Optimizing Plywood Business Operations Using Data Analytics

A Final Report for the BDM capstone Project

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1. Executive Summary

Aarambh Traders is a growing plywood business that mainly relies on manual registers and basic digital tools to maintain its daily operations and financial records. The purpose of this project was to carefully study its business data, find the main challenges it faces, and suggest useful solutions to improve how the business runs. After studying the operations in detail, it was found that the business struggles with three main issues: improper inventory management, inefficient profit management, and delays in customer credit payments which affect overall cash flow and business growth.

To begin with, data was collected from different record books provided by the business owner. The data included sales, purchases, customer payments, and SKU-level pricing. This raw data was cleaned and restructured using Microsoft Excel so that meaningful analysis could be done. Tools such as pivot tables, charts, and formulas were used to understand trends, patterns, and problems in the business. The sales data helped track which products sell more and during which months. The inventory data highlighted which items were overstocked or went out of stock frequently. Credit data showed the payment behaviour of different customers.

The results revealed that stock levels were not balanced—some products had extra stock that remained unsold for months, while others ran out quickly, leading to missed sales and unhappy customers. Also, some products had low profit margins, and their prices were not updated even when costs increased. This reduced the overall profit of the business. In the credit analysis, many customers were found to delay payments, and there was no proper system to follow up or control overdue payments. This caused a shortage of working capital and disturbed the cash flow.

To address these problems, the following recommendations were made: start using an Excel-based or software based inventory tracking to keep stock at the right level, revise selling prices regularly to maintain good profit margins, and introduce a credit management policy that sets clear limits and ensures follow-ups on pending payments. These steps are easy to apply, cost-effective, and will help the business make better decisions, improve its financial health, and support steady long-term growth.

2. Detailed Explanation of Analysis Process/Methods

During this project, I conducted a detailed analysis of **Aarambh Traders'** business operations, focusing on inventory management, profitability tracking, and credit analysis. The goal was to identify inefficiencies and provide meaningful insights to improve decision-making and long-term business growth.

1. Data Collection and Organization :

The first step involved collecting all the business data from Aarambh Traders, which was primarily in manual registers. The data included information about inventory, sales transactions, customer payments. My task was to organize this data into a consistent format to make it easier to analyze.

2. Data Cleaning and Structuring

After collecting the data, the next step was to clean and structure it. This involved identifying missing entries, some outlier values and inaccuracies in the data. Since the data was gathered from manual entry through register, there were some inconsistencies. I used Microsoft Excel to organize the data into tables for handling datasets, such as sales purchase record, customer transactions and sales records.

3. Tools and Techniques Used for Analysis

Once the data was cleaned and structured, I applied various tools and techniques to analyze the business's financial and operational performance:

- **Pivot Tables**: These were used to summarize key metrics like inventory turnover, cost trends, sales data, and profit margins. Pivot tables helped identify patterns in product demand, stock movement, and profitability.
- **Trend Analysis**: I examined historical trends such as sales growth, cost fluctuations, and profit margins to understand the business's financial health over time.
- **Data Visualization**: I used tools like bar charts, line graphs, and heatmaps to visualize important trends. These graphs helped highlight critical issues like inventory imbalances, delayed customer payments, and profitability concerns.
- **Conditional Formatting**: I applied this technique to highlight key areas, such as overdue payments and inventory excess, which helped in identifying critical issues that needed immediate attention.

4. Challenges Faced During Analysis

During the analysis, I encountered a few challenges:

- **Manual Bookkeeping Issues:** The business relied on manual records, leading to frequent data entry errors, inconsistent formats, and missing transactions, making it challenging to consolidate and analyze data effectively.
- **Scalability Challenges:** As the business grew, the manual method became inefficient and time-consuming, making it difficult to manage increased data volumes and

emphasizing the need for an automated, standardized data management system to improve accuracy and efficiency.

5. Findings

The analysis revealed several critical insights into the business's performance:

- **Inventory Management Issues**: The business faced fluctuating inventory levels, with excess inventory at times leading to higher holding costs and tied-up cash flow. At other times, low inventory caused stockouts, resulting in missed sales opportunities and customer dissatisfaction. These inconsistencies in inventory management affected operational efficiency and profitability.
- **Profitability Concerns**: Revenue growth was inconsistent, especially when the price of certain SKUs was increased. Customers were unhappy with the price hike and demanded the previous prices, leading to decreased sales volume and customer dissatisfaction. Additionally, cost fluctuations and inefficiencies in inventory management, such as holding excess stock of low-margin products, further impacted profitability.
- **Credit Management Issues**: The business faced challenges with overdue customer payments, which directly affected cash flow. The credit management system lacked clear policies for following up on overdue payments, leading to financial instability.

2.1. Steps for Inventory Management Analysis

From the sales data, I first extracted the daily sales for each stock item, structuring the data so that the columns represent SKU names and the rows correspond to dates. This format provides a clear overview of stock movement over time.

Date	10mm 6×3	10mm 6×4	10mm 7×3	10mm 7×4	10mm 8×4	12mm 6×3	12mm 6×4	12mm 7×3	…

After that, I created another sheet named Stock Ledger, which includes columns such as Opening Stock, Sales, Inward Stock, and Closing Stock for each SKU. The rows represent daily records, allowing for a structured and sequential tracking of stock movement over time.

Date	10mm 6×3				…
	Opening Stock	Sales	Inward Stock	Closing Stock	

Thereafter, I created a table for annual analysis, which includes columns such as SKU Name, Total Demand, Average Daily Demand, Lead Time (Days), Safety Stock, Minimum Stock Level, and Reorder Quantity. This table helps in calculating the effective safety stock, reorder point, and reorder quantity for each SKU, ensuring better inventory management and demand fulfillment.

Annual Inventory Analysis						
SKU Name	Total Demand	Avg Daily Demand	Lead Time(Days)	Safety Stock	Min Stock Level	Re-Order Qty

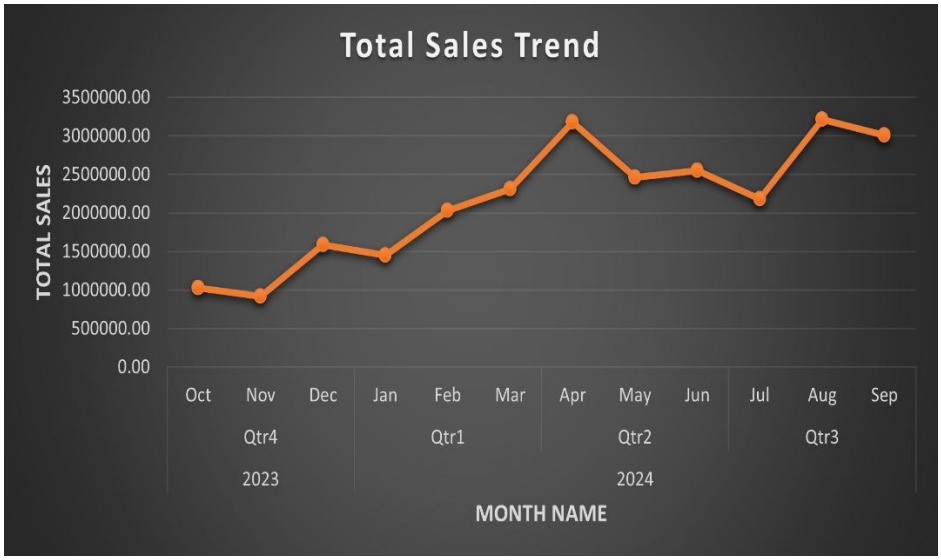

Figure 1 - Monthly Sales Trend

However, since the graph shows variations in demand across different months, using a single annual calculation for reorder point and reorder quantity may not be effective.

To address this issue, I recalculated the reorder point and reorder quantity for each SKU on a monthly basis. This approach ensures that inventory levels are adjusted according to the changing demand trends, helping to prevent both stock shortages and excess inventory.

Inventory Analysis of 6mm 6×3							
Month	**Total Sales**	**Seasonal Index**	**Monthly Avg Demand**	**Lead Time**	**Safety Stock**	**Re-order Point**	**Re-order Qty**

- **Total Sales –** I calculate total sales using pivot chart.
- **Seasonal Index -** A seasonality index is a measure that indicates the degree to which sales in a particular period are above or below the average sales across all periods.
- **Monthly Average Demand –** Monthly average demand is the average daily demand within a specific month.
- **Lead Time –** After discussing with the owner I find that the lead time for all inventory is 3 days.
- **Safety Stock -** the extra inventory maintained to prevent stockouts due to demand fluctuations.
- **Re-order Point -** the inventory level at which a new order should be placed to avoid stockouts.
- **Re-order Quantity –** I chose to order inventory for 15 days to balance stock availability and minimize holding costs while ensuring a steady supply based on average daily sales.

After performing all the necessary steps, I was able to determine the most suitable Reorder Point, Safety Stock, and Reorder Quantity for each SKU, ensuring that the business can effectively meet demand across different seasons.

Inventory Analysis of 6mm 6×3							
Month	Total Sales	Seasonal Index	Monthly Avg Demand	Lead Time	Safety Stock	Re-order Point	Re-order Qty
Oct	39	0.37	1.26	3	4	8	19
Nov	85	0.81	2.83	3	4	13	43
Dec	72	0.69	2.32	3	4	11	35
Jan	126	1.21	4.06	3	4	16	61
…	…	…	…	…	…	…	…
Aug	127	1.22	4.10	3	4	16	61
Sep	187	1.79	6.23	3	4	23	94

I created a similar table for all SKUs, representing the optimal safety stock, reorder point, and reorder quantity. These values are tailored to the business needs, as the analysis is based on the past year's sales data. This ensures efficient inventory management, preventing stockouts and overstocking while meeting demand effectively.

2.2. Steps for Profit Management Analysis

To understand how much profit the business is making, I analyzed the sales, purchase, and price list data. This helped track how changes in buying and selling prices affect earnings. Using Excel, I calculated and compared profits for each product to find areas where the business can earn better.

Firstly, the sales data includes the following columns:

Date	Customer Name	SKU	Qty	Sales Price	Gross Sales Value

To analyze profit more effectively, I added several new columns to the sales data table. These additions helped in calculating and understanding the profit margin for each sale. The newly added columns are: Purchase Price, Gross Purchase Value, Gross Profit, and WeekNum. After these additions, the updated table includes the following columns:

Date	Customer Name	SKU	Qty	Sales Price	Gross Sales Value	Purchase Price	Gross Purchase Value	Gross Profit

The method I use for calculating the new columns are defined below:

- **Purchase Price –** Retrieved using VLOOKUP from the SKU Price List table based on the SKU.
- **Gross Purchase Value –** Calculated by multiplying the Purchase Price with the Quantity sold (Purchase Price × Qty).
- **Gross Profit –** Derived by subtracting the Gross Purchase Value from the Gross Sales Value (Gross Sales Value – Gross Purchase Value).

To gain a clearer understanding of the business's profitability and to monitor trends more effectively, I created a dedicated table focused entirely on profit analysis. This table helps in evaluating overall performance by comparing sales figures with purchase costs and calculating gross profit. It provides a structured view of how each sale contributes to profitability. The columns included in this table are as follows:

Date	Gross Sales Value	Gross Purchase Value	Gross Profit	Profit Margin

The explanation of all columns are as follows:

1. Date – This column includes dates ranging from the start to the end of the data collection period, providing a timeline for profit analysis.

2. Gross Sales Value – Determined by summing the total quantity of SKUs sold on a given date and multiplying it by their respective selling prices using Excel formulas.

3. Gross Purchase value – Determined by summing the total quantity of SKUs sold on a given date and multiplying it by their respective purchase prices using Excel formulas.

4. Gross Profit – Gross profit is the revenue remaining after deducting the direct cost of sku.

Regular and timely profit analysis is essential to maintain SKU profitability. It helps identify pricing issues, cost changes, and margin fluctuations early, allowing for quick adjustments. By monitoring profits consistently, businesses can make informed decisions, improve pricing strategies, and ensure sustainable growth while adapting to market trends and customer behavior.

2.3. Steps for Credit Analysis

Effective credit analysis is crucial for maintaining the financial health of a business. It involves tracking credit extended to customers, payments received, and the remaining outstanding amounts. This analysis helps in identifying delayed collections, understanding payment behavior, and setting appropriate credit policies to ensure better cash flow management and minimize financial risks.

To understand how customers are paying their dues and how much is still pending, I analyzed the credit data. This helps track payments and improve cash flow management.

Date	Customer Name	Credit Amount	Payment Received	Oustanding Amount	Mode of Payment

I created a separate table called "Credit Analysis" to understand each customer's payment behavior. It includes columns like total credit, total payments received, outstanding amount, risk ratio, and payment ratio. This table helps identify how timely and regularly each customer pays, making it easier to manage credit effectively.

Customer Name	Total Credit	Total Payment Received	Total Outstanding	Payment Ratio	Risk Ratio

The process I followed to determine the columns in the "Credit Analysis" table is explained below:

1. **Customer Name –** Name of every customer who made any purchase from the store.
2. **Total Credit -** Calculated by summing all credit amounts given to each customer over time.
3. **Total Payment Received -** Summed all the payments made by the customer to date.
4. **Outstanding Amount** - Found by subtracting total payments from total credit.
5. **Payment Ratio** - Calculated as (Total Payment Received ÷ Total Credit), showing how much a customer has paid.

6. **Risk Ratio -** Calculated as (Outstanding Amount ÷ Total Credit) or simply 1 - Payment Ratio, indicating the risk of delayed or unpaid amounts.

The new "Credit Analysis" table provides a clear summary of each customer's credit, payments, outstanding dues, and risk level. It helps identify reliable and risky customers, set credit limits, follow up on overdue payments, and make informed decisions—improving cash flow management and reducing the risk of bad debts.

To understand monthly customer credit behavior, I created a Pivot Table using credit data. Rows show month names, and columns include total credit, payments received, and outstanding amounts. This view gives a clear picture of issued credit, collections, and pending dues. It helps spot payment delays and supports better financial planning and credit control.

Month	Sum of Payment Received	Sum of Credit Amount	Sum of Oustanding Amount

The description of all columns are following -

1. **Month Name**: Groups data by month to track credit activity over time.
2. **Sum of Credit Amount**: Displays the total credit extended to customers in each month, helping identify peak credit periods.
3. **Sum of Payment Received**: Shows how much credit has been repaid by customers monthly, allowing evaluation of repayment trends.
4. **Sum of Outstanding Amount**: Indicates the total pending amount not yet recovered, highlighting potential cash flow issues.

The pivot table provides a clear monthly summary of credit given, payments received, and outstanding amounts. It helps identify trends in customer payment behavior over time and highlights specific months where cash inflow was lower due to delayed payments. By comparing credit and payment values, the business can pinpoint when payment delays are occurring and which months had the highest risk of poor cash flow. This aids in making informed decisions regarding credit extension and follow-ups. Overall, it offers a structured and visual representation of financial data, helping improve cash flow management and enabling timely actions to maintain financial stability.

3. Results and Findings

This section presents the key observations and insights obtained from the data. The findings are structured to provide a clear understanding of the business's inventory, and sales performance. Various data points and trends are highlighted to support informed decision-making. The results are documented with supporting visual representations for better clarity.

3.1. Sales Analysis

Firstly we analyse the sales data and find all the results and finding through the chart,

Figure 2 - Total Sales Per Qtr (Bar)

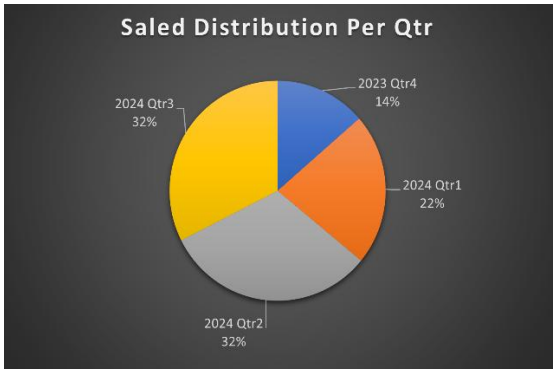

Figure 3 - Sales Distribution Per Qtr (Pie)

Finding from above chart

The pie chart displays each quarter's percentage of total sales. The bar chart shows the specific sales amounts for each quarter, enabling direct comparison and trend identification. Together, these visuals provide a comprehensive understanding of sales distribution and performance across the quarters, highlighting both relative contributions and absolute values.

Looking at the sales data, we see a steady increase from the lowest point in Q4 2023. Sales almost doubled in Q1 2024, showing a big improvement. Q2 2024 had the highest sales, marking our best period. Sales stayed strong in Q3 2024, continuing the growth.

The sharp increase in sales during Q2 2024 can be attributed to the business expansion into new locations by the owner. Additionally, April and May mark the peak season for this industry, leading to higher demand and increased sales. This seasonal surge, combined with expansion efforts, significantly contributed to the strong performance in this quarter.

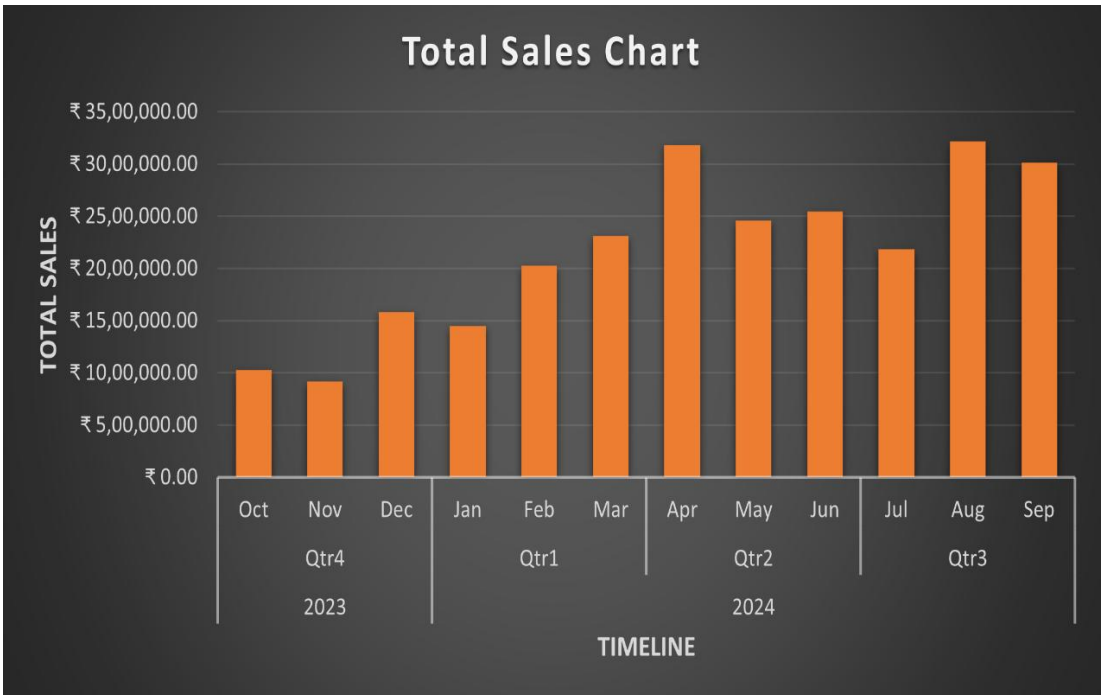

Figure 4 - Total Sales Per Month

Findings from the above chart:

1. **Sales Growth:** Sales remain relatively lower in the initial months and start increasing from December.
2. **Peak in April:** A significant rise in sales is observed in April, indicating high demand during this period.
3. **Fluctuations in Mid-Year:** After April's peak, sales remain stable but slightly dip in July.
4. **Recovery in August and September:** Sales pick up again in August and September, maintaining a high level.
5. **Seasonality Impact:** The pattern suggests possible seasonal demand variations affecting sales.

Pareto Chart for SKU

I used a Pareto chart for SKUs to identify the top-performing products that contribute the most to total profit or sales. It helps prioritize inventory and business focus by applying the 80/20 rule—showing that a small number of SKUs often drive the majority of business performance.

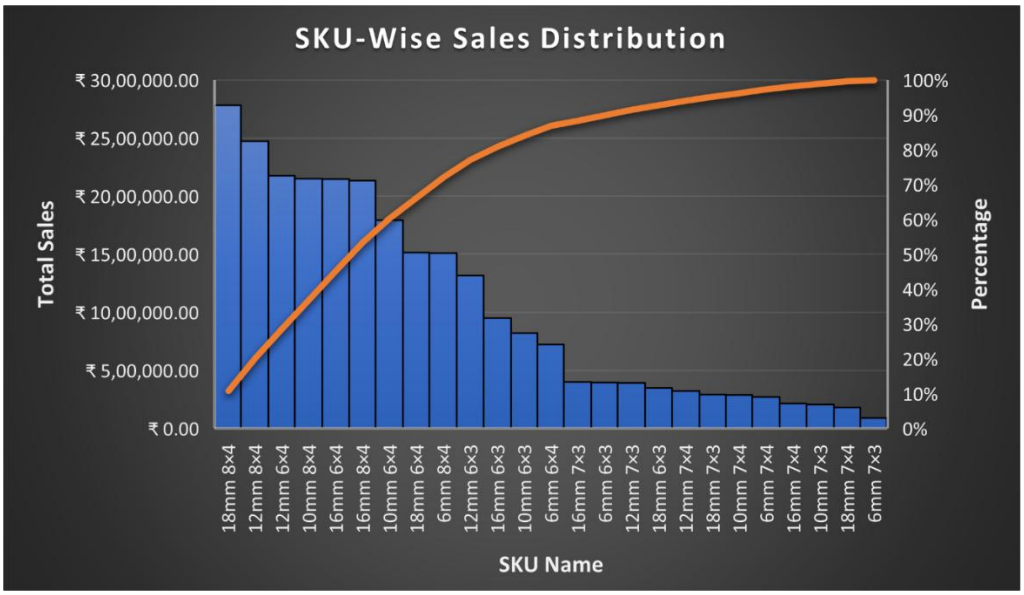

Figure 5 - Pareto Chart for SKU

Finding from this chart,

1. **Top Revenue Contributors -** SKUs like *18mm 8×4* and *12mm 8×4* generate the highest revenue, indicating strong customer demand.
2. **Pareto Principle Observation -** Approximately 20–25% of SKUs contribute to nearly 80% of total sales, following the 80/20 rule.**Skewed Sales Distribution -** A large number of SKUs contribute very little to overall revenue, reflecting an uneven sales pattern.
3. **Focus Areas for Management -** High-performing SKUs should be prioritized in stock planning and promotional strategies.
4. **Optimization Opportunity -** Low-performing SKUs may need review for cost-effectiveness, bundling, or potential discontinuation.

3.2. Profit Analysis

To evaluate the business's financial performance, a detailed profit analysis was conducted using sales and cost data. This analysis focuses on understanding how effectively the business converts revenue into profit, identifying the most profitable time periods, and uncovering any inefficiencies in pricing or inventory. By comparing gross sales value with gross purchase value, key profit trends and fluctuations were visualized to support better pricing strategies and cost control measures.

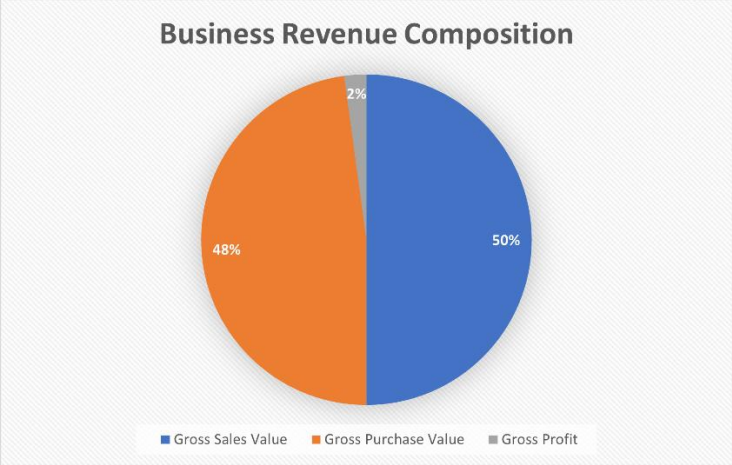

Figure 6 - Business Revenue Composition

Findings from this chart,

1. Gross sales are 50% of revenue, but high purchase costs (48%) result in a very low 2% gross profit margin.
2. The small difference between sales and purchase values indicates limited pricing flexibility or high costs.
3. Improving profitability requires optimizing purchase costs or adjusting selling prices due to the current risky, minimal margins.

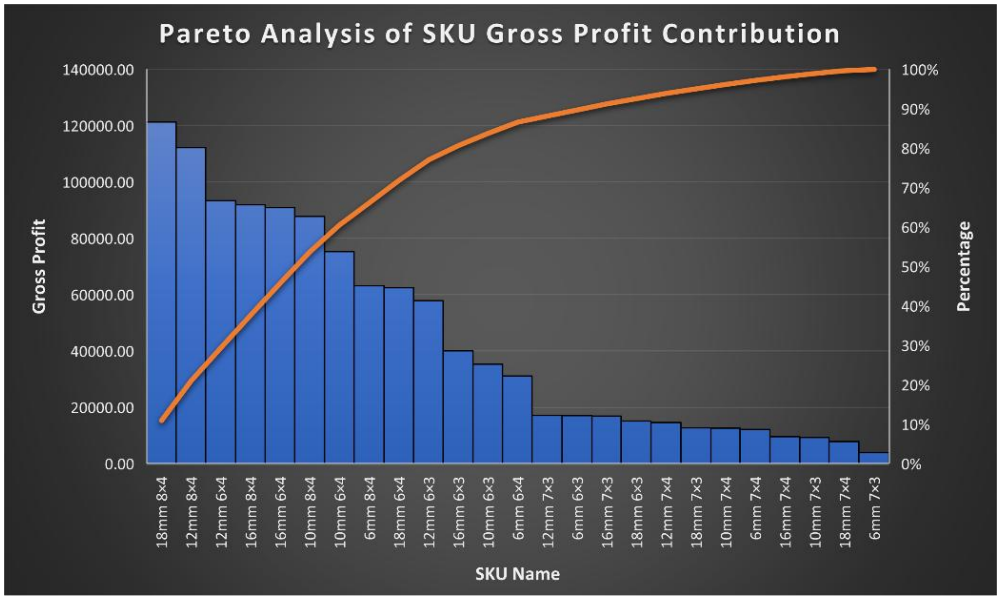

Figure 7 - Pareto Analysisi of SKU Gross Profit Contribution

Findings from this chart,

1. **Top Contributors**: A few SKUs (e.g., 18mm 8x4, 12mm 8x4) contribute disproportionately to the total gross profit, aligning with the 80/20 rule.
2. **Profit Concentration**: The top 20% of SKUs account for around 80% of the gross profit, indicating high-profit concentration.
3. **Low Performers**: Many SKUs on the right contribute minimally to the overall profit.
4. **Inventory Optimization**: Focus should be on high-profit SKUs to improve efficiency and profitability.
5. **Strategic Decisions**: Low-contributing SKUs can be re-evaluated for discontinuation or improvement in sales strategy.

Figure 8 - Gross Profit Growth Trend (Qtr)

The gross profit trend shows consistent growth with a brief mid-period dip, suggesting strong overall performance and resilience. A sharp recovery follows the decline, indicating effective business strategies and a positive outlook for future profitability. To better understand the dip, a monthly profit trend chart was created, offering deeper insights into specific fluctuations and profit issues.

Figure 9 - Monthly Profit Growth Trend

Findings from this chart,

1. **Initial Dip**: Profit dropped slightly from October to November, signaling a slow start.
2. **Qtr4 Growth**: A strong rise in December shows improved performance toward year-end.
3. **Volatility in Qtr1**: January showed a minor dip, but February and March recorded solid gains, indicating recovery.
4. **Significant Drop in April**: April saw a sharp dip, identifying the core of the temporary downturn.
5. **Consistent Growth Post-April**: From May to August, profits rose steadily with peaks in June and August.
6. **Mild Decline in September**: A slight fall in September suggests seasonal variation or operational impact.

To gain deeper insights into the dip, I created a line chart comparing profit with gross sales and gross purchase values. This visualization helps identify whether the decline was driven by reduced sales, increased purchases, or a combination of both, offering a clearer picture of underlying business dynamics during that period.

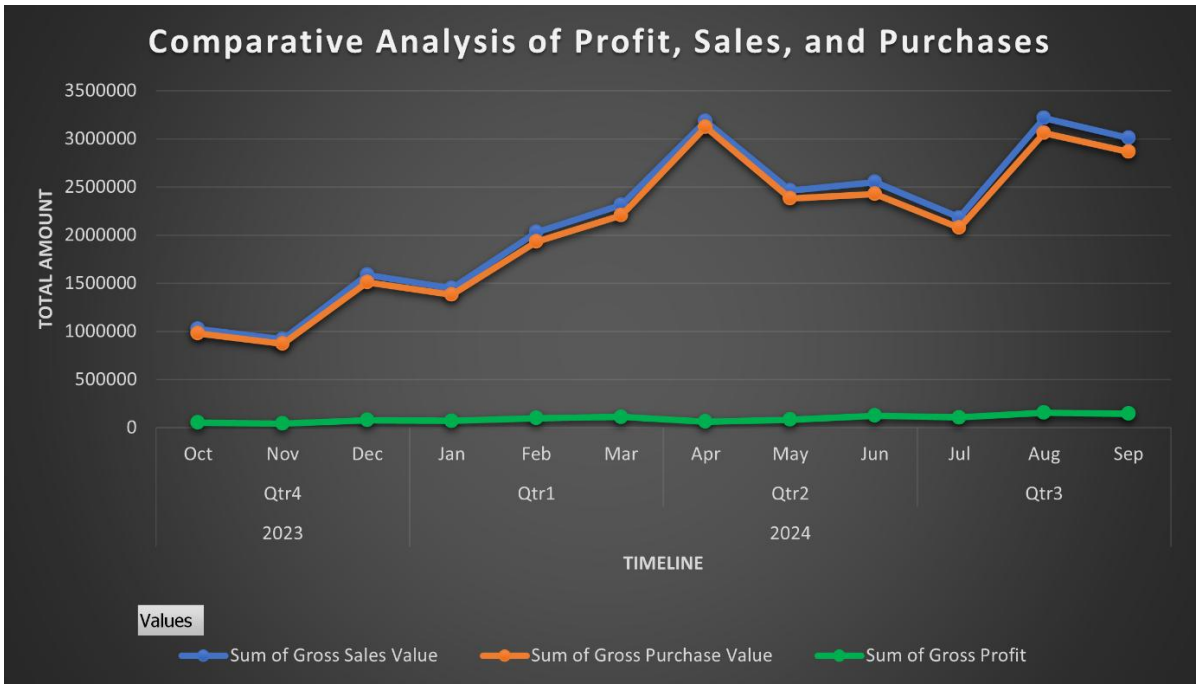

Figure 10 - Comparative Analysis of Profit, Sales and Purchasae

From the above chart, it is evident that both sales and purchase values increased in April. However, profit saw a slight dip during the same month. The key reasons for this decline are as follows:

1. In April 2024, the purchase price of SKUs rose significantly.
2. Despite the cost increase, the owner continued selling at the old rates, as customers were initially unwilling to accept the higher prices.

3. This led to a reduction in profit margins, even though sales volume remained steady.
4. The imbalance between rising purchase costs and unchanged selling prices caused the dip in April's profit.
5. By 16th May 2024, customers began accepting the increased market prices.
6. The owner adjusted the selling prices accordingly.
7. As a result, profit margins improved, and profits grew consistently in May, June, and August.

3.3. Credit Analysis

The credit analysis focuses on understanding customer payment behavior and identifying patterns of delayed payments. By analyzing credit, payments received, and outstanding amounts over time, this section highlights issues affecting cash flow. The insights help improve credit management strategies and ensure better financial stability through timely follow-ups and informed decision-making.

We began by analyzing the various payment modes through which customers made their payments. This helps in understanding customer preferences and identifying the most commonly used methods for transactions.

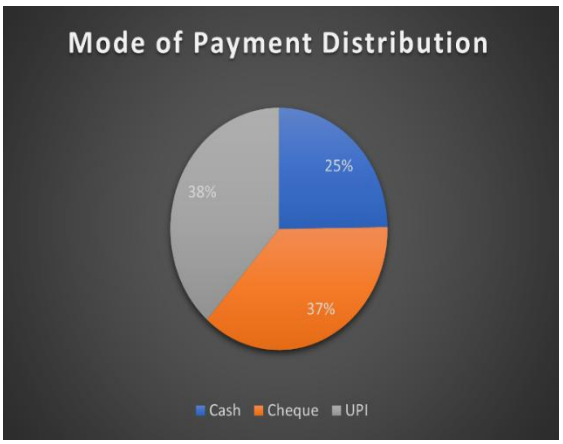

Figure 11 - Mode of Payment Distribution (Pie)

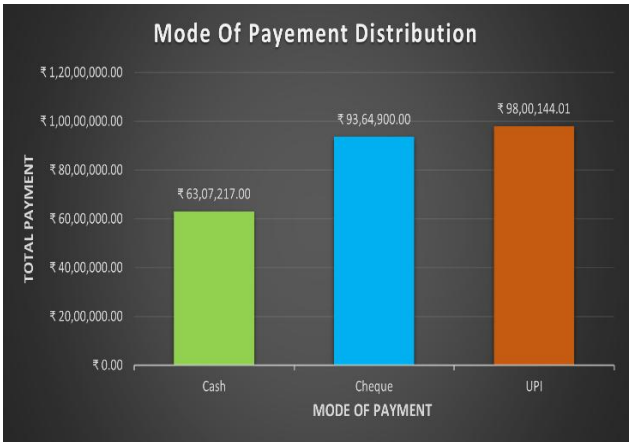

Figure 12 - Mode of Payment Distribution (Bar)

We used both a pie chart and a bar chart to present the payment mode data. The pie chart effectively illustrates each mode's proportion of the total, while the bar chart allows for a clear comparison of the absolute transaction values.

Findings from this chart,

1. UPI is the most preferred payment mode, contributing to 38% of the total payments received, indicating a shift towards digital transactions.
2. Cheque payments (37%) are almost as common as UPI (38%), likely because cheques are preferred for transactions exceeding ₹1 lakh due to UPI's daily limit.
3. With an average transaction of ₹91,812, cheques are favored for larger amounts, significantly higher than UPI's average of ₹27,762, suggesting a preference for cheques in high-value transactions.

4. Cash payments make up the smallest portion, at 25%, reflecting either a preference for traceable transactions or operational ease with digital modes.
5. This distribution suggests that digital modes (UPI + Cheque = 75%) dominate, which can help in reducing delays and improving transparency in the payment process.

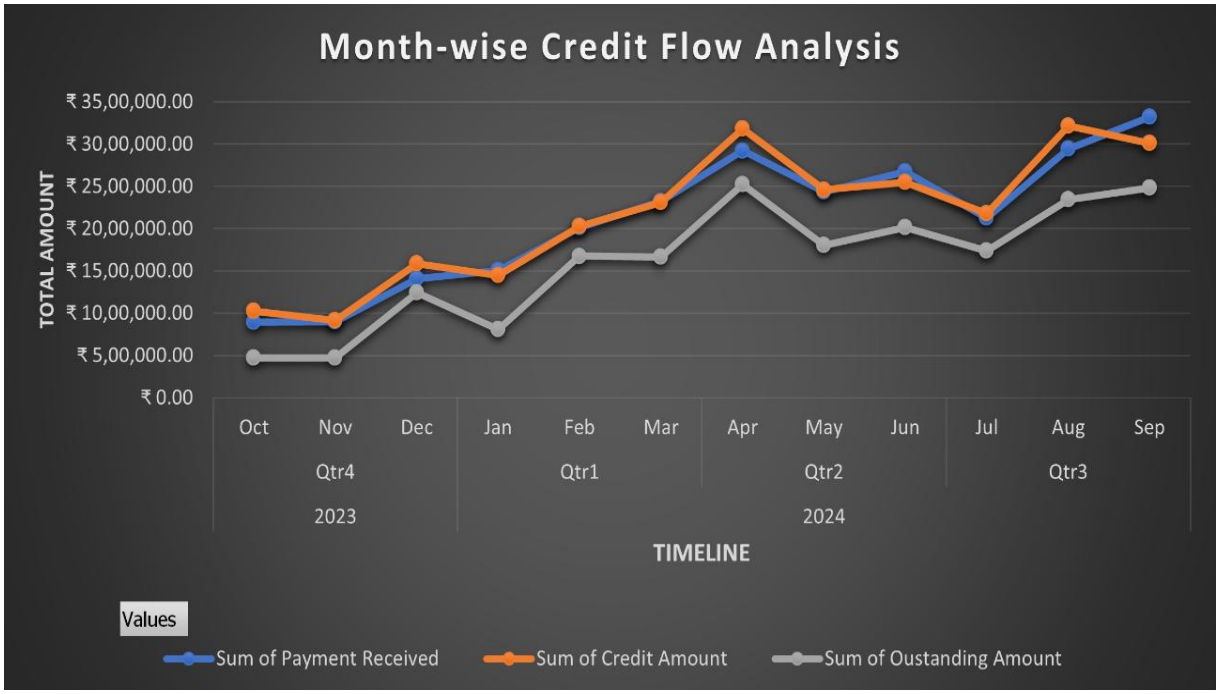

Figure 13 - Month wise Credit Flow Analysis

Findings from this chart,

1. **Outstanding Increases When Credit Exceeds Payments -** In months like April and August, credit amounts are higher than payments received, leading to a rise in outstanding balance.
2. **Payments Help Reduce Outstanding -** In May and June, the payment received is close to the credit given, which helps in reducing or controlling the outstanding amount.
3. **Mismatch in September -** In September, although payment received is the highest, the outstanding amount still increases slightly, suggesting older dues may remain unpaid.
4. **Consistent High Credit Leads to Accumulation -** Repeated high credit across months without matching payments causes a steady increase in the outstanding balance.
5. **Payment-Credit Balance is Key -** Maintaining a balance where payments meet or exceed credit is essential to keep outstanding under control and improve cash flow.

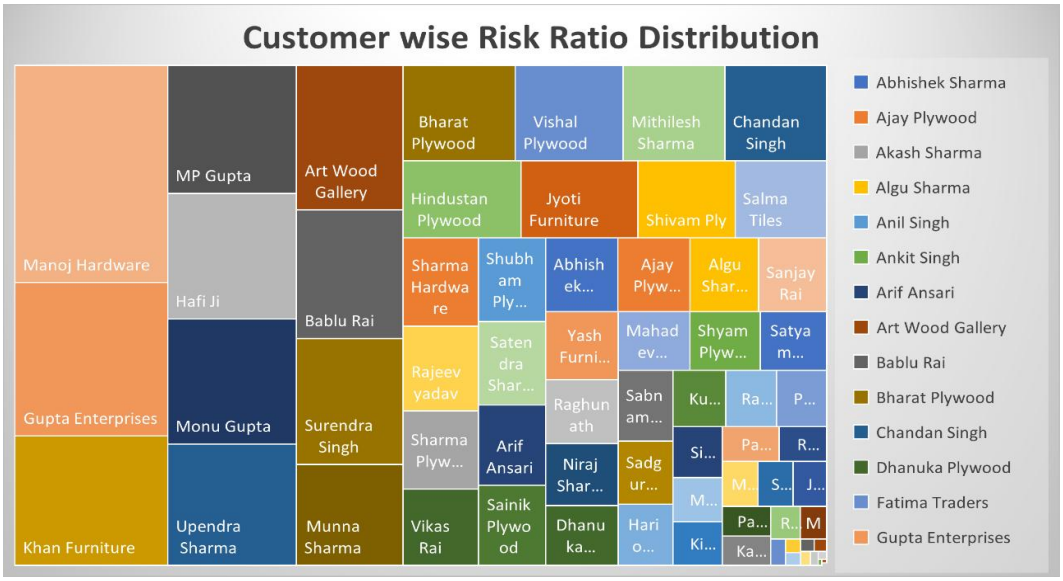

Figure 14 - Customer wise Risk Ratio Distribution

Findings from this chart,

1. **High-Risk Customers**: *Manoj Hardware*, *Gupta Enterprises*, and *Khan Furniture* show the largest blocks, indicating the **highest risk ratios** among all customers.
2. **Moderate Risk Holders**: *MP Gupta*, *Art Wood Gallery*, and *Hafi Ji* also carry **significant risk**, though slightly lower than the top few.
3. **Multiple Medium Risk Clients**: Clients like *Bharat Plywood*, *Vishal Plywood*, *Shivam Ply*, and *Jyoti Furniture* have **moderate-sized risk ratios**, contributing notably to overall risk.
4. **Low-Risk Customers**: Smaller blocks indicate **many customers with lower risk**, spread across various names and businesses.
5. **Diversified Risk**: The business is exposed to a **wide customer base**, which helps distribute risk but highlights a few customers with **disproportionately high exposure**.

4. Interpretation of Results and Recommendations

This section explains what the results of our detailed analysis mean for the business and how they directly relate to the key problems identified in each area. It helps in understanding patterns, strengths, and areas that need improvement. Based on these insights, we suggest practical, data-driven, and result-oriented actions that the business can implement to improve operations, strengthen decision-making, and ensure long-term financial stability, growth, and sustainability.

4.1. Sales and Inventory Analysis

The analysis highlights how product sales and inventory levels impact business performance. It helps identify demand patterns, stock issues, and opportunities for improvement. These insights are crucial for making informed decisions on inventory planning, reducing wastage, and meeting customer demand more efficiently.

Interpretation of Results

1. **Overstocking Detected**: Multiple SKUs were identified as overstocked despite consistently low sales performance, indicating inefficient inventory control.
2. **Stockouts in High-Demand SKUs**: Frequently sold items experienced repeated stockouts, resulting in missed sales and customer dissatisfaction.
3. **Lack of Demand-Based Procurement**: Current purchasing decisions appear to be based on assumptions rather than actual sales trends or forecasting models.
4. **No Seasonal Stock Planning**: Despite identifiable seasonal demand patterns, procurement does not adjust accordingly, causing overstocking post-season or shortages during peak periods.
5. **High Holding Costs**: Overstocked items increase storage costs and reduce available space for fast-moving SKUs, affecting overall operational efficiency.

Recommendations

1. **Dynamic Reordering** - Use monthly demand and seasonal index to set accurate reorder levels for each SKU.
2. **Focus on Fast-Moving SKUs** - Prioritize the top 20–25% SKUs that generate most sales for regular restocking.
3. **Manage Slow-Moving Items** - Discontinue, discount, or bundle underperforming SKUs to optimize storage.
4. **Seasonal Stock Planning** - Pre-stock high-demand SKUs before peak months like April, May, and August.
5. **Adopt JIT for Non-Essentials** - Apply Just-in-Time stocking for B and C category items to cut holding costs.
6. **Adopt Smart Inventory Software -** Use smart data entry or inventory management software to automate stock tracking, reorder alerts, and generate real-time inventory reports, reducing manual errors and saving time.

4.2. Profit Management Analysis

Profit analysis was conducted to evaluate which products and pricing strategies contribute most to overall earnings. The goal was to identify high-margin products, minimize losses from underpriced SKUs, and improve pricing decisions to maximize profitability and business sustainability.

Interpretation of Results

1. **Low Profit Margins on Popular SKUs**: Some frequently sold SKUs have minimal profit margins, reducing overall earnings.
2. **Profit Contribution Disparity:** The bulk of our profits is driven by just 20% of our SKUs, highlighting a significant imbalance in profit generation across our product line.
3. **Inefficient Pricing**: Selling prices aren't regularly updated with rising purchase costs.
4. **Manual Errors**: Pricing inconsistencies exist due to lack of software-based validation.
5. **Insights Support SKU Prioritization**: Strategic focus on high-profit items can boost overall profitability.
6. **Mismatch Between Sales Volume and Profitability -** Some SKUs with high sales do not yield proportionally high profits due to thin margins or outdated pricing, It is seen in April and May'24.

Recommendations

1. **Focus on High-Margin SKUs**: Promote and prioritize the top 20% profit-generating products.
2. **Automate Profit Calculations**: Use inventory or accounting software to track profit margins.
3. **Implement Margin-Based Pricing**: Apply fixed profit margins over cost for consistent profitability.
4. **Quarterly Pricing Review**: Revise SKUs' selling prices every 3 months to reflect cost changes.
5. **SKU-Wise Profit Tracking**: Maintain monthly Excel reports or use profit management software for better profit visibility.
6. **Bundle Low-Margin Products**: Sell less profitable SKUs with high-margin ones to balance returns.
7. **Use Visual Dashboards**: Monitor profit trends through clear graphs and SKU-level comparisons. It can be done using softwares.

4.3. Credit Analysis

Credit analysis was carried out to assess customer payment behavior and its impact on the business's cash flow. The objective was to identify overdue payments, evaluate the efficiency of credit policies, and suggest actionable improvements to reduce outstanding amounts and improve the financial stability of Aarambh Traders.

Interpretation of Results

1. **High Outstanding from Few Customers -** A small group of customers account for the majority of unpaid dues, creating financial concentration risk.
2. **Frequent Payment Delays -** Many customers pay 30 to 90 days after due dates, severely affecting cash flow.
3. **No Credit Limit Policy -** Customers continue to receive goods without any pre-defined credit cap.
4. **Lack of Penalty or Interest System -** Late payments attract no penalty, reducing the urgency to clear dues.
5. **No Credit Aging Mechanism -** There is no structured 30/60/90-day analysis to track overdue payments.
6. **Unstructured Follow-Ups -** Payment follow-ups are irregular and reactive rather than planned.

Recommendations

1. **Define Credit Limits per Customer -** Set limits based on historical payment behaviour to manage risk like don't give credit until 50% of payment get advanced.
2. **Automate Payment Reminders -** Use credit tracking tools to send timely follow-ups via SMS or WhatsApp, you can also use any software which automatically send emails or massages for late payment due.
3. **Apply Penalties for Delays -** Introduce late payment fees after 30 days to incentivize timely payment.
4. **Adopt Smart Credit Management Software –** It can automate credit aging, alert on dues, and generate reports.

5. **Track Credit Aging Regularly -** Review outstanding credits weekly to prioritize recovery efforts.
6. **Encourage Digital & Advance Payments -** Offer small discounts for early UPI/cash payments.
7. **Restrict Credit to Chronic Defaulters -** Deny or limit credit to customers with repeated overdue behaviour.

4.4. SWOT Analysis

Aarambh Traders is a growing plywood trading business serving a wide range of customers. To assess its overall health and identify key areas of focus, a SWOT analysis was done using detailed sales, inventory, profit, and credit data. This analysis helps to identify the business's internal strengths that it can build upon, as well as weaknesses that need attention.

The SWOT analysis also highlights opportunities for growth and improvement, along with external threats that could impact performance. Understanding these factors will allow Aarambh Traders to make informed decisions, improve operational efficiency, increase profitability, manage financial risks, and strengthen its position in a competitive market.

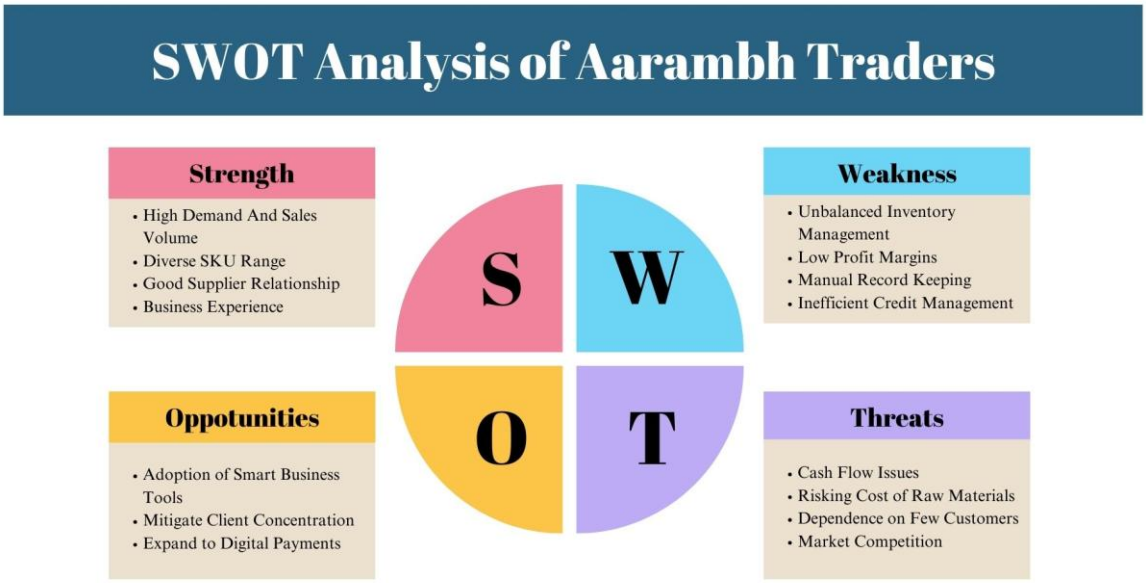

Figure 15 - SWOT Analysis

Strength

1. **High Demand and Sales Volume -** Consistent sales figures indicate strong market presence and customer trust in products.
2. **Diverse SKU Range -** Offers a wide range of plywood products, catering to varied customer needs.
3. **Good Supplier Relationships -** Regular purchases suggest established and stable supply chains.
4. **Business Experience -** Owner has practical knowledge of the plywood market and customer base.

Weakness

1. **Unbalanced Inventory Management -** Overstocking of some SKUs and frequent shortages of others indicate poor demand forecasting.
2. **Low-Profit Margins on Key Products -** Several fast-moving products are being sold at or below cost, affecting overall profitability.
3. **Manual Record Keeping -** Lack of business software leads to delays, errors, and difficulty in tracking performance metrics.
4. **Ineffective Credit Management -** High outstanding dues with no defined credit policy or payment reminders reduce working capital.

Opportunities

1. **Adoption of Smart Business Tools –** Using business software can automate inventory, sales, and credit tracking, improving efficiency.
2. **Price Optimization -** Reviewing and adjusting selling prices periodically can significantly improve profit margins.
3. **Customer Segmentation -** Analysing buying and payment behaviour to offer tailored credit limits and promotional offers.
4. **Expand to Digital Payments -** Encouraging UPI and digital transactions can ensure faster payments and better tracking.

Threats

1. **Cash Flow Issues Due to Credit Delays -** Continuous late payments from customers threaten daily operations and vendor commitments.
2. **Rising Cost of Raw Materials -** Without regular price revisions, increasing purchase costs can eat into profits.
3. **Dependence on a Few Customers -** A large portion of credit is tied up with a few buyers, posing risk if they default.
4. **Market Competition -** Competitors with better tech adoption or pricing strategies may capture market share.

5. Presentation and Legibility of the Report

This report has been professionally structured to ensure clarity, consistency, and a smooth flow of information. It begins with an executive summary and progresses logically through the analysis methods, results, interpretations, and recommendations, followed by a detailed SWOT analysis. Each section is clearly titled and arranged in an order that enhances understanding and engagement.

Consistent formatting has been maintained throughout the report, using uniform font styles and sizes. Proper spacing, bullet points, and numbered lists have been used wherever necessary to improve visual organization and make information easy to follow. Subheadings are used to break complex sections into simpler parts.

Visual aids such as graphs, charts, and tables are incorporated to support data interpretation and present key insights in a visually appealing manner. These elements not only improve comprehension but also highlight important trends and comparisons effectively.

Simple and business-appropriate language is used to ensure the report remains accessible to a broad audience, including non-technical stakeholders. The overall layout, formatting, and writing style aim to reflect professionalism and enhance the legibility of the document for better decision-making.

6. Useful Links

Dataset Link – Click here

BDM Project Folder – Click here