Optimizing Revenue Inflow and Resource Management by utilizing retail store and institutional sales data for a Furniture Firm,

Modern Amenities

Final Submission for the BDM capstone Project

Submitted by

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1. Executive Summary -

This report presents actionable insights derived from a comprehensive analysis of Modern Amenities' financial positioning, and market demand analysis. It aims to optimize Revenue Inflow and Resource Management, by providing significant findings on retail store and institutional sales contributions, post-expansion revenue dynamics, the pandemic's influence on the business, and key performance indicators for strategic decision-making.

The analysis process began with a systematic evaluation of the company's assets and liabilities, revealing a significant imbalance favoring liabilities and highlighting areas for improvement in financial management. Charts like Rose Charts, Heatmaps, Line charts were employed to interpret trends in individual asset and liability elements like fixed assets, current liabilities etc offering insights into financial stability.

The analysis then explored sales performance, noting a discrepancy between sales growth and profitability trends. Despite robust sales growth over five years, profitability did not align, indicating potential inefficiencies in resource utilization and operations. This prompted a closer look at expense management, revealing a significant rise in retail store expenditures post-showroom expansion without corresponding revenue growth, highlighting the need for cost optimization measures. Further exploration covered market dynamics post-pandemic and product demand analysis in the online marketplace. Insights into top-performing product categories, procurement methods, and buyer preferences were identified, with visualizations using Excel and other data analysis tools.

In conclusion, this report synthesizes findings from financial analysis, sales performance, and market dynamics, offering recommendations for Modern Amenities to enhance revenue inflow, streamline expenses and resources, driving sustainable growth in the competitive furniture industry.

2. Detailed Explanation of Analysis Process/Method

1. Resource Assessment and Performance Analysis:

Analysis Method Explanation: In our analysis, We conducted a resource assessment to evaluate the financial health and resource utilization efficiency of Modern Amenities. This involved examining the distribution of total assets and liabilities, identifying trends, and spotting anomalies and the efficiency of resource allocation between these categories. Our analysis delved into evaluating the performance of sales across different channels (retail and institutional), focusing on their contribution to total sales, revenue growth, and expenses incurred by each channel. We specifically looked at how each channel influenced profitability, whether one channel drove more sales than the other, and if the expense to net profit ratio differed significantly between the two channels. We have utilized tools line Excel for effective data structuring and visualization.

How the Analysis is Conducted:

Evaluation of Company's Resources:

- We began our analysis with a visual breakdown of Modern Amenities' financial structure using Rose

Charts. These charts provided a clear representation of the composition of assets and liabilities, segmenting them into categories such as current liabilities, fixed assets etc.

- We utilized Heatmaps to delve into the correlations between various financial metrics. The Heatmaps visually represented the strength and direction of these correlations, helping us identify relationships between different elements such as sales,expenses, profitability, and resource allocation.
- In parallel, we used Line Charts to compare the trends of total assets and total liabilities over time. This comparative analysis allowed us to track the changes in asset and liability values across different periods, identifying trends, anomalies, and patterns

Sales Performance and Quartile Analysis:

- This analysis began with collecting sales data for each channel over a specified time period, typically monthly or quarterly. We computed the total sales and revenue generated from each channel, utilizing box and whiskers plot to understand the distribution and identify any outliers or significant trends.
- Line Chart was plotted to visualize and compare sales trends for each sales channel with total sales over time, highlighting notable fluctuations and any intrinsic pattern in the sales funnel.
- Waterfall Chart was employed to analyze the factors contributing to changes in net profit, such as new showroom launch, channel specific expenditure and overall profitability.
- We calculated revenue growth rates for both channels to understand year-on-year sales performance. Radar Chart was used to compare the revenue growth rates of both sales channels in parallel, examining the revenue growth rate and trends of financial elements relative to total sales.
- Sankey chart was used to visualize the flow of sales between retail and institutional channels, shedding light on the distribution of key expenses for each channel across the year and how these expenses impacted yearly sales figures.

2. Product Demand Analysis in Online Marketplace:

Analysis Method Explanation: Product Demand Analysis in the Online Marketplace involves evaluating the demand for Modern Amenities' products in the digital sphere. This analysis delves into various aspects of online product performance, customer behavior, and market trends to gain insights that can inform strategic decisions. It includes examining data related to product categories, customer preferences, pricing dynamics, and sales trends on digital platforms. Techniques such as Boxplots, Treemaps, Sankey Charts, Rose Charts, and Bubble Charts are used to visualize and analyze this data, providing valuable insights into product popularity, competitive positioning, and opportunities for growth in the online marketplace.

How the Analysis is Conducted:

- Boxplot for Sales Spread Analysis: Boxplot was instrumental in analyzing the spread and range of institutional sales across different months. This analysis helped us understand the monthly sales dynamics, identifying months with higher revenue inflow and those with relatively lower sales ranges. It provided valuable insights into seasonal variations and sales performance trends over time.
- Treemaps for Product Hierarchy and Top Products: Treemaps were used to visually represent the

hierarchy of product categories and their respective contributions to overall sales. Additionally, a separate treemap identified the top 15 products in terms of sales over five years, aiding in prioritizing focus on high-performing products and categories.

Sankey Chart for Sales Flow Analysis: Sankey chart was employed to depict institutional sales revenue across the years 2018-2023 and months, highlighting the flow of revenue through two primary ordering methods: Direct Orders and BID/RA. This visualization provided insights into sales channel effectiveness and revenue distribution patterns.

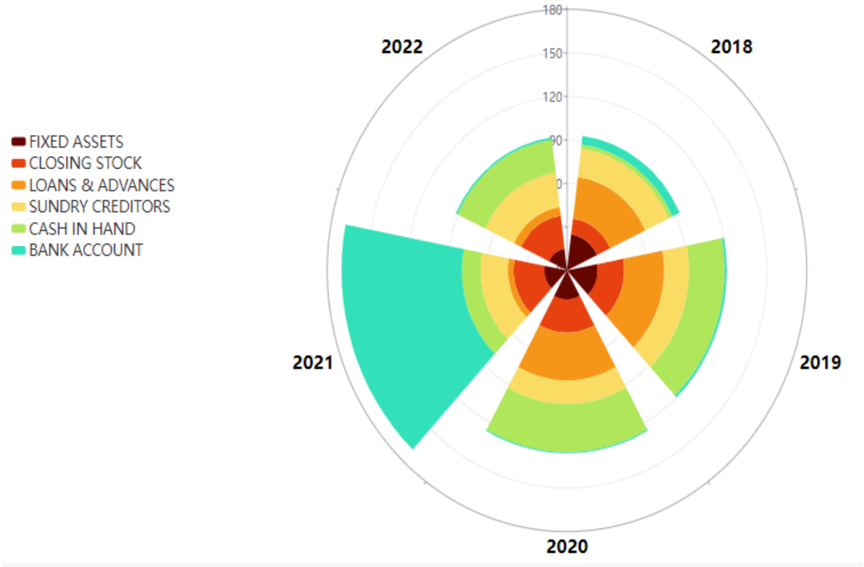
- Rose Charts for Product Comparison: Rose charts were utilized to compare the distribution of in-house manufactured products versus outsourced products in terms of both order quantity and order value. This comparison highlighted the relative importance of each product type in the company's sales portfolio.
- Top Government Procurers Bubble Chart Analysis: Bubble Chart was used to effectively visualize multidimensional data by representing the variables of sales value, order quantity, and government procurers through the position, size, and color of bubbles, respectively. It enables quick identification of top performers and aids in strategic decision-making and resource allocation.

3. Results and Findings

In this section, we present the key results and findings from our analysis, shedding light on crucial aspects of Modern Amenities' sales distribution and the impact of strategic initiatives. Through comprehensive data analysis and visualization techniques, we shall unearth actionable insights that pave the way for informed decision-making and strategic planning.

Resource Assessment of Company's Finances

We start the data analysis journey by conducting a resource assessment of the Assets and Liabilities of the firm Modern Amenities for a period of 2018-2023. We are using a Rose Chart for presenting the individual distribution of both Assets and Liabilities, gathered from the balance sheet data. The interpretation will be further consolidated with a heatmap representation of how exact values change over time with the help of color indications for visual storytelling.



Type: Rose Chart | Fig. 1

This chart shows year on year (2018-2023) distribution of **Asset Elements**

Interpreting the Rose Chart-

- ➔ The Rose Chart intricately maps each year (2018-19 to 2022-2019) via petals.
- ➔ Each petal is subdivided into multiple parts, each part representing elements of either Assets or Liabilities. Color-coded labels are provided to understand the interpretation of colors assigned to each element.

Type: Heatmap | Fig. 2

This heatmap represents the values for different asset elements through the years (2018-2023)

Color indicators: **Green** : High | **Yellow** : Low

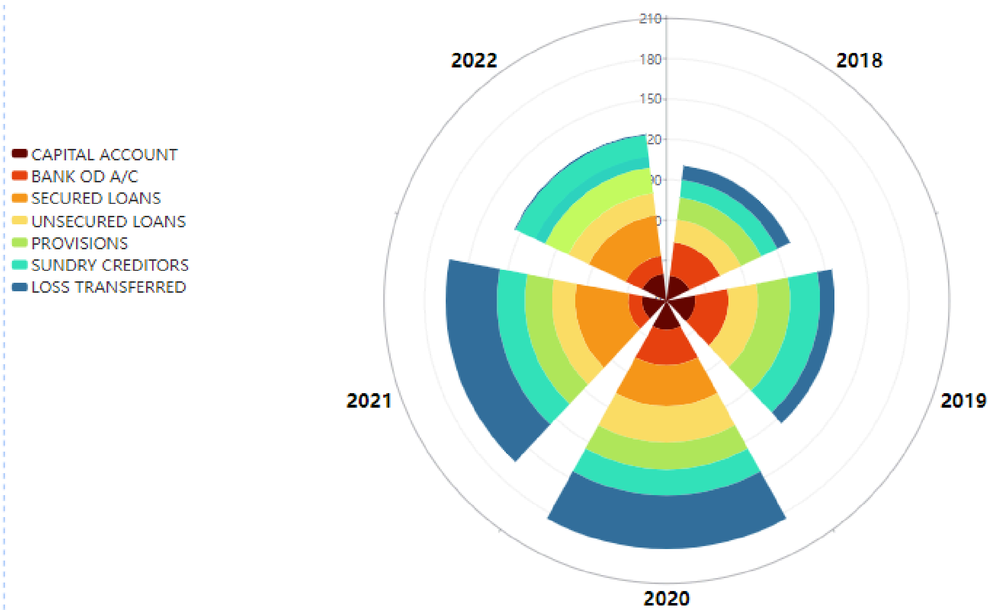
Assets

Year	Fixed Assets	Closing Stock	Loans & Advances	Sundry Debtors	Cash-in-hand	Bank Accounts
2018	1283670.24	8085200	12556712.9	12927777.3	7302.53	34470.88
2019	1160389.41	15365500	12454855.4	12336598.67	76700.11	9169.68
2020	995029.41	18025300	14319900.4	10774968.74	97197.4	4118.94
2021	859433.41	17515500	1900005.39	13625814.59	40146.27	519185.67
2022	759433.85	18012350	2063901.39	16518721.71	65943.5	7976.28

Key interpretations about the firm's Assets from Figures 1 and 2 are as follows:

- **Fixed Assets Depreciation:** There is a notable downward trend in Fixed Assets over the 2018-2023 period, indicating a total depreciation of 40.84%. This trend suggests that the firm may have undergone asset dilution strategies, possibly to sustain operations amidst market challenges like the new showroom launch and market downturn.
- **Closing Stock Increase**: The Closing Stock has consistently increased year on year, particularly doubling from 8085200 Rs in 2018 to 1536550 Rs in 2019. This significant rise, especially after the new showroom launch, may indicate expanded inventory to cater to increased demand or expansion into new product lines or markets.
  If this rise in Closing Stock correlates with a corresponding increase in sales, it suggests an effective strategy of aligning inventory levels with growing demand.
- **Loans & Advances Fluctuation:** The Loans & Advances exhibit fluctuations, with a drastic reduction of 86.7% in 2021 compared to 2020. This reduction could signify strategic shifts or financial restructurings within the firm during this period.
- **Sundry Debtors Trend:** Sundry Debtors amount portrays a consistent upward trajectory, starting at 12927777.3 in 2019 and steadily increasing to 16518721.71 in 2022. This upward trend signifies that Modern Amenities often faces delayed payments from vendors and buyers, impacting their liquidity and cash flow.
- **Cash Position Dynamics:** -
  Interestingly, the Cash-in-hand position experienced a remarkable surge from 7302.53 in 2018 to 76700.11 in 2019, nearly a tenfold increase. However, subsequent years show a fluctuating trend.
  - Similarly, Cash in Bank accounts showcases a fluctuating trend, with a peak of 519185 Rs in 2021.

This variability suggests that the cash in the bank is a dynamic asset, likely to be reinvested or utilized in business operations.



Type: Rose Chart | Fig. 3

This chart shows year on year (2018-2023) distribution of **Liability Elements**

Type: Heatmap | Fig. 4

This heatmap represents the values for different liability elements through the years (2018-2023). Color indicators: **Green** : High | **Yellow** : Low

Liabilities

Year	Captial Accounts	Bank OD A/c	Secured Loans	Unsecured Loans	Provisions	Sundry Creditors	Loss Transferred
2018	17542664.3	7183317.6	0	5986667	69804	4430609.81	723296.58
2019	19627210.3	7056300.48	0	7705767	100617	7534042.66	743486.5
2020	19970618.05	7603686.4	737504	9537925	83005	6557988.69	2707417.05
2021	16895456.43	3017553.29	956260	6044379	84295	7036848.77	2582284.26
2022	18761084.3	3855137.61	735016	5882727	80301	8280639.2	44942.87

The firm's Liabilities in general indicate higher value trends for most elements over the years giving hints of increasing financial burden for the firm. By examining Figures 3 and 4, we can highlight the key observations as-

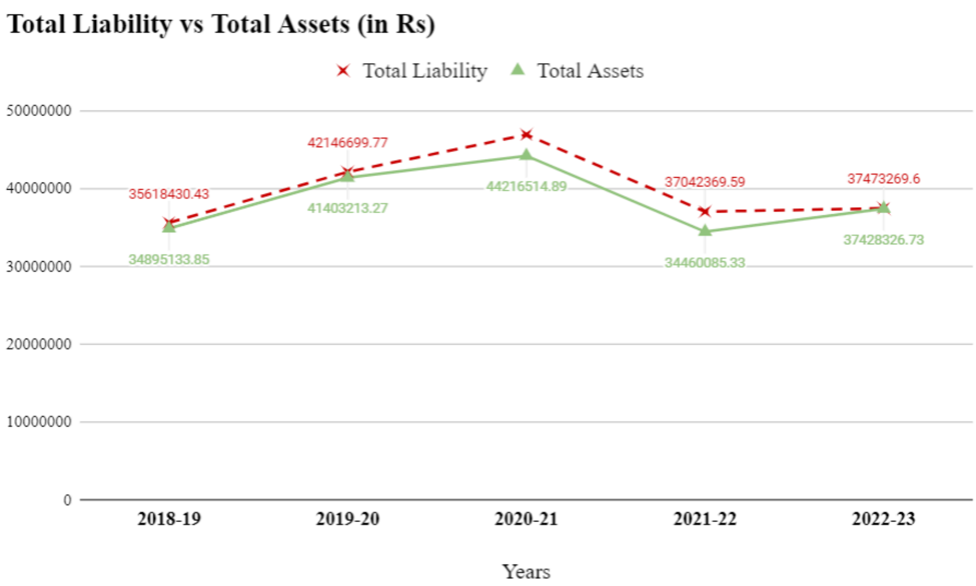
- **The capital accounts witnessed a spike in 2019 and 2020, reaching 19627210.4 and 19970618.05 from 17542664.3 in 2018.** However, this spike was contained at 18761084.3 in 2022, indicating some stabilization.
- **Secured loans were nonexistent in 2018 and 2019** but rose significantly to 7375504 in 2020, peaking in 2021 before stabilizing at 735016 in 2022.
- **Unsecured loans reached their peak in 2020 at 96260 but experienced a minimal reduction over the 5-year period,** from 5986667 in 2018 to 5882727 in 2022.
- Sundry creditor amounts increased significantly year on year, starting at 4430609.81 in 2018, rising to 7534042.66 in 2019, and eventually reaching 8280639.2 in 2022. This indicates a **more than twofold increase in unpaid payments over 5 years.**
- **Bank O/D accounts decreased from 7183317.6 in 2018 to 3855137.61 in 2022** indicating a

decrease in amount substantially by 46.3% in 5 years.

- The company's **Loss Transferred showed positive indications as it substantially decreased from 723296.58 in 2018 to 44942.87 in 2022.** This reduction is noteworthy, especially considering the impact of the COVID-19 crisis, which led to higher loss transfers in 2020 and 2021.

These findings are suggestive that individual liability elements have a tendency to increase year on year, impacting the total liability eventually. On the other hand, the individual asset elements have shown a trend of decrease in a 5 year period, except for closing stock amounts. In figure 5, we consolidate these findings by seeing an overview of how these trends in individual asset and liability elements impact the total liabilities and total assets.

Type: Line Chart | Fig. 5



Red: Total Liability

Green: Total Assets

A Line chart comparison could be of paramount importance to understand any interrelationships between the financial elements.

- **Total Liabilities have always been higher than total assets throughout the years.** This validates our findings from individual liability elements which tended towards the higher values when compared to individual asset elements which often inclined towards lower values.
- What's intriguing is the **parallel trajectory between total liabilities and total assets in terms of trends.** As total liabilities showed a consistent increase from 2018 to 2020, signifying a higher financial burden, total assets also experienced considerable growth during this period. This growth in assets somewhat mitigated the impact of rising liabilities, maintaining a relative balance. Similarly, in 2021, when liabilities decreased, assets also decreased, leading to no significant gains.
- In 2022, we observe a near balance between total liabilities and total assets, with liabilities at 37,473,269.6 and assets at 37,428,326.73. Notably **in 2022, the growth in assets (8.61%) from the previous year outpaces the increase in liabilities (1.16%), indicating a positive trend** towards balancing the financial equation.

We shall continue our investigation further by conducting a statistical analysis of the total Sales for MA in a period of 5 years to understand the impact of the firm's current resource management and how it is translating towards the company's profitability. We are employing a boxplot and an accompanying table for this purpose.

Total Sales Quartile Analysis

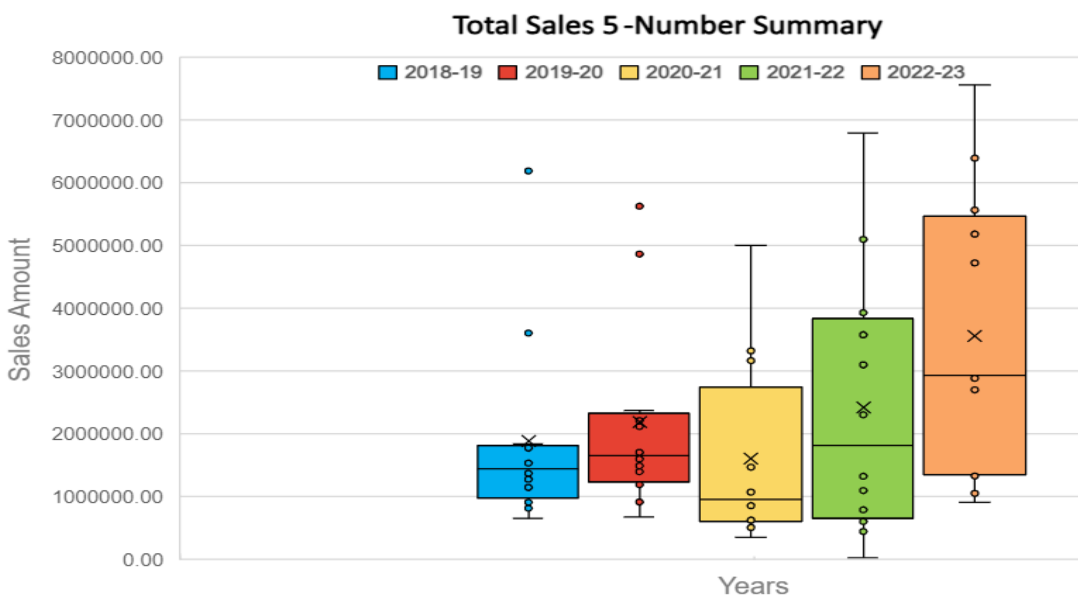
Box Plot interpretation:

➔ Median (Q2): Represents the middle value in the dataset. Half of the data points are below this line, and half are above it.

➔ Quartiles (Q1 and Q3): Mark the 25th and 75th percentiles, showing the middle 50% of the data range.

➔ Whiskers: The lines extending from the top and bottom of the box (whiskers) show the range of the data.

➔ Outliers**:** Data points outside the whiskers, highlighting deviations from the main dataset.



Type: Box Plot | Fig. 6 The Interquartile Range (IQR) serves as a measure of data spread, indicating the range where the middle 50% of the data points lie.

Year	Total Sale	Q1	Q3	Median(Q2	IQR	Upper	Lowe
2018	22748792.24	971937.085	1819804.535	1452807.125	847867.45	6197200.16	660651.2
2019	26209855.16	1246262.243	2336253.673	1654251.95	1089991.43	5629230.85	677188
2020	19179339.35	597130.74	2758440.96	962589.31	2161310.22	5010204.02	358892.2
2021	29098114.74	646763.74	3844419.67	1815419.07	3197655.93	6791180.73	13400
2022	42746695.86	1396027.81	5478854.93	2924905.02	4082827.12	7575644.78	916740.6

Type: Table | Fig. 7

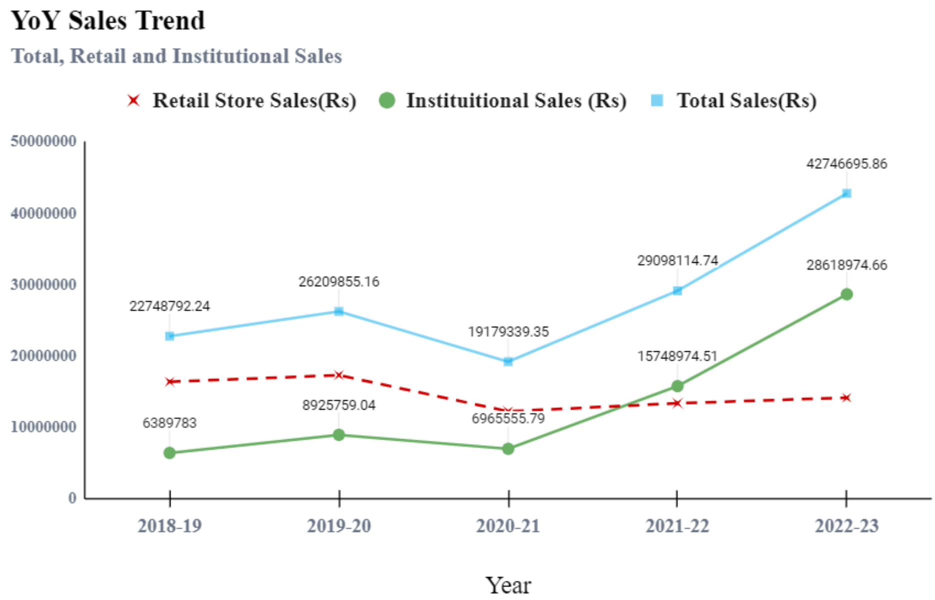
Observations from the Quartile Analysis and Growth Trends:

- **The data spread, measured by the Interquartile Range (IQR), expanded significantly over the years.** In 2018, the IQR was Rs. 847,867.45, growing to Rs. 4,082,827.12 by 2022, indicating a nearly 4.8 times increase.
- **Both the median, Q1, and Q3 values showed an upward trend each year**, reflecting consistent growth in sales values.
- **In both 2018 and 2019, outliers were notable on the upper end of the sales data.** Despite the

main data being tightly clustered within an IQR range of 8 to 10 lakh, these outliers reached exceptionally high values, with 2018 reaching 6,197,200.16 and 2019 surpassing even the highest value of 2020 at 5,629,230.85.

- For 2018 and 2019, the mean value is closely aligned with the Q3 value, indicating the influence of outliers on the average. This suggests that **a few high-value transactions skewed the average upwards,** even though the majority of values were below the Q3 thresholds of Rs. 18,198,04.535 in 2018 and Rs. 2,336,253.673 in 2019.
- In contrast, **from 2020 to 2023, the mean value did not significantly exceed the median, indicating a more balanced distributio**n without extreme outliers impacting the average.

Sales Performance and Profitability Analysis



Type: Line Chart | Fig. 8

X-axis: Year Range

Y-axis: Sales Amount

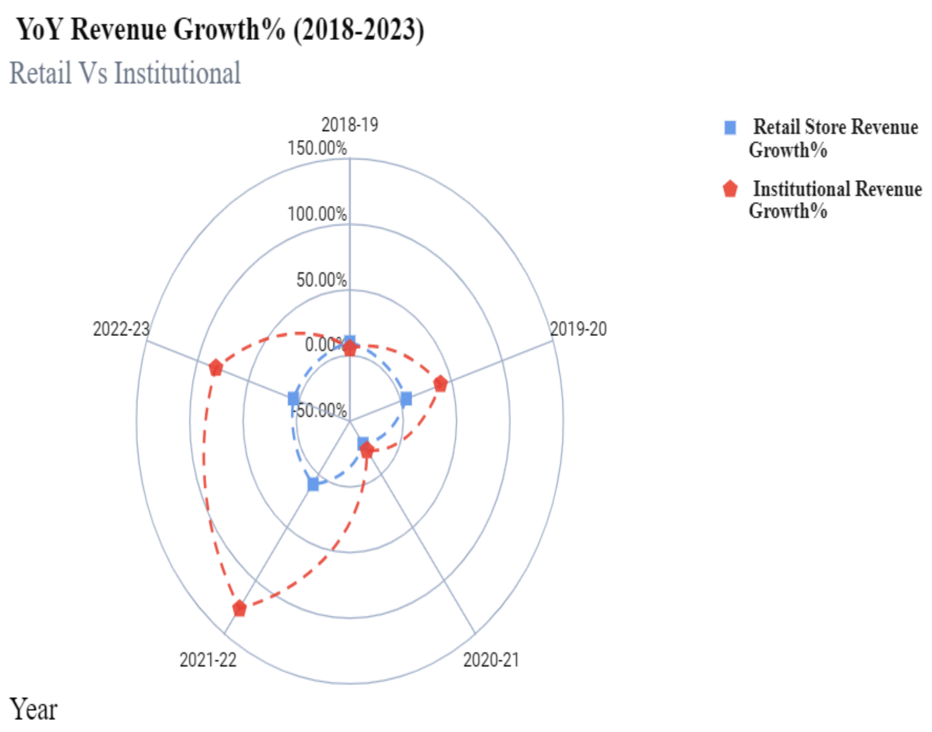
This chart shows year on year (2018-2023) Sales Trend comparison between Retail, Institutional and Total Sales.

Retail Store Sales(Rs) - **Red** , Institutional Sales(Rs) - **Green** , Total Sales - **Blue**.

- **There is a strong correlation between Total Sales and Institutional Sales**, as evidenced by their similar trajectory over the years. This indicates a significant impact of Institutional Sales over Total Sales.
- In 2018, Retail Sales dominated Total Sales with a contribution of 71.91%, while Institutional Sales accounted for 28.09%. However, **by 2022, this balance shifted significantly, with Institutional Sales contributing 66.95% and Retail Sales dropping to 33.05%.** This reversal highlights a notable shift in sales dynamics over the five-year period.
- **A turning point in sales trajectory is experienced post year 2020.** While retail sales continued plummeting in the following years, institutional sales increased manifolds from Rs. 6965555.79 in 2020 to Rs. 15748974.51 in 2021 and so on.

These observations underline the changing dynamics in sales distribution between Retail and Institutional channels, with Institutional Sales emerging as a dominant contributor to Total Sales by 2022 and experiencing significant growth post-2020.

Year on Year Revenue Growth% Analysis



Type: Radar Chart | Fig. 9

This chart shows year on year (2018-2023) Revenue Growth% comparison between Retail and Institutional Sales. Color Indications:

Retail Revenue Growth%: **Blue**

Institutional Revenue Growth%: **Red**

Year	Retail Store Sales Growth%	Instituitional Sales Growth%
2018-19	10.57%	5.57%
2019-20	5.65%	39.69%
2020-21	-29.34%	-21.96%
2021-22	9.30%	126.10%
2022-23	5.83%	81.72%
Grand Total	**2.01%**	**231.11%**

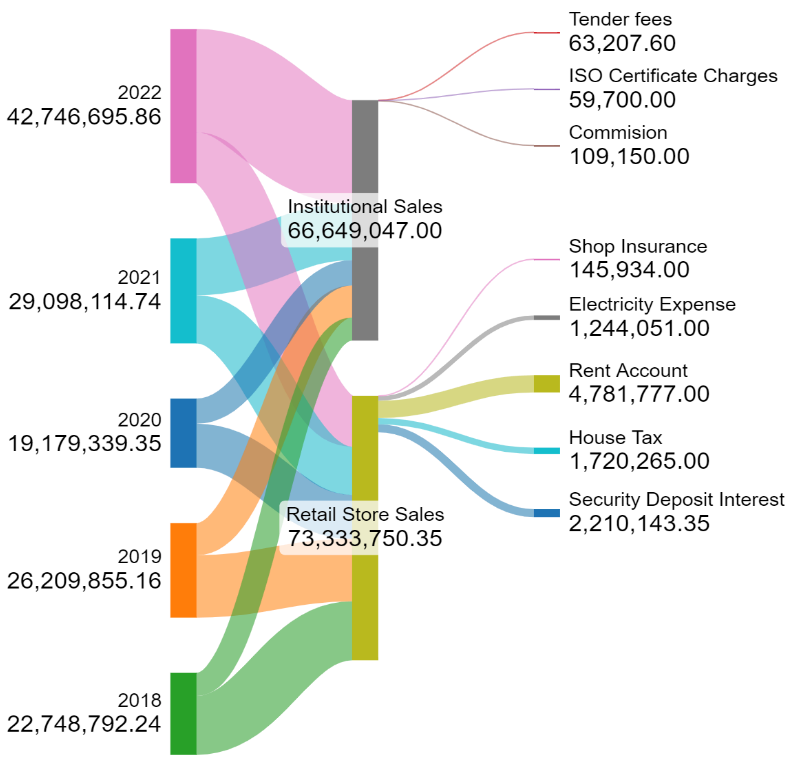
Type: Table | Fig. 10

To further understand the year on year revenue trends, we have calculated the Sales growth rates for both the channels. We are using a Radar Chart for illustration as it can effectively show the relative performance of each channel across different years, highlighting trends and patterns in sales growth. The notable observations from the analysis of Fig. 9-10 :

1. Institutional sales consistently surpassed retail sales growth, showcasing a notable disparity in net sales growth rates. Specifically**, institutional sales exhibited a remarkable growth rate of 231.11%, in stark contrast to the modest 2.01%** growth rate seen in retail sales.
2. **Initially, retail sales outperformed with a higher growth rate in 2018** (10.57% compared to 5.57% for institutional sales). However, this trend shifted significantly in 2019, where institutional sales surged in growth while retail sales experienced a decline.
3. **The Covid-19 pandemic's impact in 2020-21 resulted in negative growth rates for both sectors**, albeit institutional sales endured a relatively smaller decline compared to retail.
4. The post Covid-19 recovery in 2021 highlighted a notable discrepancy in growth rates between institutional and retail sales. **Institutional sales demonstrated a robust recovery with a growth**

rate of 126.10%, significantly surpassing the 9.30% growth rate observed in retail sales.

Flow of Total Sales and Primary Expenses: Retail vs. Institutional Channel



Type: Sankey Chart | Fig. 11

This chart illustrates the total annual sales flow across years (2018-23), distribution between Institutional Sales and Retail Store Sales, along with the allocation of Primary Expenses for each channel based on revenue utilization.

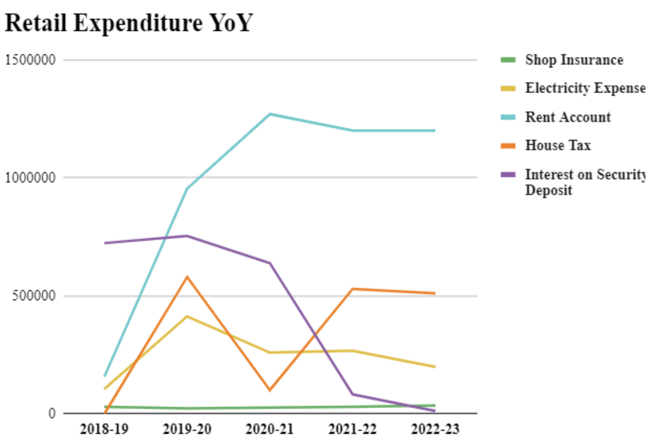
Color indications:

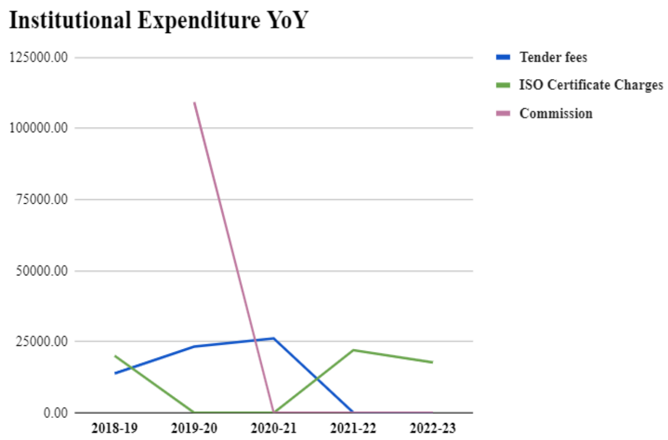
2022: **Pink** | 2021: **Cyan** | 2020: **Blue** |

2019: **Orange** | 2018 : **Green**

The Sankey chart visually represents revenue flow across sales channels, where flow width corresponds to value. It illustrates total sales, yearly contributions to each channel, and revenue allocation to channel-specific expenses, offering a comprehensive view of sales distribution, expenses, and revenue generation between channels. This helps assess revenue generation, channel-specific expenses, and similar insights. Only channel-specific expenses are considered here, excluding other common expenses for both channels. Following are the insights gathered from the Figure-11 :

- **Total Retail Sales are higher than total Institutional in 5 years, attributing to higher sales in the initial years,** while the institutional sales show higher proportions in the last two years, keeping the total retail sales around only 7 lacs higher than the institutional channel.
- **When comparing expenses, Institutional Sales show considerably lower expenditures compared to Retail Sales.** This suggests that Institutional Sales may offer higher profitability potential due to their lower operational costs. Specifically, Institutional Sales expenditure accounts for only 0.348% of total Institutional Sales, while Retail Sales expenses represent 13.78% of total Retail Sales.
- **Institutional sales expenditure has lower recurring expenses compared to Retail business.**
    - ISO Certification charges are one time charges or have higher validity.
    - Commission costs for Institutional Sales staff, despite being variable based on sales values, remain modest at 0.16% of Total Institutional Sales over 5 years.
    - On the other hand, Retail expenses mainly comprises fixed costs such as Rent, electricity, interest on security deposit for the new outlet, and House Tax, highlighting higher overhead associated with Retail operations.





<u>Type: Line Chart | Fig. 12</u>

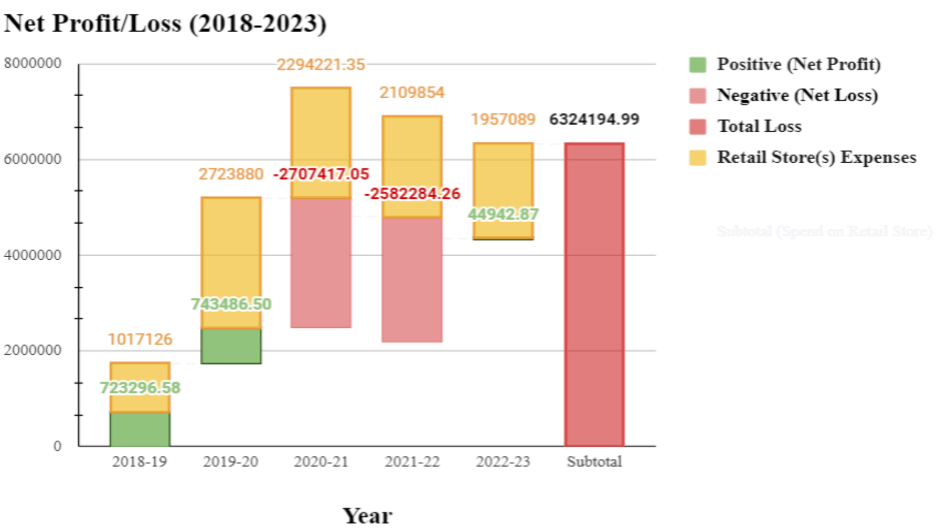
<u>Type: Line Chart | Fig. 13</u>

In figures 12 and 13, we display the trends for individual expenses for both the channels. Here are a few observations from the analysis:

- **Retail sales incur the highest expense in Rent,** starting with a minimal amount in 2018 and escalating significantly in 2019 and 2020, followed by a minor reduction thereafter. This pattern reflects the impact of Rent for the new retail store that was launched in 2019, introducing a new and substantial expense.
- **In 2019, house tax and electricity expenses peaked, coinciding with the launch of the new showroom.** This surge in expenses reflects the increased operational costs associated with establishing the new retail outlet
- **In terms of expenditure range and consistent costs, there are notable differences between institutional and retail expenses.** Institutional expenses show a narrower range, with only ISO certification charges remaining by the end of the period, indicating a more stable trend. In contrast, retail expenses exhibit a wider range, with the interest on the security deposit for the new shop being the only expense having reduced consistently.

<u>Type: Waterfall Chart | Fig. 14</u>

This chart shows the relationship between <u>Net Profit/Loss and Retail Store Expenses(in Rs.)</u> on Y-axis with years from 2018-23 on X-axis.



Insights derived from the waterfall chart in Fig. 14 are as follows:

1. **Before the showroom launch in 2018, the company managed costs efficiently**, maintaining a balanced relationship between net profit (723296.58) and retail expenses (1017126).
2. After launching a new outlet in 2019, retail expenses surged from 1,017,126 to 2,723,880, resulting in minimal net profit growth (2.8%), indicating potential cost inefficiencies. **A substantial portion of gross profit is absorbed by Retail Sales expenses, indicating a higher cost burden in this channel.**
3. The company experienced consecutive losses in 2020 and 2021, with retail expenses remaining high and no decline, leading to **a total net loss of 6324194.99 over 5 years.**
4. **In 2022, despite a post-COVID-19 net profit of 44942.87, retail expenses soared to Rs. 1957089, significantly outweighing the net profit**, signaling a substantial decrease in profitability relative to expenses resulting in an overall net loss of 6324194.99 by the end of the 5-year period.

Type: Radar Chart | Fig. 15 This chart depicts the relationship between **Total Sales** and **Closing Stock (in Rs.**)

Values	2018-19	2019-20	2020-21	2021-22	2022-23
Total Sales	22748792.24	26209855.16	19179339.35	29098114.74	42746695.86
Instituitional Sales (Rs)	6389783	8925759.04	6965555.79	15748974.51	28618974.66
Retail Store Sales(Rs)	16359009.24	17284096.12	12213783.56	13349140.23	14127721.2
Gross Profit	5765545.92	8442793.35	3850099.92	3946014.21	6979938.15
Retail Store Expenditure	1017126	2723880	2294221.35	2109854	1957089
Instituitional Sales Expenditure	33835	132421	26101.6	22000	17700
Net Profit	723296.58	743486.5	-2707417.05	-2582284.26	44942.87
Retail Store Sales Growth%	0.105654335	0.056549077	-0.293351329	0.092956999	0.058324428
Instituitional Sales Growth%	0.055674587	0.396879838	-0.219611939	1.260978877	0.817196075
Salary Account	160676	1633942	1240130	1232859	1243740
Marketing Expense	270678	223407	29100	297964	46987
Rent Account	158130	953647	1270000	1200000	1200000
Opening Stock	3964150	8085200	15365500	18025300	17515500
Closing Stock	8085200	15365500	18025300	17515500	60759045.86

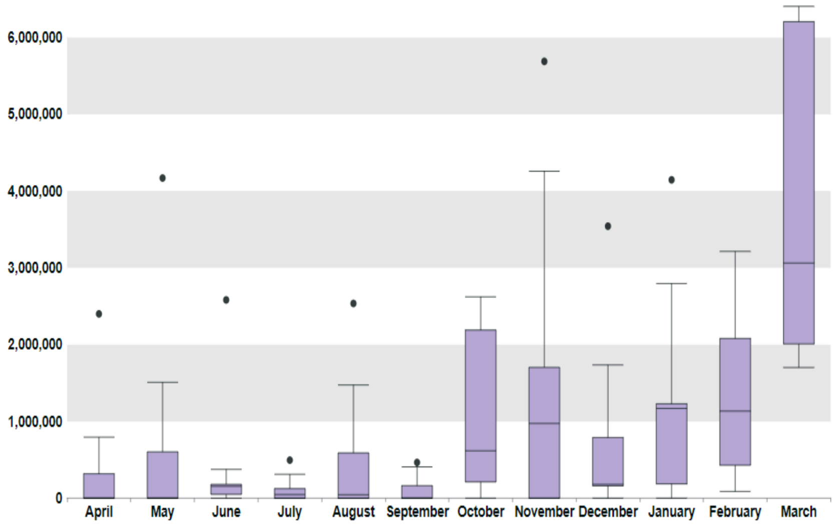
Type: Heatmap Fig. 16

Figure 15 and 16 highlight intriguing observations:

- The opening of a new branch in 2019 led to a significant increase in closing stock. However, this **increase in closing stock was not proportionate to the rise in total sales,** indicating potential inventory management challenges.
- **Despite a notable decrease in sales during the pandemic in 2020, the closing stock continued to rise,** suggesting possible inefficiencies in stock control.
- In 2022, the closing stock (60759045.86) exceeded total sales(42746695.86), indicating a **potential issue with dead stock management.** This may be related to the high amount of sundry creditors, implying unpaid stock bills contributing to higher liabilities for the firm.

Product Demand Analysis in the Online Marketplace

The main goal of this section is to address our third problem statement which is to identify the top-performing product categories for the firm in the gem portal to prioritize these products for competitive positioning against ecommerce and other sellers in these categories.



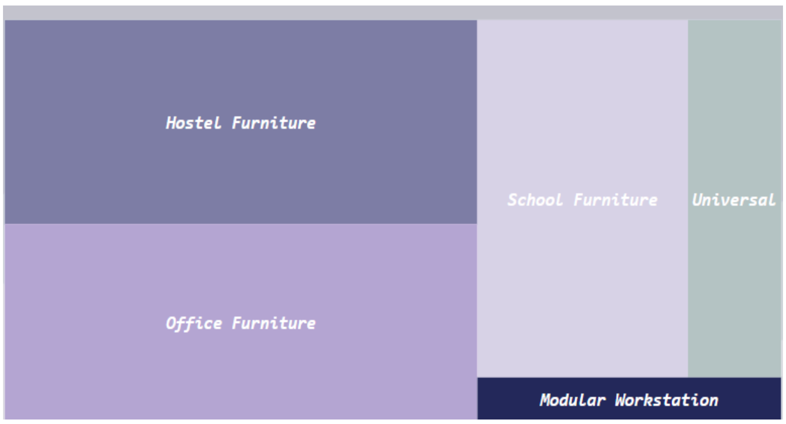
Type: Boxplot | Fig. 17

Month	2018-19	2019-20	2020-21	2021-22	2022-23
April	0.00	2399760	0	0.00	317700
May	0.00	603375	0	0.00	4168820
June	49500.00	153958	179644.44	0.00	2581660
July	47355.00	495000	0	124301.99	0
August	0.00	0	44911.11	2535826.62	589431.66
September	0.00	0	0	163009.24	465000
October	0.00	211800	2189373.53	616852.00	2621842
November	0.00	973034.4	0	5687808.00	1702990
December	0.00	789919.8	179799.96	159975.00	3541664
January	0.00	1168440	1229336.49	185718.00	4145324
February	87320.00	429114	1134122.79	3213874.00	2079672
March	6205608.00	1701357.84	2008367.47	3061609.66	6404871

Type: Table | Fig. 18

Box-plot in Fig. 17 depicts institutional sales trends over a five-year period, offering insights into monthly performance through quartile analysis. Key observations from Fig 17 and 18 are as follows-

- **March consistently stands out with the highest total sales** and range over the five-year period, indicating a trend of peak performance during this month.
- Conversely, **July consistently records the lowest total sales and range,** suggesting a period of relatively slower sales activity.
- **All months exhibit outliers except October, February and March** indicating exceptional sales in specific years despite overall lower rangest.
- **The latter half of the fiscal year, from October to March, generally shows higher sales ranges compared to the first half** (April to September), indicating a pattern of increased sales activity in the second part of the year for Modern Amenities.



Revenue Distribution based on Product Categories

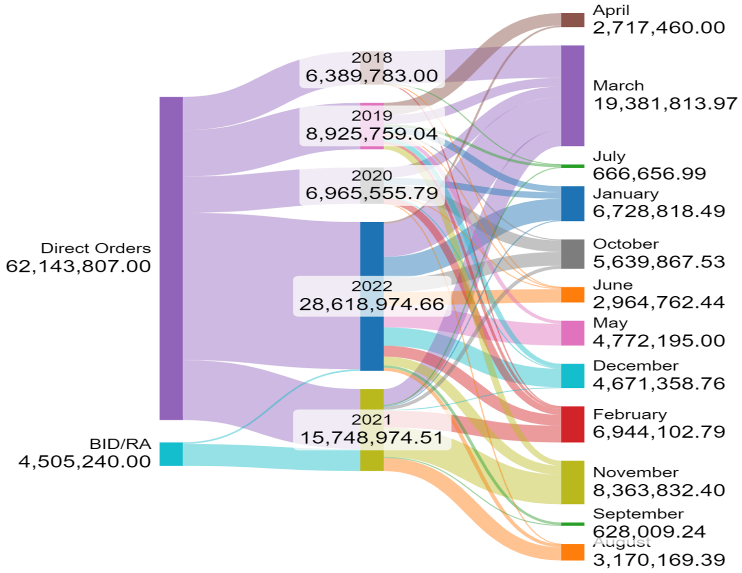
Type: Treemap | Fig. 19

Category	Revenue
Hostel Furniture	20648758.36
Modular Workstation	2821597.31
Office Furniture	19931369.34
School Furniture	16118094.03
Universal	7129227.96

Fig. 20 | Type: Table

We've categorized products into five areas based on their utility: Hostel Furniture, Office Furniture, School Furniture, Universal, and Modular Workstation. The segmentation was guided by stakeholder domain knowledge, with the Universal Category comprising products that span multiple segments. In Fig. 19's treemap, **Hostel Furniture and Office Furniture emerge as top sellers in the institutional business, closely followed by School Furniture. Both the Universal Furniture category and Modular**

Workstation show promising growth potential in the online business segment.



Institutional Sales Distribution: Direct Orders vs BID/RA

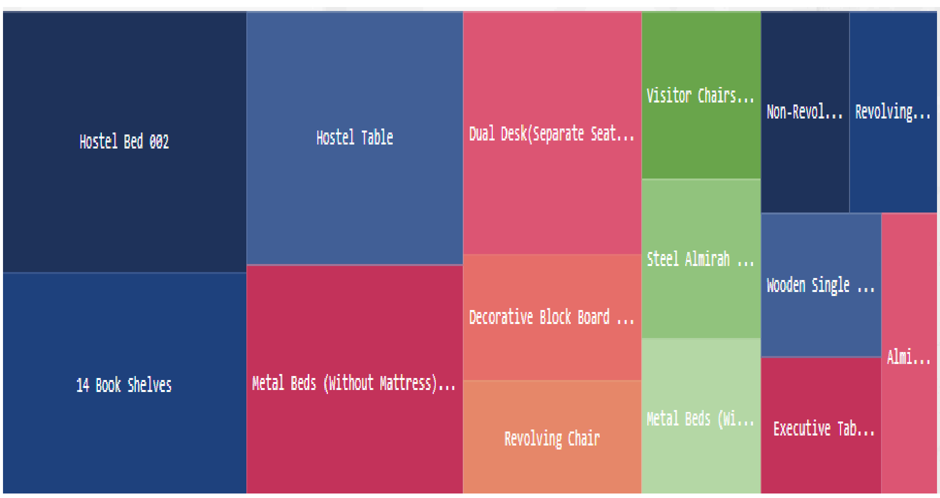
Fig. 21 | Type: Sankey Chart

This Sankey chart visually depicts the distribution of institutional sales revenue across years 2018-2023 and months, focusing on two primary ordering methods: Direct Orders and BID/RA.

Here are key insights from the analysis of this chart:

1. **The total contribution from Direct orders (62,143,807) significantly surpasses that of the BID/RA method (4505,240) consistently across all years**, with the highest contribution observed in 2022.
2. Notably, **Direct orders, which are the orders below 5 lac rupees are more frequently placed as compared to Orders through Bidding method,** suggesting:
   - Direct Orders are convenient due to easier qualification criteria, allowing buyers to place orders directly.
   - Modern Amenities faces challenges with the Bidding method, needing to qualify for the lowest product price criteria and dealing with competitors who compromise on quality and guarantees to meet these criteria, as discussed in the problem statement.
3. March achieves the highest sales at 19,381,813.97 Rs, followed by November at 8,363,832.40 Rs. The notable disparity between these top two sales months, with **March exceeding November by more than two times, is striking and underscores the exceptional sales potential during March.**

15 Best Selling Products Across Years | Fig. 22 | Type: Treemap



Product Name	Total Sales	Category
Hostel Bed 002	3530010	Hostel Furniture
14 Book Shelves	3068000	School Furniture
Hostel Table	3046505	Hostel Furniture
Metal Bed (without matt	2804110.5	Hostel Furniture
Dual Desk(Separate Se	2399760	School Furniture
Decorative Block Board	1240730	Modular Workstation
Revolving Chair With AF	1177679	Office Furniture
Office/Visitor Chairs witl	1107410.12	Office Furniture
Steel Almirah 1980 mm	1055100	Office Furniture
Metal Beds (Without Ma	1053400	Hostel Furniture
Non-Revolving and Non	991150	Office Furniture
Revolving Chair With AF	969897	Office Furniture
Wooden Single Bed WI	968660	Hostel Furniture
Executive Table of Thre	949000	Office Furniture
Almirah Steel shelving c	870904	Universal

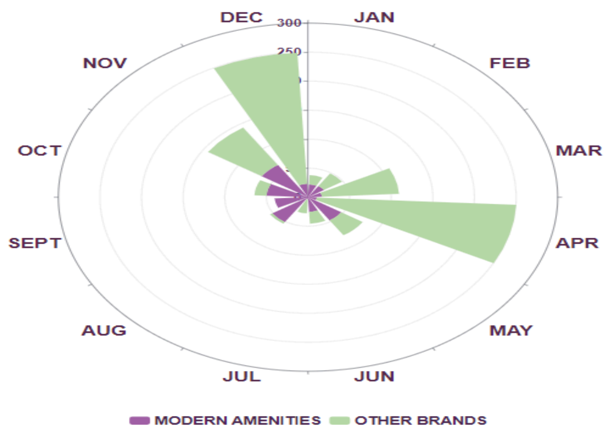
Fig. 23 | Type: Table

Fig 22 and 23 highlights the best selling product across years based on total revenue generated. Insights derived from the treemap are as follows-

- ➔ **3 out of the top 5 products belong to the hostel category, namely Hostel Bed 002, Hostel Table, and Metal Bed** in descending order. Together, they account for 6.7% of the total sales over 5 years.
- ➔ **2 of the top 5 products, namely 14 book shelves and Dual Desk, belong to the School category,** which ranks as the third-largest category. These products collectively account for 3.9% of the total sales over the five-year period.
- ➔ **Six out of the top 15 products belong to the Office category,** which is the second-largest category.

Institutional Monthly Average Order Quantity: Modern Amenities vs. Other Brands Comparison

Fig. 24 | Type: Rose Chart



Month	Modern Amenities	Other Brands
Jan	21.97142857	16
Feb	22.67741935	26.125
Mar	16.70175439	92.84126984
Apr	10.5	240
May	47.6	30.66666667
Jun	25.33333333	20.33333333
Jul	3.5	24.4
Aug	51	3.5
Sep	40	0
Oct	50	14.44444444
Nov	66.28571429	76.66666667
Dec	23.18181818	226

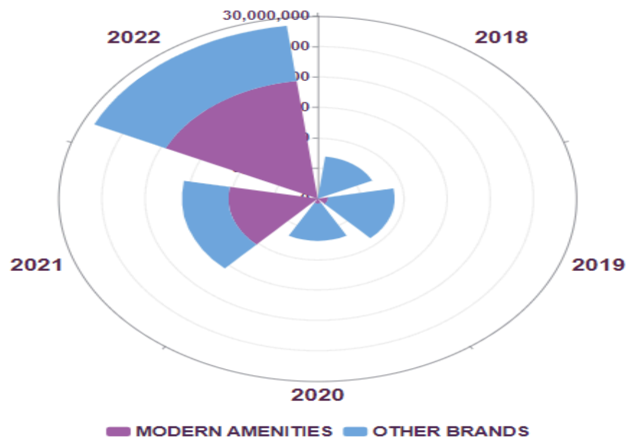
Fig.25

Purple : Modern Amenities | **Green :** Other Brands

Figures 24 and 25 present a graphical representation of the distribution of demand between in-house manufactured products and outsourced products for Modern Amenities on the gem portal.

- ➢ **Modern Amenities' in-house products exhibit a relatively lower average order quantity** compared to outsourced products.
- ➢ November shows the highest average order quantity for Modern Amenities' manufactured products at 66.29, while December records the highest average order quantity for outsourced products at 226**.**
- ➢ The lowest average order quantity month for Modern Amenities is July, recorded at 3.5, while for other brands, it's September with an average of 0.

Let's explore whether this trend also translates into the sales value generated by each segment.



Sales Distribution across years: Modern Amenities vs Other Brands

Fig. 26 | Type: Rose Chart

Year	Modern Amenities	Other Brands
2018	0	6389783
2019	1195496.4	7730262.64
2020	811926.7	6153629.09
2021	10348543.51	5400431
2022	19491386	9127588.66

Fig. 27
Type:Table

Color Indications: **Purple :** Modern Amenities | **Blue :** Other Brands

The key conclusions that can be drawn from the rose chart in Fig 26 are :

- ➢ Modern Amenities witnessed a **remarkable surge in its in-house manufactured product demand,** skyrocketing from no revenue in 2018 to 19,491,386 Rs in 2022. This extraordinary growth reflects a consistent year-on-year upward trajectory, highlighting a substantial increase in market demand.
- ➢ Contrastingly, **demand for Other Brands exhibited a more erratic trend**, initially growing from 2018 to 2019, declining in 2020 and 2021, and finally reaching a peak in 2022. Despite these fluctuations, the five-year sales growth from 2018 to 2022 totaled 42.8%.
- ➢ An interesting observation is that **in 2020, Modern Amenities' in-house product sales surpassed demand for Other Brands, maintaining a higher level throughout the subsequent years (2020-2022)**. This shift underscores the increasing preference and market penetration of Modern Amenities' in-house offerings over time.
- ➢ It is noteworthy, that even though average product quantity for Other brands remained high as observed in fig. 24, **Modern Amenities gained an upper edge in terms of revenue generation**.

Let's analyze the demand for Modern Amenities' products among top government organizations, focusing on the most active buyers based on order quantity and value through the gem portal. This analysis will use a bubble chart, where bubble size corresponds to the average order value by department over five years, with order quantity and value on the X and Y axes, respectively.

Top 5 Government Procurers based on Average Sales Value and Average Order Quantity

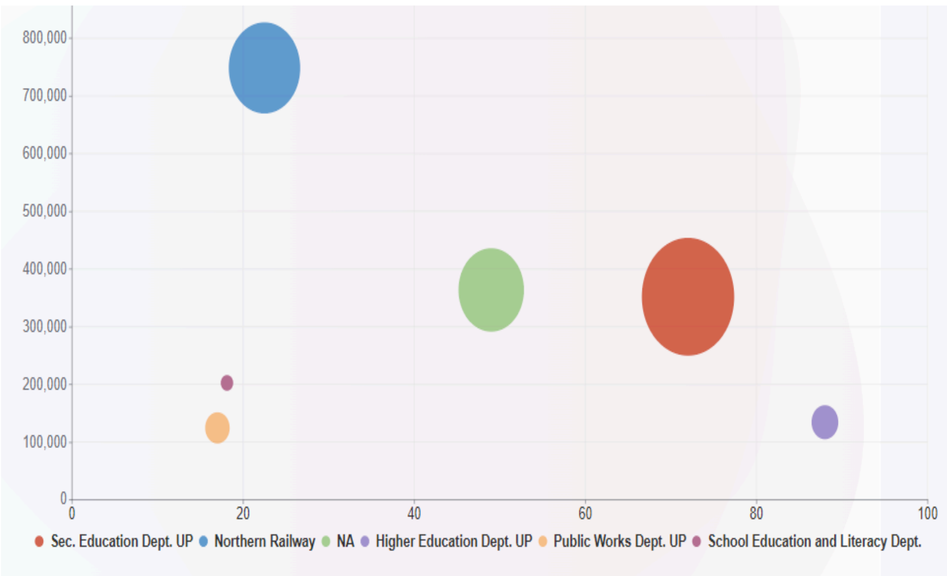


Fig. 28 | Type: Bubble Chart

Red: Sec. Education Dept. UP | **Blue:** Northern Railway | **Green:** Unknown Dept | **Purple:** Higher Education Dept. UP | **Yellow:** Public Works Dept. UP | **Magenta :** School Education & Literacy Dept. |

Department	Average Product	Average Ord	Total Sales
Sec. Education Dept. UP	71.82352941	351838.6688	11962514.74
Northern Railway	22.5	748533.5269	9730935.85
NA	49.2	363623.9344	9090598.36
Higher Education Dept. UP	87.78378378	134319.9459	4969838
Public Works Dept. UP	16.55263158	124502.1855	4731083.05
School Education and Literacy Dept.	18.11764706	202451.4706	3441675

Fig. 29 | Type: Table

- ➔ **The top government buyer is the Secondary Education Department, Uttar Pradesh,** despite having a lower average order value compared to Northern Railways. **Northern Railways is the**

second-largest buyer in terms of total sales, even though the average product quantity ordered is 22.5 units.

➔ There's also a category labeled as "NA," representing orders from departments for which detailed information is not available. It's intriguing to note that this category accounts for the third-largest sales.

➔ **The Higher Education Department of Uttar Pradesh boasts the highest average order quantity at 87.78, despite being the fourth-largest buyer by sales value.** This observation suggests that there isn't always a direct correlation between order quantity and sales value.

4. Interpretation of Results and Recommendations

Key interpretation of results derived from the analysis are:

Resource Assessment:

- Modern Amenities' asset elements generally exhibited a downward trend over the period, with notable exceptions in Closing Stock and Sundry Debtors. Fixed Assets depreciated by 40.84% from 2018 to 2023, likely due to asset dilution strategies amidst challenges like a new showroom launch and market downturn. Loans & Advances saw an 86.7% reduction in 2021, reflecting post-pandemic impacts.
- Sundry Debtors consistently increased, reaching 16518721.71 in 2022, indicating delayed payments affecting liquidity.
- The company's individual liability elements showed fluctuation but maintained higher values compared to assets.
- Sundry Creditor amounts doubled over five years, highlighting a significant increase in unpaid payments. Bank O/D accounts decreased by 46.3% over the same period.
- Total Liabilities consistently exceeded total assets, maintaining a parallel trajectory and balancing out changes in either financial element. Interestingly, in 2022, the total assets experienced higher growth rate compared to total liabilities growth rate, showing positive signs.

Sales Performance and Revenue Growth Analysis:

- In 2018, Retail Sales dominated Total Sales with a contribution of 71.91%, while Institutional Sales accounted for 28.09%.
- By 2022, Institutional Sales contributed 66.95%, showing a significant shift. Institutional sales grew by 231.11%, contrasting with the modest 2.01% growth in retail sales in 5 years.

Expense Analysis:

- Institutional Sales demonstrated lower expenses, indicating cost-effectiveness and higher profitability. Retail Sales, on the other hand, had a higher cost burden, impacting net profit growth negatively.
- Institutional Sales expenses were only 0.348% of total Institutional Sales, while Retail Sales expenses were 13.78% of total Retail Sales.

Product Demand Analysis in Online Marketplace:

- Top-selling products in the institutional segment included Hostel Bed 002, 14 Book Shelves, and Hostel Table, indicating strong demand in this sector. In-house manufactured products experienced significant growth, showcasing Modern Amenities' ability to cater to market demand.
- The Secondary Education Department, Uttar Pradesh, emerged as the top government buyer, followed by Northern Railways, highlighting key procurement trends.
- Hostel and Office Furniture emerge as top selling categories closely followed by School Furniture.

Recommendations:

- The firm shall consider reallocating resources from the new showroom to focus more on the institutional sales channel which shows promising growth and a good return on investment. The new retail outlet has had a negative impact on business, leading to a sales decline and diluting gross profit due to heavy expenses.
- The firm may want to evaluate the expenses associated with the new retail outlet and explore strategies to reduce costs. This may involve relocating the outlet to a lower-rent location, renegotiating lease agreements, optimizing staffing levels, and implementing targeted marketing campaigns like walk-in interior experiences and consultation to prospect clients to attract more customers and increase sales, leading to enhanced profitability.
- The company can reallocate resources saved from reduced new retail store expenses towards optimizing manufacturing costs. This strategy will enable the company to offer competitive pricing in bidding processes against online bidders, potentially leading to securing more orders.
- Focusing on top-performing products and categories identified in the analysis of the online marketplace by offering special promotions, competitive pricing, and exclusive deals on these high-demand products can help the company maximize sales and revenue opportunities.
- Capitalize on the increasing demand for in-house manufactured products by highlighting their unique features, quality, and value proposition to gain a competitive advantage in the market.
- The firm can develop and implement targeted sales strategies, especially during peak demand periods like March. This may include promotional offers, discounts, bundled deals, and marketing campaigns tailored to attract customers during high-sales months.
- Maintaining optimal stock levels proportional to yearly sales can help the firm in avoiding overstocking and reduce the risk of dead stock. Implementation of effective inventory management practices to align stock levels with market demand trends is highly recommended. This approach will help them in minimizing the excess inventory costs, ensuring timely product availability, and reducing liabilities associated with unpaid stock bills (sundry creditors), contributing to overall financial health and operational efficiency.

In conclusion, the analysis of Modern Amenities' business data has provided valuable insights and actionable recommendations to optimize revenue inflow and resource management. These recommendations, if implemented effectively, can drive revenue growth, optimize expenses, reduce liabilities, and align the company's strategies with evolving market dynamics, fostering profitability.