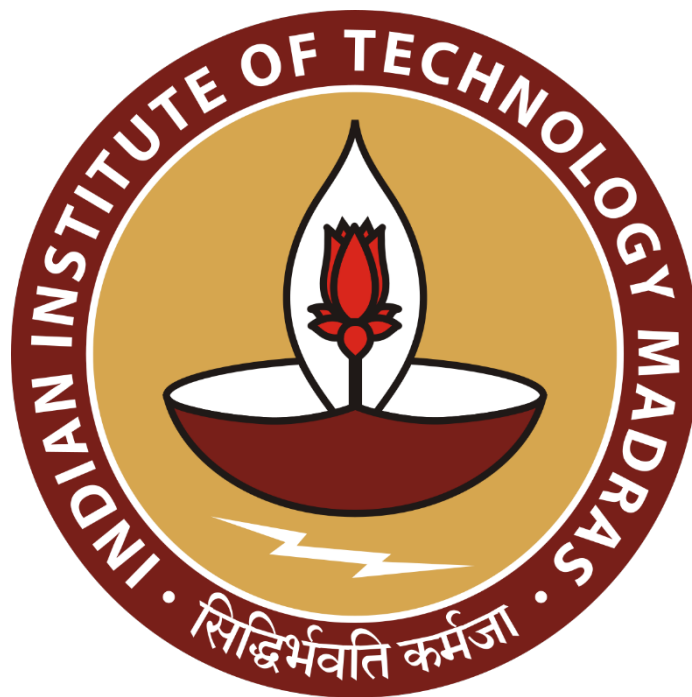


Title: Optimizing Profitability and Stock Management for Amway Business Owner
A Mid-Term report for the BDM capstone Project

Submitted by

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1 Executive Summary and Title

Title: "Optimizing Profitability and Stock Management for Amway Business Owner"

Executive Summary:

This project aimed to comprehensively analyze the operational landscape and challenges faced by Amway Business Owners, leveraging data collected from manual bills and inventory records. Through meticulous data entry into spreadsheets and subsequent preprocessing, the focus was to gain actionable insights into customer behaviour, sales patterns, and inventory management.

Data Collection and Analysis Process : The data, sourced from 250 bills spanning 2022, underwent meticulous manual entry and transformation into structured Excel formats. With the utilization of Python's powerful libraries, extensive preprocessing was carried out, including null value handling and categorical-to-numerical data conversion.

Insights from Data Analysis : The analysis unveiled intriguing revenue insights, totaling Rs 7,19,662 for 2022, showcasing fluctuations across weeks and months, with notable peaks in Week 41 and May. Moreover, despite an estimated 240 transactions, missing data might influence actual counts. Surprisingly, the sales data did not conform to volume or revenue Pareto, diverging from the null hypothesis.

Financial Performance and Customer Insights : The calculated gross profit stood at Rs 1,43,932.4, reflecting the business's financial health. Among customers, C001 emerged as the highest spender, contributing Rs 34,866 across 22 purchases. Inventory assessments revealed potential gaps, notably product P059 with high opening stock but lower sales, suggesting room for improvement.

Sales Trends and Payment Preferences : Identified sales trends across varying periods highlighted notable patterns, while cash transactions dominated the payment landscape, amounting to Rs 4,67,897, followed by PhonePe transactions with Rs 1,56,530.

Visualizations and Recommendations : Utilizing Pareto analysis and visualizations, critical contributors to sales were identified, along with insights into customer segmentation and inventory turnover rates. Recommendations focused on stock optimization strategies during offers, cost-effectiveness evaluations vis-à-vis market prices, and targeted discount strategies to foster customer loyalty and enhance margins.

Conclusion : Through meticulous data collection, analysis, and visualization, this project generated invaluable insights into the Amway Business, enabling strategic recommendations aimed at augmenting profitability, refining inventory management, and fostering enduring customer relations.

2 Proof of Originality of the Data

The data is collected manually from the bills given by the Business Owner and the Inventory provided by her. After which the data is typed into a computer, through Excel and Google sheets.

Interaction link with Ms. Sarita Soni about Amway Business : [Link](#)

Google Drive link for various Images of Warehouse of Amway both in city and at local home : [Link](#)

Primary Data link on which the analysis done : [Link](#)

The below attached Figure 1 is a letter from Amway Business Owner Sarita Soni regarding their use of data for this project.



Figure 1 : Letter from Organization

Figure 2 shows the Warehouse of the Amway in Jaipur, where she used to purchase products for their customers.



Figure 2 : Warehouse of Amway Store in Jaipur

Throughout the project duration, I engaged in in-depth discussions with ABO Sarita Soni, delving into the operational landscape and challenges faced by Amway Business Owners. These conversations centered on comprehending the intricacies of the business within the MLM (Multi Level Marketing) domain, identifying persistent challenges encountered in day-to-day operations. The primary objective was to gain invaluable insights into the fundamental issues influencing the business.

This informative discourse serves as the bedrock for formulating robust strategies aimed at augmenting profitability and refining inventory management for Amway Business Owners. By leveraging these insights, the intent is to devise tailored and effective strategies that facilitate profit maximization and streamline inventory operations, pivotal for driving the overall success of the Amway business in the competitive MLM industry.

Figure 3 is the one such bill given by her as a Primary Data.

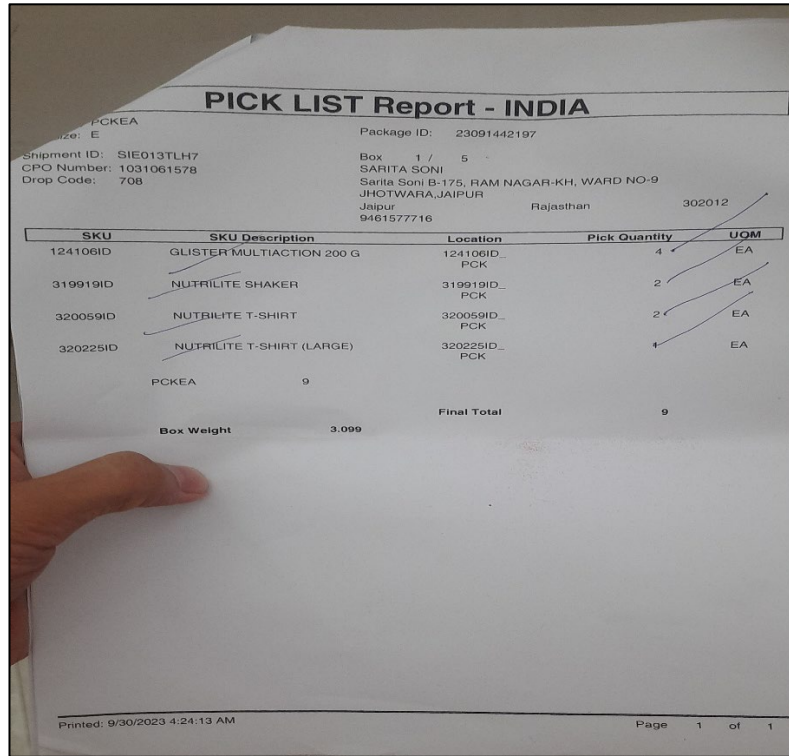


Figure 3 : Bill Image

3 Metadata

Data sources & Collections: The data is collected from the bills provided by the Business Owner for the year of 2022 from January to December. The bills are kept by the Business Owner to return the products to the manufacturer in the future if she or her customer base found any issues with the products.

Data Format: The data is collected from the bills and is manually typed in an Excel workbook for further analysis. The data which is used for analysis is saved in .xlsx format.

Data Description: We have two primary tables of data one is Sales data whose information is given in Table 1 and another one is Stock data whose information is given in Table 2.

The Sales data size is 492 rows and it contains Date, Order_ID, Customer ID, Product Name, SKU, Quantity, MRP, Total Amount, Week, Month, Day, Payment Type

Components	Description
Date	The date of purchasing of products.
Order_ID	The ID number of the order placed.
Customer ID	The ID of the customer who purchased the product. For confidentiality we use Terms like C001, C002,...etc.
Product Name	The Name of the product being sold including the size of the product.
SKU	The SKU (Stock Keeping Unit) is the Product ID by which each product uniquely identified.

Quantity	The number of units of the product being sold.
MRP	The price per unit of the product being offered.
Total Amount	The overall monetary value of the transaction, calculated by multiplying the rate and quantity. The individual or entity purchasing the product or service in the transaction.
Week	The number of week in which the purchase occurs i.e. between 1-52.
Month	The Month in which the purchase occurs i.e. from January – December.
Day	The Day on which the purchase occurs i.e. from Monday – Sunday.
Payment Type	The chosen mode of payment for the transaction, such as cash or UPI methods (Unified Payment Interface) like PhonePe, Paytm etc.

Table 1 : Sales Data

The Stock data size is 840 rows it contains SKU, Month, Opening Stocks, Sales, Inward Stock and Closing Stock. We have 70 different types of products.

Components	Description
SKU	The unique id of the products which ranges from P001 – P070.
Month	Months ranging from January – December.
Opening Stocks	The initial quantity of products available in the inventory at the beginning of the month.
Inward Stocks	The quantity of products received or purchased in that specific month, contributing to the overall inventory.
Sales	The total quantity of products sold from the inventory in that month.
Closing stocks	The remaining quantity of products in the inventory at the end of that specific month, after accounting for sales and inward stock.

Table 2 : Stocks Data

Some Instances of Products

SKU	Product Name	MRP
P002	Glister™ Multi Action Toothpaste	291
P006	Persona Talc 350g	269
P007	Persona 100% Pure Coconut Oil	265
P008	NUTRILITE® Salmon Omega-3 Softgels	1606
P015	NUTRILITE® All Plant Protein Powder	4306

Table 3 : Products

Some Instances of Customers

Customer ID	Total Amount in Rs
C001	34866
C002	32238
C003	25856

C006	19162
C016	19008

Table 4 : Customer

Data Usage and Purpose: The data which is collected will be utilized to gain customer insights, identify sales patterns, and improve customer relations, while the inventory data will be used for optimizing stock levels and managing supplies efficiently.

4 Descriptive Statistics

I. Revenue wise

- The total sales for the year 2022 from 1st January – 31st December amounted to **Rs 7,19,662.**
- The estimated count of transactions stands at around **240**. The actual count might be higher, considering that the received data had missing values, leading to the omission of certain rows.
- Gross profit was **1,43,932.4** and Net profit was **1,07,949.3** for the year **2022**.
- The highest sales occurred during **Week 41**, amounting to **Rs 58,943.00**, closely followed by **Week 20** at **Rs 58,805.00**.
- **May 2022** saw the highest sales in a month, totaling **Rs 1,12,690.00**, while **October 2022** recorded sales of **Rs 92,654.00**.
- Preferred payment methods show **Cash** leading with **Rs 4,67,897.00**, trailed by PhonePe with **Rs 1,56,530.00**.
- The below Figure 4 shows monthly sales in Rs.

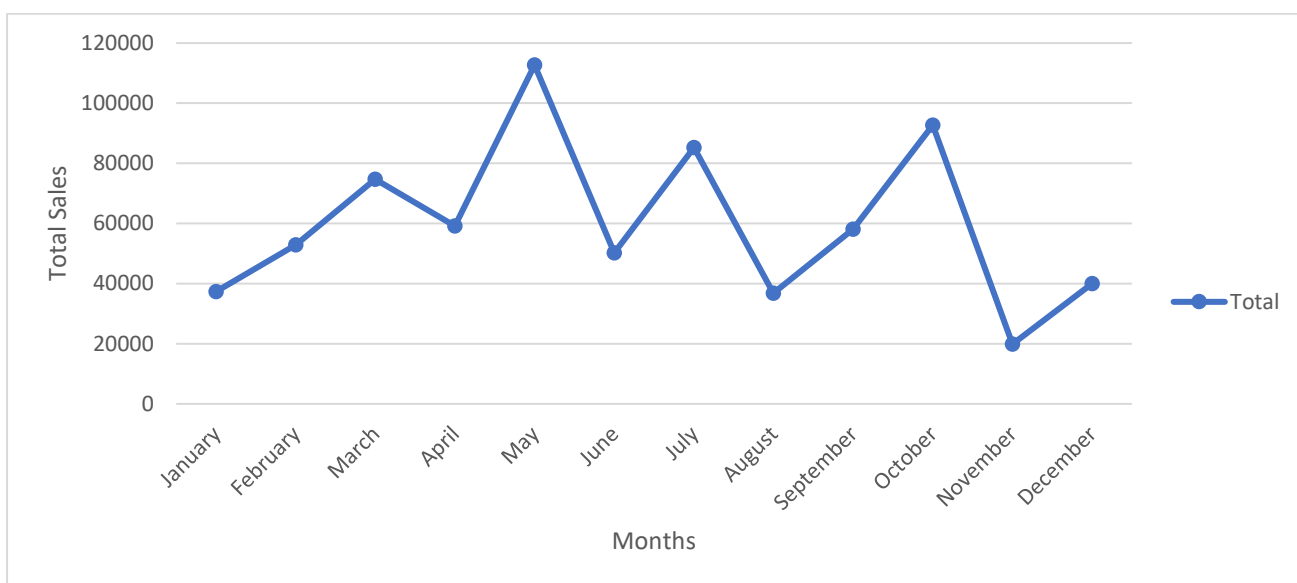


Figure 4 : Monthly Sales

II. Inventory wise

- The customer with Customer_id **C001** is the customer with the highest purchase value equivalent to a total of **Rs 34,866.00** and purchased **22** items.
- Notably, **P059** boasts the highest Average Opening Stock of **22.42**, accompanied by an average sales figure of **0.25** in terms of items which is very poor.
- The below is the tree map of top 20 highest selling products in Figure 5.

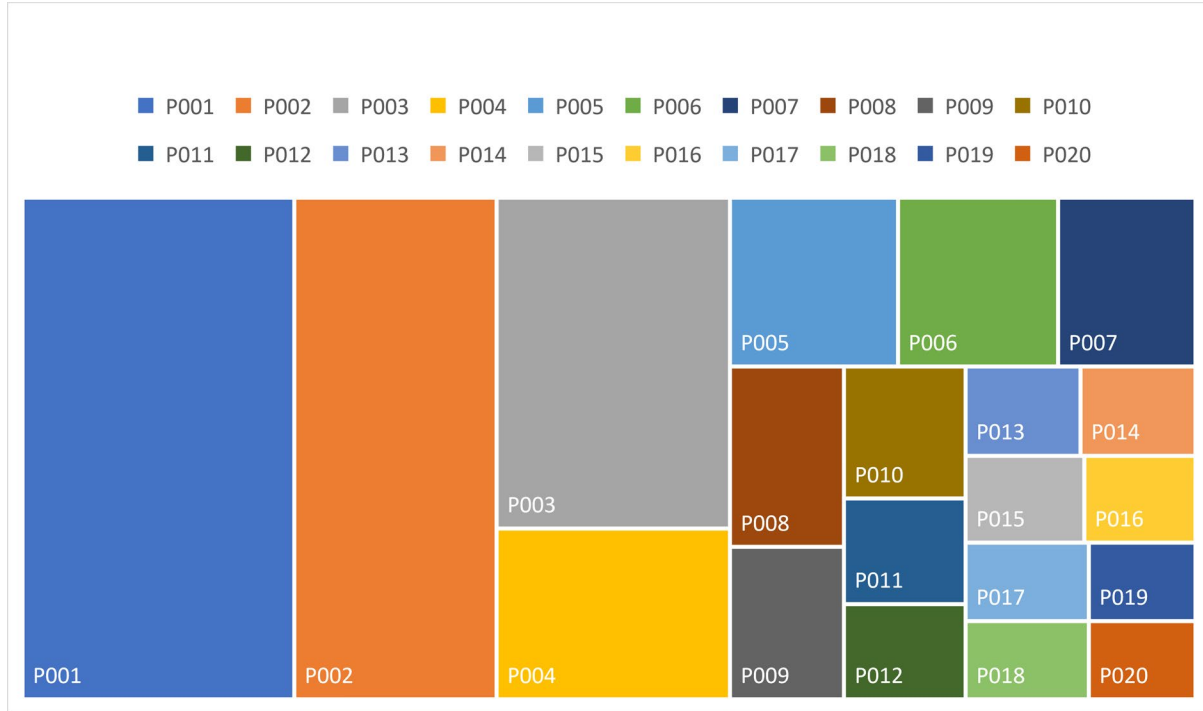


Figure 5 : Tree map of Top 20 highest selling Products

5 Detailed Explanation of Analysis Process

I. Data Collection and Entry:

- Received 250 hard copies of bills containing vital data: product names, quantities, prices, order IDs, and purchase dates.
- Transferred this data meticulously into a spreadsheet using Google Sheets or MS Excel, ensuring accuracy and completeness.

II. Preprocessing and Transformation:

- Conducted comprehensive data preprocessing using Python, employing libraries like NumPy, Pandas etc.
- Addressed null values and converted categorical data to numerical format, facilitating seamless analysis.

III. Visualization and Insights:

- The Pareto Analysis conducted for Revenue and Sales delineated crucial insights into the products contributing to 80% of the total revenue. This analysis effectively identified the key products driving the lion's share of the business's financial performance.
- Customer Segmentation:
- Trend Analysis Based on Sales:
- Inventory Turnover Rate for Inventory Management:
- Utilized various graphing techniques to visualize the data's intricacies and tendencies.
- Constructed pivot tables in Excel to discern frequently purchased products and compute average bill amounts.

IV. Strategic Recommendations:

- Based on product purchase frequency, proposed a strategy for optimizing stock procurement during offers, aiming to reduce stockouts and eliminate dead stock.
- Calculated the cost-effectiveness of products by evaluating price against usage duration, aiding in addressing affordability concerns.

V. Discount Strategies and Customer Loyalty:

- Identified products suitable for maximum discounting to encourage customer loyalty and secure a strong customer base.
- Analyzed product margins to ascertain higher-margin items for strategic discounts.

6 Results and Findings

I. Sales Analysis:

- Revenue Insights: The analysis revealed a total sales figure of Rs 7,19,662 for the year 2022. Variations were observed across weeks and months, with Week 41 and May 2022 recording the highest sales. And Week 24 and November 2022 recording the lowest sales.
- Transaction Count: Though around 240 transactions were noted, considering missing data, the actual count might be higher, influencing the revenue figures.
- I took null hypothesis as our sales data will follow volume pareto or revenue pareto but to my surprise it did not follow any such pattern, therefore I rejected the null hypothesis. Figure 6 given below shows Volume pareto analysis.

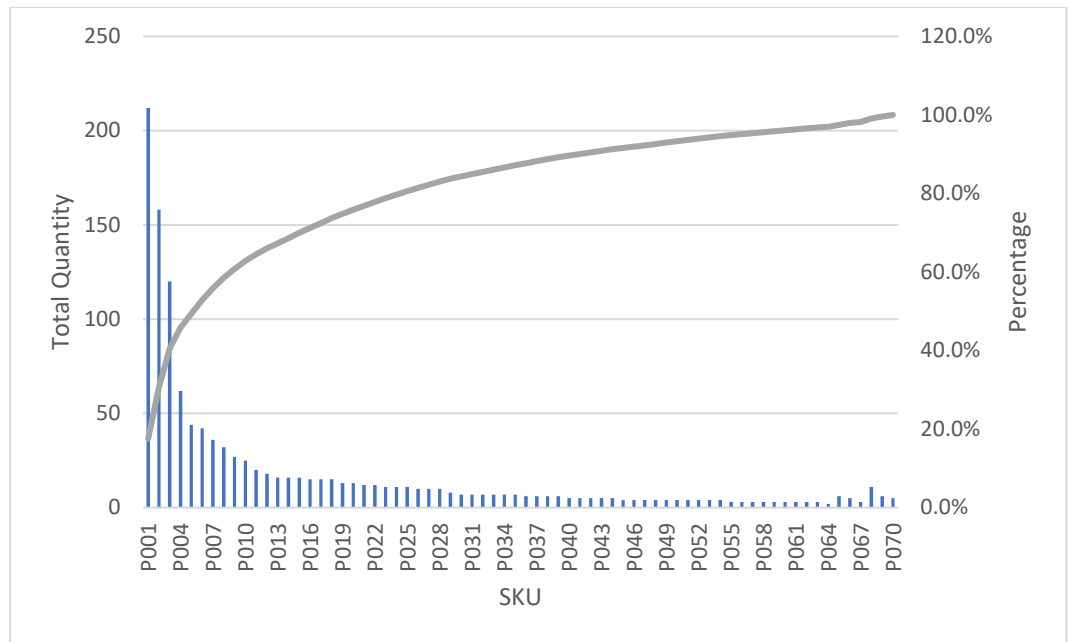


Figure 6 : Volume Pareto Analysis

II. Profit Margins:

- Gross and Net Profit: Calculations indicated a gross profit of Rs 1,43,932.4 and net profit of Rs 1,07,949.3, reflecting the business's financial performance.

III. Inventory and Customer Insights:

- High-Value Customer: Customer ID C001 exhibited the highest purchase value, accounting for Rs 34,866 and 22 purchased items.
- Inventory Analysis: Detailed inventory assessments highlighted products like P059 with the highest average opening stock but relatively lower sales, suggesting room for improvement. Figure 7 shows the line chart for the Average Opening stock and Average sales of top 20 products.

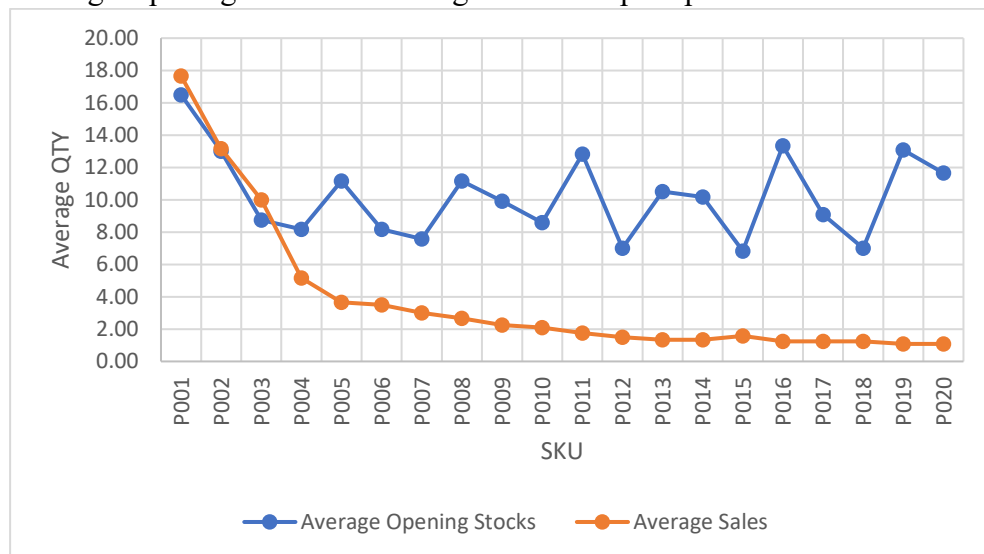


Figure 7 : Line Chart for Average Opening Stocks and Average Sales

IV. Sales Trends and Payment Patterns:

- Sales Trends: Identified peak sales periods and patterns throughout the year, showcasing variations and seasonal trends.
- Payment Preferences: Cash transactions dominated, amounting to Rs 4,67,897, while PhonePe transactions followed with Rs 1,56,530.

V. Visualizations and Interpretations:

- Pareto Analysis: Visualized revenue and sales volume using Pareto analysis, identifying significant contributors to overall sales.
- Customer Segmentation: Insights into customer segments based on purchasing behavior and preferences.
- Inventory Turnover: Calculated inventory turnover rates to optimize stock levels and management strategies.

VI. Recommendations:

- Stock Optimization: Strategies proposed to optimize stock procurement during offers, mitigating stockouts, and reducing dead stock.
- Cost-Effectiveness Analysis: It has to be more detailed therefore I am going to pick top 20 products and compare their price with their market competitors.
- Discount Strategies: I am going to suggest the discounts according to mainly two types one is the customers who bring more revenue the other one is the customers who purchase more no. of items or can be considered as frequently visiting customers.