big companies (ex: Bisleri). From this analysis I came to a conclusion that the company needs to spend at least 1-2% of the profit for a sustainable but efficient marketing campaign. The method we employed for the opinion of retailer is as follows: I visited 10 random local retail stores where "Sohit Fresh Packaged Drinking Water" is sold along with the other brands. The measure of likelihood that the retailer would buy more of this product in future was based on a 10 point system (1 being least likely, 10 being most likely, and 0 being not sold there at all). I found that Sohiti Fresh has an above average reorder value, with an average retailer opinion score of 5.5. I do acknowledge that the scores may be subjected to personal biases of the retailers.



[Fig 6: Retailer sentiment about packaged drinking water brands]

2.5 Forecasting Future Sales

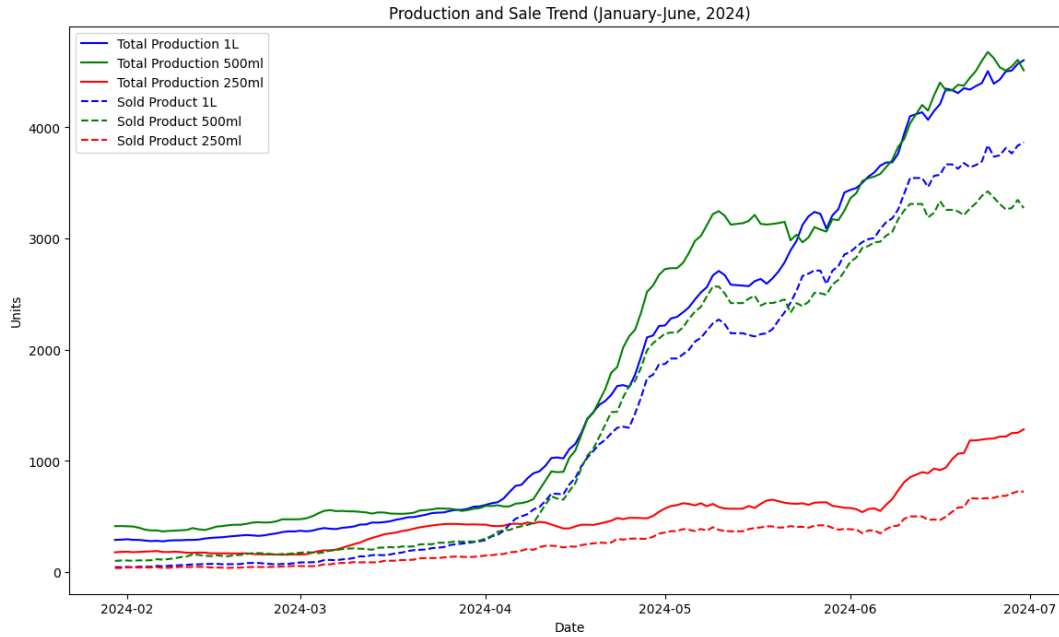
Using the past 6 months data, I tried to fit a triple exponential forecasting model (Holt-Winter's exponential forecasting) to predict the future sales and profits of the company. Holt-Winter's exponential model assumes that the time series data has seasonality and an increasing linear trend, which is evident in our case from the time series decomposition plots. The Holt-Winter model can be defined as the following equation:

$$F_{t+k} = L_t + kT_t + S_{t+k-m}$$

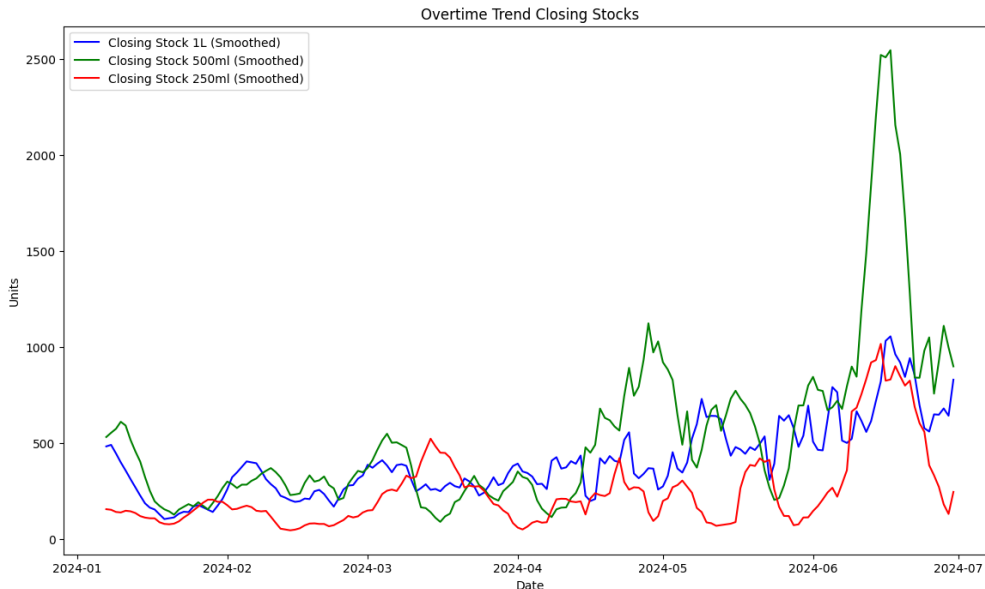
Where L_t is the level estimate for time t , k is the number forecast into the future, S_t is the seasonal estimate at time t , and m is the number of seasons. I tried to predict next 3 months of sales, if the business carries on with the current rate of production and sales.

3. Results and Findings

3.1 Profit/Loss Analysis



[Fig 7: Production and sale trend in the past 6 months]

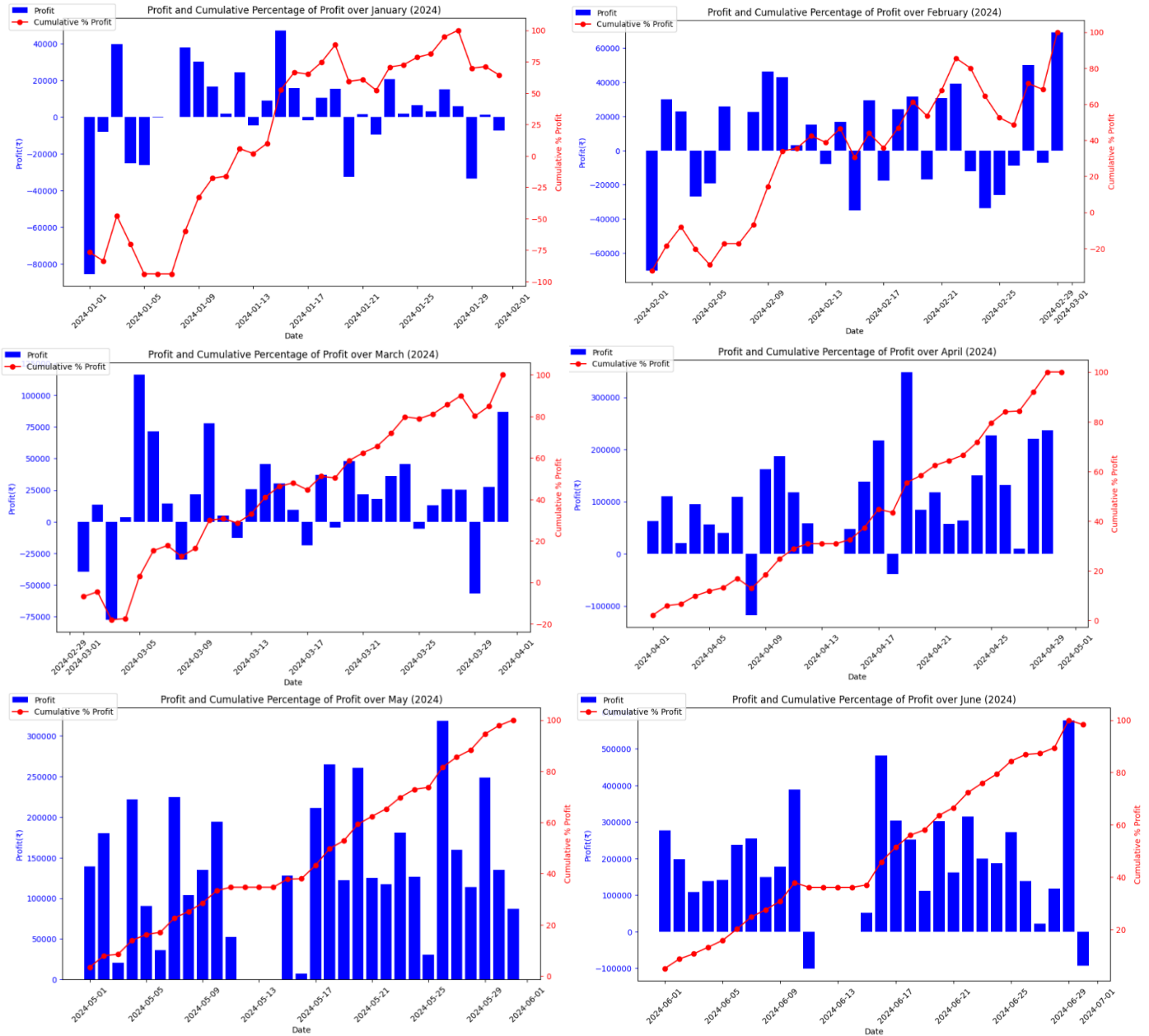


[Fig 8: Closing stock fluctuation for individual SKUs over the 6 months used for inventory analysis.]

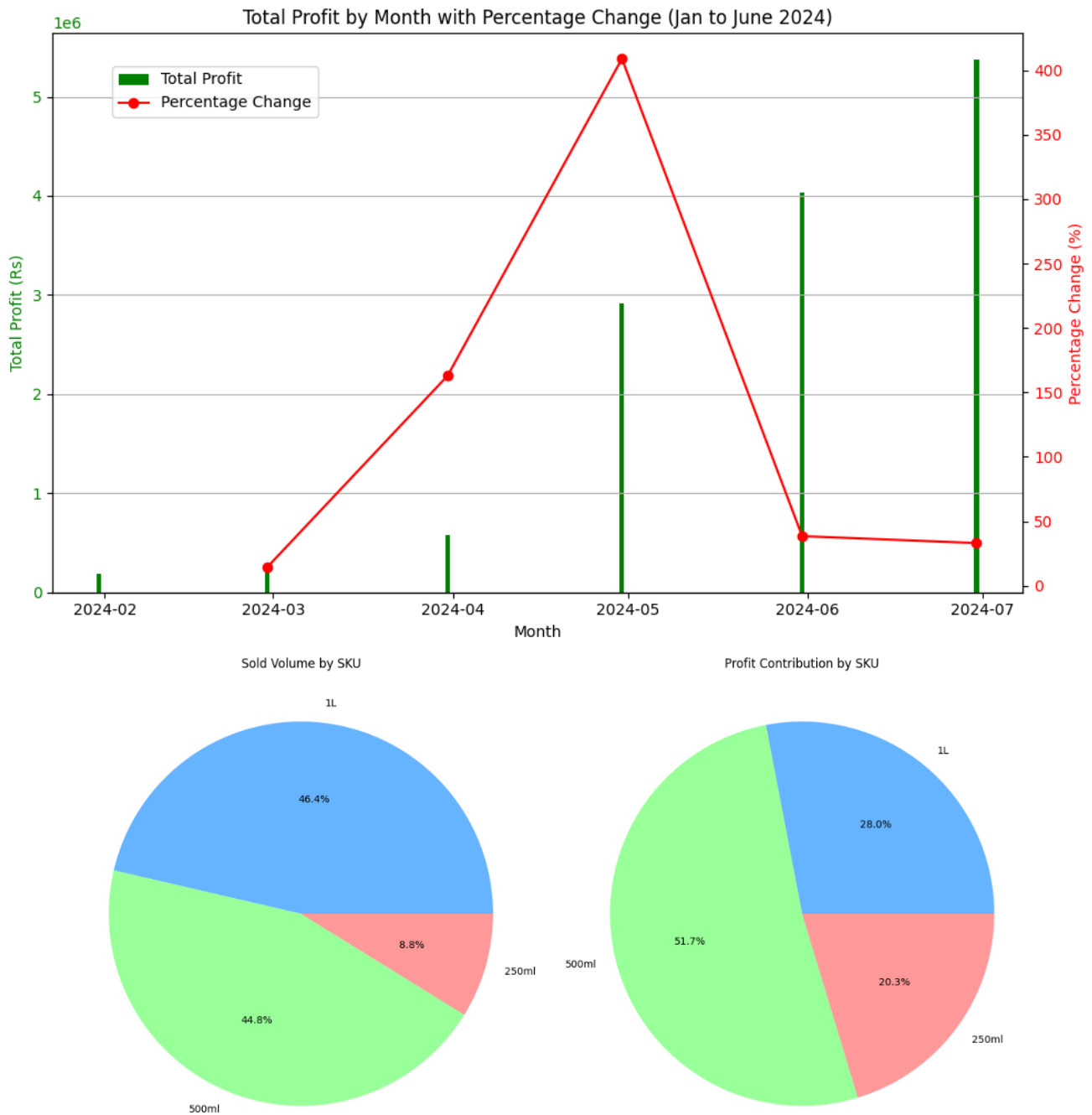
- We can see from the Production vs Sales trend that from the month of March itself the business has already started to increase the production because of increase in demand, which the sales volume also reflects. This could be attributed to many reasons, such as consumers' increasing familiarity with the brand, less reliance on middlemen, availing small bonuses to the distributors and retailers,

word of mouth and arrival of summer season. We can also notice that the owner has increased the production of 1l and 500 ml units as compared to the 250 ml units.

- From the closing stock variation, we can notice that on an average about 1000 units are staying in the inventory. On an average about 31% of the total production is the closing stock, which the company could further bring down in future by effective marketing and building connections with more retailers.



[Fig 9: Monthly Profit/Loss fluctuation and cumulative profit percentage]

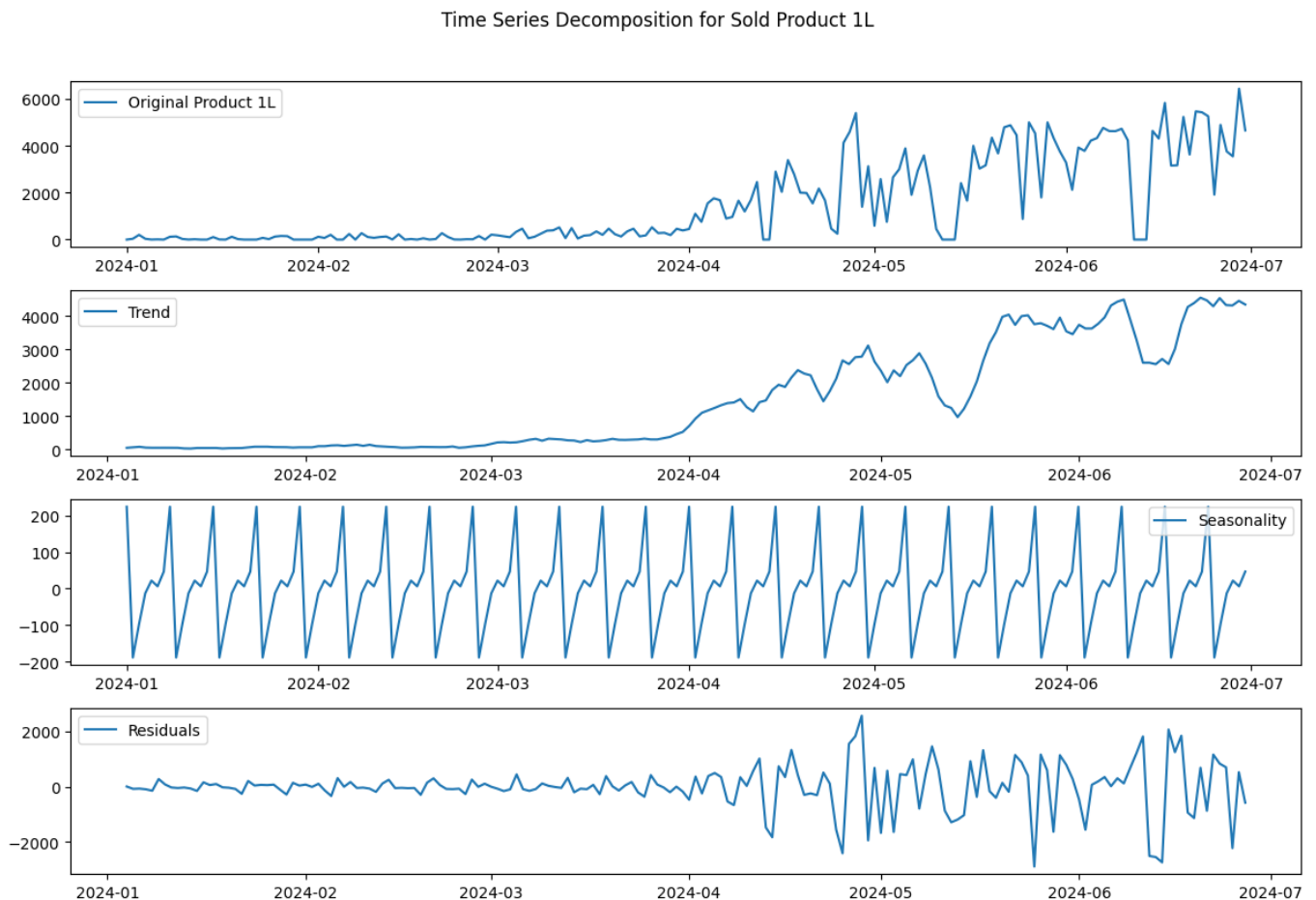


[Fig 10: Net profit increase per month with % change trendline and % profit/sales volume contribution by individual SKU]

- We observe significant increase in the total profit of the company from March month onward, with nearly 160% increase in profit since February and about 400% increase in April as seen in Fig 10 which is likely due to the extremely high demand during the hottest ever recorded summer in past decade (source: Indian Metrological Department report). During this opportunity the industry utilized the manpower and machinery to its full potential. At the end of the 6 months the pre tax turnover of the industry is about 1 Cr.

- These series of charts in Fig 9 show the profit overtime and the cumulative profit percentages as well. The business seems to struggle in the first two months but later on, April onwards we see a steady growth in the net profit earned. In the month of May, the business has made consistent profit. There is a 39% increase in profit from April to May. Overall, the growth is exponential.
- From the pie-chart of % contribution to the revenue and profit, we make an interesting observation that despite the 1 litre units are the most sold product, still it contributes only 28% of the total profit, whereas the 500 ml units are sold about slightly less if not the same volume as that of 1 Litre product, generates more than half the net profit earned. 250 ml product is also contributing a significant portion of the net profit while being only 8.6% of the total sales volume. The management needs to cut costs in the production and distribution of 1 Litre units. Another interesting observation I made is that the preference for 500 ml units is unanimously large among the population because of the disposable nature, compact form factor at a cheaper MRP. This however could lead to increase in plastic waste, which the business needs to keep in mind.

3.2 Time series decomposition trends over 6 months:



[Fig 11: Time series decomposition of sales volume of the past 6 months]

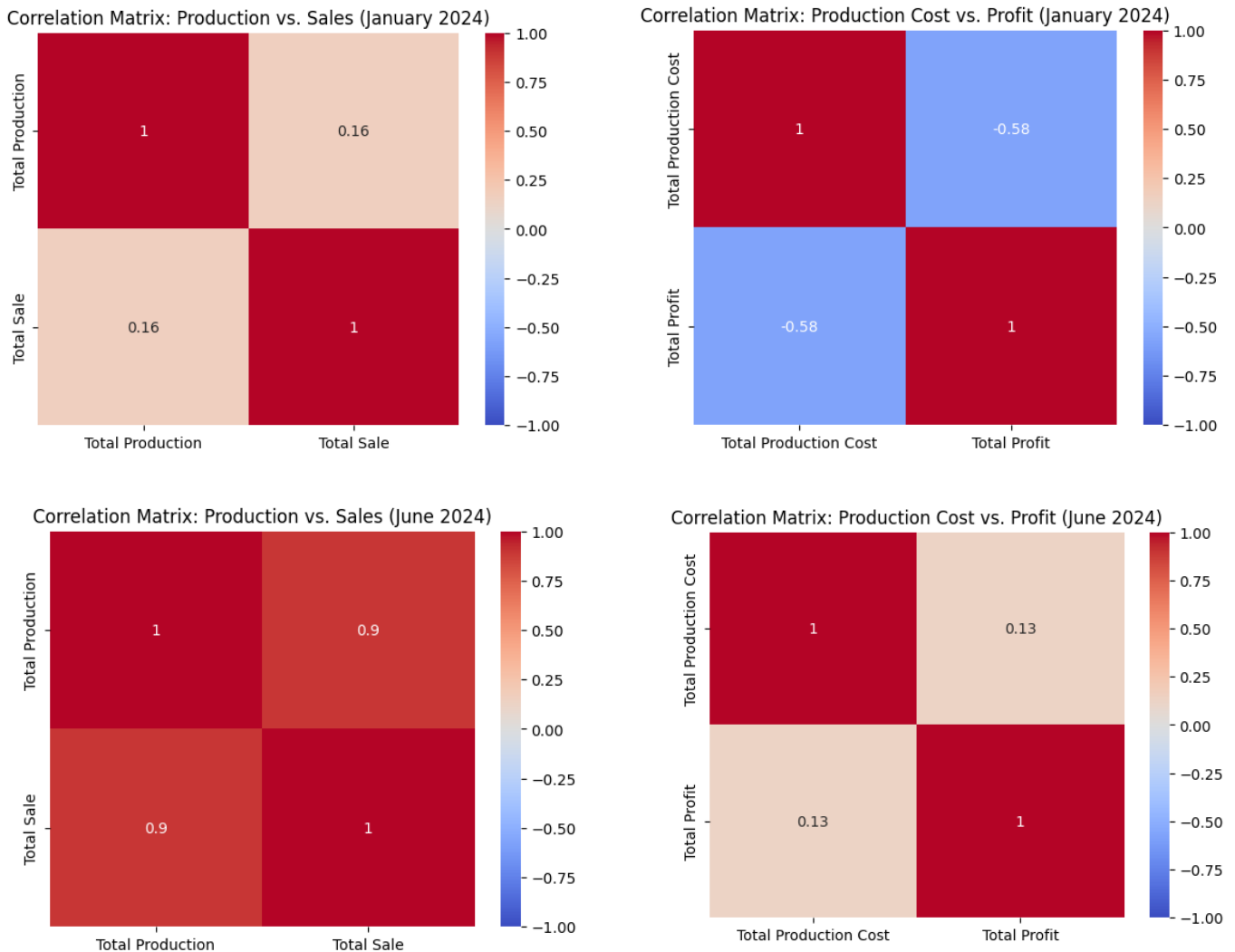
- From the time series decomposition (assumed additive) of the sold volumes of the individual products (over 7 day periods for the past 6 months), we notice that the seasonality component shows regular, repeating patterns at a specific frequency within the data. The consistent wave pattern suggests that there are strong seasonal effects influencing the sales of the products. The amplitude

of the seasonal variation is quite significant, suggesting that the product's sales are highly sensitive to periodic factors, such as weekly or monthly cycles. The zero productions days are indicated by the sharp dips in observed data plot. The trends however are increasing over the period of time for all the products



[Fig 11 contd.]

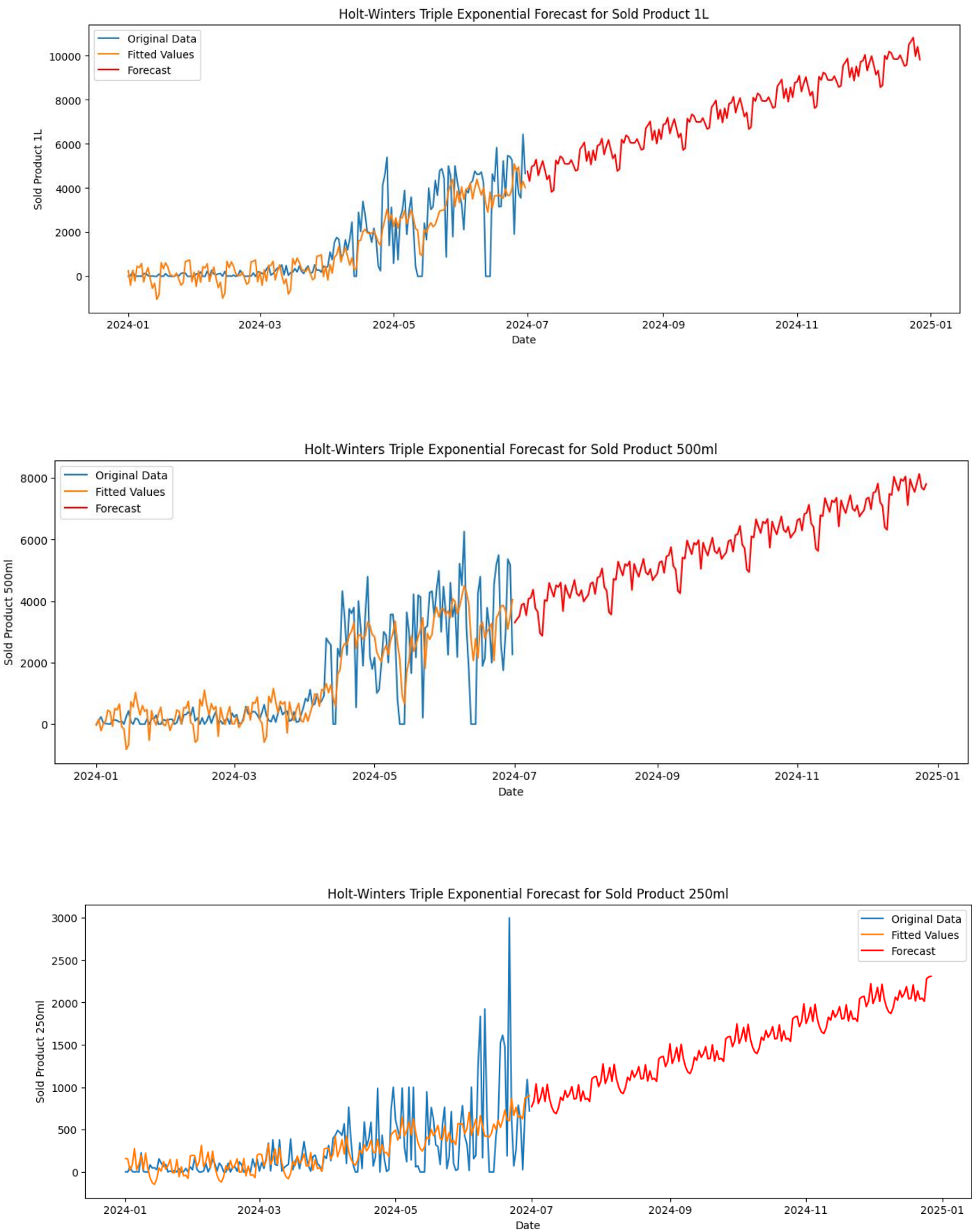
3.3 Correlation Analysis:



[Fig 12: Correlation Analysis]

- From the correlation analysis at the start of this project and at the end of this project reveals that there is a strong positive correlation between total production and total sale at the end of June month as compared to January, where the correlation appears poorer. This could mean that with the increase in market demand, the production has also increased, and with it sales have increased as well significantly.
- Furthermore, we can observe that there appears to be a relation between production cost and profitability where a higher production (along with increase in sales volume) may indicate higher profitability but if it gets too high it negatively affects the profit margin (as in case of January, 2024) but from the correlation coefficients at the end of sixth month, we can observe that the correlation is poor.

3.4 Holt-Winter’s Prediction Modelling:



[Fig 13: Holt-Winters triple exponential forecasting of sales for the next 6 months for individual SKUs]

Sales Growth Trend:

- All three products (1L, 500ml, 250ml) show a significant upward trend in sales over the forecast period, indicating a positive growth trajectory. This suggests that demand for these products is expected to increase continuously.

Seasonality:

- The fitted values align closely with the original data, especially in capturing seasonal patterns. The seasonality is apparent in the fluctuations of sales for each product size, with repeating patterns over time.
- The forecasted values (in red) also exhibit similar seasonal patterns, indicating that the model has effectively captured the seasonal components.

Product-Specific Observations:

- **1L Product:** The forecasted sales for the 1L product are expected to rise steadily, surpassing 10,000 units by early 2025. The 1L product has a smooth and consistent upward trend, suggesting stable and increasing demand.
- **500ml Product:** The 500ml product also shows a strong upward trend, with sales expected to reach around 8,000 units by early 2025. However, the seasonality appears more pronounced, with higher fluctuations in sales.
- **250ml Product:** The 250ml product has the most significant variability in sales, particularly in the original data, where a noticeable spike occurs around July 2024. Despite this volatility, the forecast predicts steady growth, with sales expected to approach 3,000 units by early 2025.

Model Accuracy:

- The fitted values (in orange) are closely aligned with the original data, indicating that the model has accurately captured the underlying patterns and trends. This alignment suggests that the forecasts are likely to be reliable.

Some inferences drawn:

- Considering the present trend of sales trend and seasonality of the sales, I applied the Holt-Winter's triple exponential prediction model on the observed sales data of the business and predicted the next 6 month's approximate sales. We can observe from the above plots that the trend of sales is upwards for all the three products, if and only if the present situation continues.
- Contrary to the 500 ml product, which has a higher profit margin, the trends show that 1 Litre units will be sold more. The manager needs to take this into account and increase the market availability of the 500 units more (by increased production) than the 1 Litre one. Alternatively, the owner must eliminate the middleman/distributor chain and directly supply the 1 Litre units to the retailers.

4. Interpretation of Results and Recommendations

Recommendation 1: Increase the production and marketing of the most profitable product.

Based on the analysis in the section 4.1, we observe that the most profitable product of the business industry is “SohiT Fresh 500 mL” and “SohiT Fresh 250 mL” packaged drinking water units. Although, the 250 mL unit shows high seasonal activity, because most of its demand comes from festivals, functions and related public/private events, the ratio between profit to sales volume is high.

Ways to maximize sales of the profitable items:

1. Focus on 500ml SKU:

- **Increase Production and Marketing:** The 500ml SKU is both popular and highly profitable, contributing over half of the total profits despite only making up 44.8% of the sold volume. Increasing production and marketing efforts for this size can further capitalize on its high profitability.
- **Expand Distribution:** Consider expanding the distribution network for the 500ml SKU to reach more retailers and consumers, especially in regions where it might be less available.
- **Bundle Promotions:** Use the 500ml SKU in bundle promotions or multi-pack offers to encourage bulk purchases, which could further enhance its profitability.

2. Promote 250 mL SKU at public events:

- I have advised the owner that a reliable and long term customer base exists for the 250 mL units and those are examination centres like TCS Ion and private institutes that conduct government/private exams. Also convocation centres and theatres across the nearby districts can be targeted for a sustainable sale and good profit margin. Another consumer base is pilgrims at temples, marriages, community feasts and similar private events where people prefer the small volume water bottles. To achieve this, the manager should consider marketing this SKU at public events using flyers and placards and supply 250 mL stock to the appropriate retailers directly.

3. Optimize Pricing for 1L SKU

- **Review Pricing Strategy:** The 1L SKU has the highest sold volume but a lower profit contribution relative to its sales. Evaluate the pricing strategy to see if there is room to increase prices without significantly affecting demand. Even a small price adjustment could improve profit margins.
- **Cost Reduction:** Investigate ways to reduce production or distribution costs for the 1L SKU. Streamlining production processes, negotiating better deals with suppliers/distributors, or optimizing logistics can improve the profit margin.
- **Targeted Promotions:** Offer targeted promotions to encourage repeat purchases or to upsell customers from smaller sizes to the 1L SKU. I advised the manager to provide the leftover stocks of 250 mL units as bundled bonuses with bulk orders of 1L units.

5. Cross-Bundle different SKUs

- **Bundle Different Sizes:** Create bundled offers that include all three sizes. This can increase the overall sales volume and make customers more aware of the different sizes available, potentially leading to increased demand for the more profitable 500ml and 250ml SKUs.

- **Upsell and Cross-sell:** Use the lower-margin 1L SKU as an entry point to upsell customers to the more profitable 500ml and 250ml SKUs.

Recommendation 2: Improve upon the advertisement and marketing

1. Targeted Advertising Based on Demographics

- **Youth and Active Lifestyles:** The 500ml SKU, which has a high profit margin and significant market share, could be marketed towards younger, active individuals through social media campaigns, fitness events, and sponsorships of sports or music events. Its lesser MRP helps the
- **Families and Bulk Purchasers:** The 1L SKU, with its high sales volume, can be targeted towards families or households that purchase water in bulk. Advertising could focus on value-for-money, health benefits for families, and convenient bulk packaging.
- **Premium Market for Smaller Sizes:** The 250ml SKU, despite its lower sales volume, has a higher profit margin. This SKU can be marketed as a premium product, ideal for fine dining, upscale events, or as a refreshing choice for on-the-go consumption. The marketing should focus on quality, exclusivity, and premium branding.

2. Running Billboards and Ads on the LED screens at crowded places

I have advised the manager to run advertisement/promotional videos on large LED screens installed at the high-traffic market and hawk areas. The manager has already shot a promotional video in February, 2024 itself. Link to the ad: <https://youtu.be/rIRP6c3KsoQ>

- **Premium Brand Image:** Advertising on LED screens in high-traffic, prestigious locations can elevate the brand's image. It signals to consumers that the brand is prominent and trusted, which can enhance its perceived value.
- **Sponsorship Opportunities:** “SohiT Fresh” can sponsor specific LED screens or ad slots during major events, aligning the brand with positive associations such as health, fitness, and community involvement.
- **Digital Presence:** The company has tried to acquire customer base using Instagram ([Sohit Fresh \(@sohit_fresh\) • Instagram photos and videos](#)). Taking it one more step further, the owner can explore reaching out to influencers to promote the products.
- **Eye-Level Placement:** Place the most profitable or popular products at eye level to ensure they are immediately noticed by customers. Eye-level placement is prime real estate in retail.
- **Impulse Purchase Zones:** Position smaller, single-serve water bottles near the checkout counters where they can attract impulse purchases.
- **Cross-Merchandising:** Place the water products near complementary items, such as snacks or sports equipment, to encourage customers to pick up both.

3. Solving inefficient distributor chain problem by starting one of their own.

Starting a dedicated proprietary distribution chain can be an effective solution to address inefficiencies in the existing distributor network. A proprietary distribution network can be branded with the company's logos and marketing messages, reinforcing brand identity throughout the supply chain (similar to Bisleri's own personal distribution chain).

- **Elimination of Middlemen:** By cutting out intermediaries, the company can reduce costs associated with commissions or fees paid to third-party distributors. These savings can be passed on to customers or reinvested into the business.

- **Better Pricing Control:** The company can set prices directly, ensuring consistent pricing strategies across all markets, which can help prevent price gouging or under pricing by external distributors.

5. Summary of Findings:

1. Product Performance:

- The 1L product contributes significantly to total profit (28%) and volume sold (46.4%).
- The 500ml product is the highest profit contributor (51.7%) and also makes up a substantial portion of the sold volume (44.8%).
- The 250ml product has the lowest contribution to both profit (20.3%) and volume sold (8.8%).
- There has been a significant increase in profit and sales volume post midterm submission.

2. Time Series Analysis:

- Decomposition of sales data reveals consistent seasonality and trends across all three products, especially in the 250 mL SKU.
- Seasonal trends indicate fluctuations in demand, with residuals showing variation that might be due to irregular events or outliers.

3. Supply Chain Insights:

- The company could benefit from establishing its own distributor chain to improve efficiency and reduce dependency on third-party distributors, ensuring better control over the supply chain.

4. Retailer Feedback:

- Heatmap analysis of retailer opinions shows which brands are more likely to be reordered. This tells us that SohiT Fresh has an average likelihood of re-ordering which is comparatively good based on the fact that the company is extremely new.

5. Marketing & Advertisement Strategies:

- Running billboards and LED screen ads in crowded places is suggested to boost brand visibility and attract more consumers.
- Investment in visual merchandising and enhancing store displays can increase the visibility of products in retail stores, potentially driving sales.

6. Seasonal Forecast of Sales for the next 6 months:

- **Increasing Demand:** All three products show a clear upward trend in sales, reflecting growing demand in the market.
- **Seasonal Influence:** The seasonality captured by the model suggests that sales are influenced by cyclical factors, possibly linked to external factors like holidays, marketing campaigns, or climatic conditions.
- **Product Comparison:** The 1L and 500ml products are expected to experience higher sales volumes compared to the 250ml product, but all are forecasted to grow.

- **Forecast Reliability:** The close fit between the original data and the model's fitted values enhances confidence in the accuracy of the forecasts, making these projections valuable for strategic planning.

Relevant Links:

The data regarding the capstone project is available in this drive link:

1. [BDM Capstone End-Term Data](#)
2. [BDM Capstone Project Root Directory](#)
3. [Authorization Letter 2024 May Term](#)
4. [Non Disclosure Agreement Letter Signed between Owner and Myself](#)