

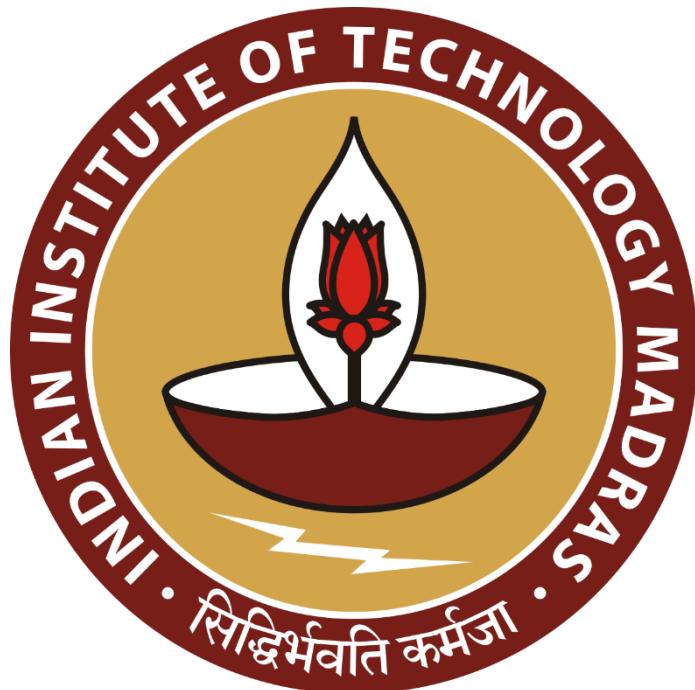
Enhancing Profitability by Combining Online Sales with Traditional Vendor Channels

A Proposal report for the BDM capstone Project

Submitted by

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Executive Summary

Kamalai Organics is a small business based in Yavatmal, Maharashtra which sells organic hair oils through vendors, direct customers and online platforms like Amazon. The brand has a loyal local customer base with good quality natural products but faces operational challenges that restricts growth. The main problems are irregular order frequency, seasonal fluctuations and high dependence on vendors and third-party marketplaces like Amazon which makes sales unpredictable and affects profitability.

To address these challenges, sales data was collected from July 2024 to February 2025 which covers the monsoon to winter season, a period which impacts hair oil demand. Descriptive statistics showed lower sales during monsoon and steady rise during winter which validates the hypothesis of seasonal demand fluctuations. Additional metadata insights on sales channels showed that vendor sales contribute to most of the revenue and Amazon performance is limited without advertising.

The analysis involves data preprocessing, pivot-based visualization and sales trend analysis using Excel, Power BI. Techniques like trend analysis, channel-wise performance comparison and profitability segmentation were used to identify inefficiencies in supply chain and sales flow. Initial findings suggest that improving inventory forecasting, optimizing vendor dependence and adopting direct customer engagement can improve profitability and operational stability for Kamalai Organics.

Proof of Data Originality

- Business Name: Kamalai Organics
- Address: Kamalai Farms, Near Badki Layout, Post Maregaon, District Yavatmal, Maharashtra
- Owner's Name: Sanhita Jainarayan Badki
- Owner's Phone Number: 8668938539

Video of Interaction with Business Owner: [video](#)

Letter: [letter](#)

Additional Information: [BDM](#)



Image 1 & 2: Official Photoshoot of the brand

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UDYAM REGISTRATION CERTIFICATE					
UDYAM REGISTRATION NUMBER	UDYAM-MH-36-0033078				
NAME OF ENTERPRISE	KAMALAI ORGANICS				
TYPE OF ENTERPRISE *	SNo.	Classification Year	Enterprise Type		
	1	2023-24	Micro		
Classification Date	18/08/2023				
MAJOR ACTIVITY	MANUFACTURING				
SOCIAL CATEGORY OF ENTREPRENEUR	OBC				
NAME OF UNIT(S)	S.No.	Name of Unit(s)			
	1	kamalai organics			
OFFICIAL ADDRESS OF ENTERPRISE:	Plot/Door/Building No.	ward no 1	Name of Post/Building		
	Village/Town	yavatmal	bhadki nager		
	Road/Street/Lane	marapurao	badki layout		
	State	MAHARASHTRA	City		
	Mobile	703026167	yavatmal		
		Email:	sanchitashuk388@gmail.com		
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	01/04/2023				
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	01/04/2023				
NATIONAL INDUSTRY CLASSIFICATION CODE(S)	SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
	1	21 - Manufacture of pharmaceuticals, medicinal, chemical and botanical products	2100 - Manufacture of pharmaceuticals, medicinal, chemical and botanical products	21003 - Manufacture of "cosmetic" or "sanitary" pharmaceutical preparation	Manufacturing
DATE OF UDYAM REGISTRATION	18/08/2023				
<small>* In case of grant/denial of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.03.2020 issued by the MoS SME. Disclaimer: This is computer generated statement, no signature required. Printed from https://udyamregistration.gov.in & Date of printing: 18/08/2023 https://udyamregistration.gov.in/Udyam_User/Udyam_PrintApplication.aspx</small>					

Image 3: Udyam Registration Certificate

Metadata

- DataFormat: CSV (Comma-Separated Values) and Excel/Sheets (XLSX)
- Range: July, 2024 to February, 2025
- Units of Measurement for Features involving Money: Indian Rupee (₹)

Metadata refers to data about the data collected. It provides detailed information about each variable in the dataset, including its type and role in understanding business performance.

In the context of Kamalai Organics, metadata explains how each column in the dataset (such as sales channel, profit, region, and delivery distance) captures an essential aspect of the business operation from production to sales enabling structured analysis and meaningful interpretation of patterns related to profitability, logistics, and customer engagement.

Features Collected:

1. Date: It represents the date of each sale. Tracking the orders by date helps to identify monthly and seasonal trends.
2. Sales Channel: It represents whether the sale was through a vendor, platform like Amazon or direct customer. This relates to the problem statement of over dependence on vendors and need for diversifying the channel.
3. Quantity Sold: It represents the number of oil bottles sold per transaction. This helps to recognize bulk vendor orders and order size distribution. It also helps in understanding production planning and stock availability.
4. Selling Price Per Unit: The price charged for each bottle of hair oil. For vendors it is ₹299 and for direct customers (offline and website) it is ₹499. This helps to see profit margin difference between wholesale and retail sales.
5. Cost Price Per Unit: The cost of one bottle is in the range of ₹180 - ₹250 depending on the material, packaging and labor. This helps in profitability analysis and to see if raw material price fluctuation affects the overall earning.
6. Revenue: This is the total sales across all the channels and time periods. It helps to predict monthly revenue trends and seasonal sales variation.
7. Profit: It helps decide pricing strategy and understand channel efficiency.
8. Region: The places where the product was stored or delivered (Nagpur, Warora, Chandrapur, Yavatmal, Wani etc). Helps to compare regional demands and analyze distribution networks.
9. Delivery Distance: The delivery distance is calculated from Yavatmal, base location of business, to the delivery region. It helps to see the logistic cost and delivery feasibility for expansion.
10. Return Flag: This determines whether the product was returned (Yes) or not (No). Only 5-7% of the total transactions are marked as “Yes”. This helps

understanding customer satisfaction, product quality and issues in supply or packaging.

The chosen variables directly address the problem statements for Kamalai Organics, that are fluctuating demand, irregular vendor ordering, and over-reliance on third-party platforms like Amazon.

- **Date and Sales Channel** helps to identify seasonal demand patterns and compare the performance of different sales platforms. This directly answers the question of whether a D2C (Direct-to-Customer) model would lead to more engagement and consistent revenue.
- **Quantity Sold, Selling Price, and Cost Price** provides a financial basis to calculate revenue and profit margins. These variables will help to calculate channel profitability (vendor vs. direct) and whether the current pricing structure is sustaining the desired margins.
- **Region and Delivery Distance** data highlights logistics and transportation costs which is one of the biggest challenges for the business due to its rural base. Analyzing these variables will help to determine which delivery zones are most cost-effective and where improvements or collaborations (like with India Post or Shiprocket) can be done.
- **Return Flag** captures the quality and satisfaction aspect by tracking the rate of returns. This is important to measure customer retention and trust across different regions or sales platforms.

Overall this metadata will form the foundation for data-driven insights by linking operational realities (vendors, logistics, pricing) with strategic decisions (D2C expansion, cost reduction, demand forecasting), so Kamalai Organics can move from intuition-based decision making to data-driven business growth.

Descriptive Statistics

The main features of the dataset are summed up and described by descriptive statistics, which also offer insights into pricing, operational logistics, and sales trends. The statistical table is complemented by line charts, box plots, and heatmaps that show trends, distributions, and relationships between variables in order to visualize these trends and variations.

	Quantity_Sold	Selling_Price_Per_Unit	Cost_Price_Per_Unit	Revenue	Profit	Delivery_Distance_From_Yavatmal_km
count	280.000000	280.000000	280.000000	280.000000	280.000000	280.000000
mean	10.567857	426.857143	215.303571	4519.789286	2233.800000	131.982143
std	5.748838	96.213515	19.682170	2721.318755	1697.072471	58.978002
min	1.000000	299.000000	180.000000	299.000000	80.000000	60.000000
25%	5.000000	299.000000	198.750000	2392.000000	817.500000	95.000000
50%	11.000000	499.000000	214.500000	4186.000000	1605.000000	110.000000
75%	16.000000	499.000000	232.000000	6487.000000	3686.750000	150.000000
max	20.000000	499.000000	250.000000	9980.000000	6000.000000	300.000000

Table 1 : Descriptive Statistics Summary

The summary statistics of the data gives us a quick view of the sales and logistics for the period. Quantity per transaction ranges from 1 to 20 units, with a mean of 10.57 and std of 5.75. Selling price per unit has a mean of 426.86 though vendor price is 299 and others is 499. This mean is because it is calculated across all observations and includes both fixed price categories and shows the distribution of sales between the two price groups. Cost price per unit has a mean of 215.30 with low std of 19.68, revenue and profit has a mean of 4519.79 and 2233.80 respectively with high std of 2721.32 and 1697.07. Delivery distance from Yavatmal ranges from 60 km to 300 km with a mean of 131.98 and std of 58.98. 25th, 50th and 75th percentile values also give us a view of the distribution, half of the sales are between 5 to 16 units and price is at the fixed price points. These statistics give us a good understanding of sales patterns, pricing and logistics.

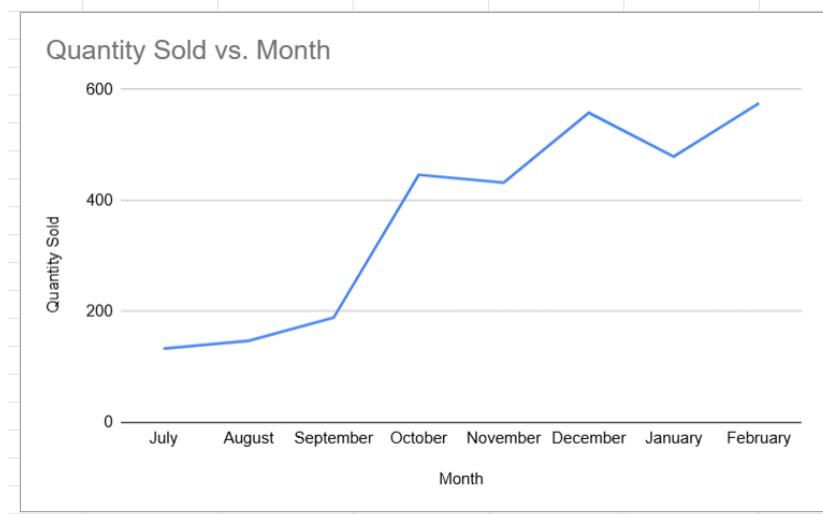


Fig 1. Shows the plot of seasonal trend of fluctuating orders

The quantity sold monthly is depicted in the line chart, which clearly shows an upward trend from July to February. July and August see a modest start to sales, which then progressively rise in September before experiencing a dramatic spike in October and November. Strong seasonal demand is indicated by the highest sales, which are recorded in December and February. This pattern points to a winter sales peak, which could be explained by consumers' heightened attention to hair care because hair loss problems tend to get worse in colder, drier weather. Both seasonal purchasing patterns and rising awareness of hairfall preventing products during this time are reflected in the slow rise that is followed by a sudden spike.

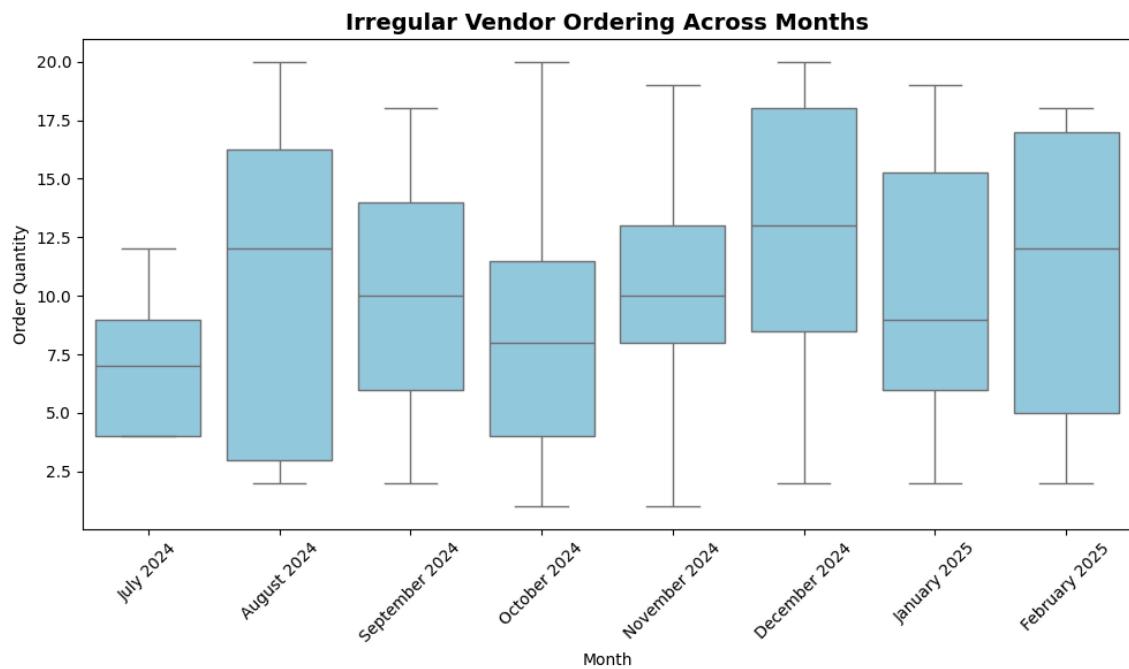


Fig 2. Shows the plot of Irregular vendor Ordering

Order quantities vary significantly from month to month, as shown in the box plot. Orders in July 2024 had a limited range and were comparatively stable. The spread significantly expanded after August, a sign of growing irregularities in vendor order quantities. The greatest variability is seen in August and October of 2024, when order quantities range from as low as 1-2 to as high as 20. The maximum overall median and top quartile were recorded in December 2024, indicating higher vendor activity over that time frame. This pattern, which reflects persistent fluctuations and uneven vendor ordering behavior over time, persists into early 2025 with higher medians and wide interquartile ranges.

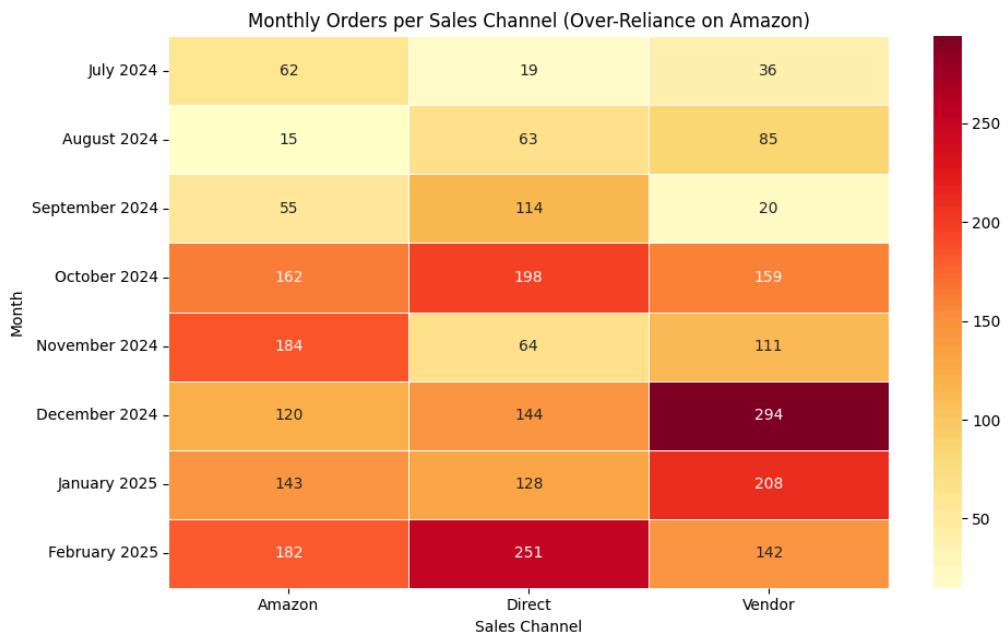


Fig 3. Shows the plot of Monthly order per Sales Channel

The heatmap that depicts an excessive dependence on third-party platforms, like Amazon, shows how this dependence varies from month to month. Amazon orders were relatively low in July and August of 2024, indicating a balanced distribution of sales across channels. However, reliance on the platform increased dramatically beginning in October 2024 and peaked at 184 orders in November 2024, indicating a broader demand for Amazon during the holiday season. Although the Direct and Vendor distribution channels also grew in late 2024 and early 2025, Amazon regularly maintained its strong position and showed its importance in terms of total sales volume. The heatmap shows that Kamalai Organics is still heavily reliant on Amazon overall, emphasizing the necessity of diversifying order sources to improve channel stability.

Detailed Explanation of Analysis Process & Methods

Data Cleaning and Preprocessing

To guarantee consistency and dependability, the dataset was cleaned. The inconsistent records in the Sales_Channel column (Amazon, Direct, Vendor) had been standardized, and missing dates were handled with the appropriate datetime conversion. Descriptive statistics in Python were used to find outliers and empty fields in order quantities, and Google Sheets was used to confirm the findings. To make trends and time-series analysis easier, dates were transformed into a common "Month-Year" format. In order to preserve data integrity and

avoid skewed results, data cleaning was essential. The accuracy of statistical measures like the mean, median, and quartiles in representing business performance was guaranteed by proper preprocessing. Effective analysis and visualizations were made possible by the removal of formatting errors and duplication.

Analysis Process

1. Spreadsheet-Based Quantitative Analysis: The sales data from Kamalai Organics was arranged and summarized using spreadsheets. Utilizing built-in functions like SUM and AVERAGE, basic computations like average order volumes and total monthly sales were automated. This initial evaluation made error detection easier, gave a clear numerical summary of order performance, and formed the foundation for later statistical visualizations.
2. Time-Series Analysis: A time-series line graph showing monthly changes in total orders was created to understand shifts in consumer demand. This graphic revealed clear sales trends, highlighting periods of low sales and months with higher demand, such as the holiday season. By looking at these time-based variations, Kamalai Organics could better align its marketing and production activities with seasonal buying patterns. This approach ensured optimal stock levels and steady revenue flow.
3. Python-Based Statistical and Visual Analysis: Kamalai Organics sales data was statistically and visually analyzed using Python and Pandas and Seaborn libraries to understand vendor fluctuations and channel performance. A box plot was created to show how order quantities changed over time for the Vendor channel. This showed periods of irregular vendor activity. A heatmap was also created to compare monthly sales across different sales channels. The heatmap showed that Kamalai Organics was heavily dependent on Amazon during peak times. These graphs gave us insights into distribution and supply trends.
4. Qualitative Insights through Discussions: The conversations with the business owner produced both valuable information and quantitative techniques. These conversations provided insight into marketing challenges, operations challenges, and sales strategy preferences that they may not have easily discovered from the data. This perspective complemented the data-informed findings to ensure the recommendations for Kamalai Organics were feasible and aligned with actual business realities.

Results and Findings

Through the analysis of the sales dataset from Kamalai Organics, the company developed an understanding of its ordering patterns, vendor ordering practices, and their market channels. Preliminary descriptive statistics indicated a substantial degree of variability in vendor orders over the course of multiple months, due to extreme upward and downward spikes in certain months, which pointed towards some supply disruption in its ordering. Notably, the dataset indicates a strong seasonality effect on orders, with elevated periods of ordering in October and December 2024 and February 2025, which may attest to increased customer ordering over holiday periods. Additionally, the distribution of monthly orders across market channels revealed a variety of patterns, suggesting differing levels of reliance on Amazon, Direct, and Vendor orders.

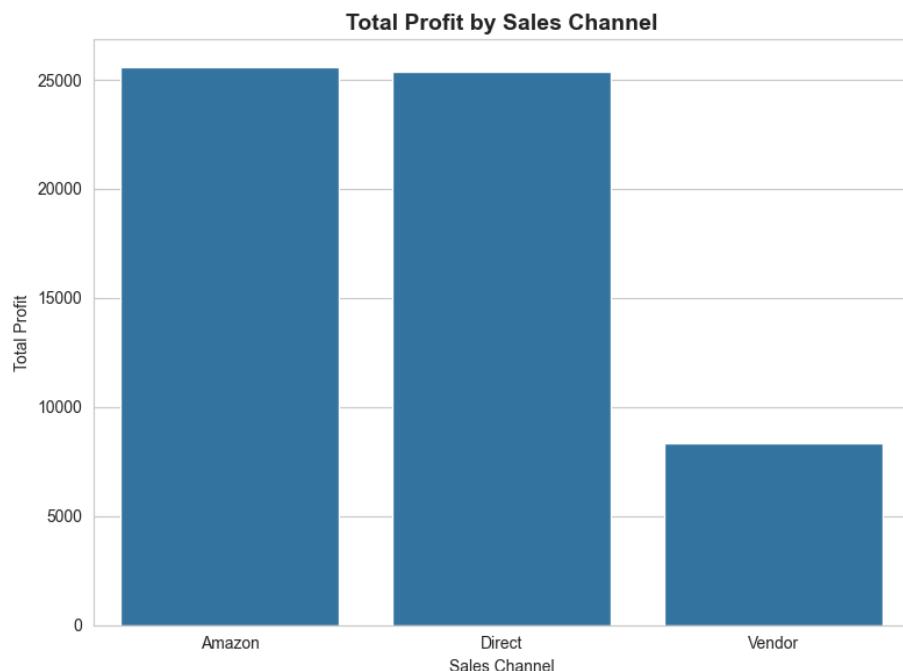


Fig 4. Shows the plot of Total Profit for all the Sales Channel

The bar chart shows total profit per sales channel reflecting the financial profitability across the business's key channels. The Amazon and Direct channels generated the same profit of ₹25,500 compared to the Vendor channel's ₹8,500. This pattern shows that even though all three sales channels contribute to overall sales, the Amazon and Direct channels are the most profitable channels for Kamalai Organics. The chart also highlights the business's reliance on two of the channels, and the risk created if either channel is disrupted. The general findings

suggest that although Kamalai Organics has a steady growth rate, channel diversification focusing on building Vendor sales could improve profits and reduce risk.

The sales data analysis of Kamalai Organics highlights advantages and possibilities for enhancing operational performance. The direct as well as amazon channels are producing the maximum profit however, vendor orders have a fluctuating pattern indicative of possible inconsistency in supply. The seasonal data illustrates production peaks during festive months, showing what is important is aligning operations and marketing functions in production when demand changes. As a whole, the business does appear to generate good revenues, however, it does have some risk factors tied to over-reliance on various channels and the variable vendor performance. By diversifying sales channels and stabilizing vendor performance, Kamalai Organics should experience more balanced growth and have opportunities to improve profitability and operational resilience.