

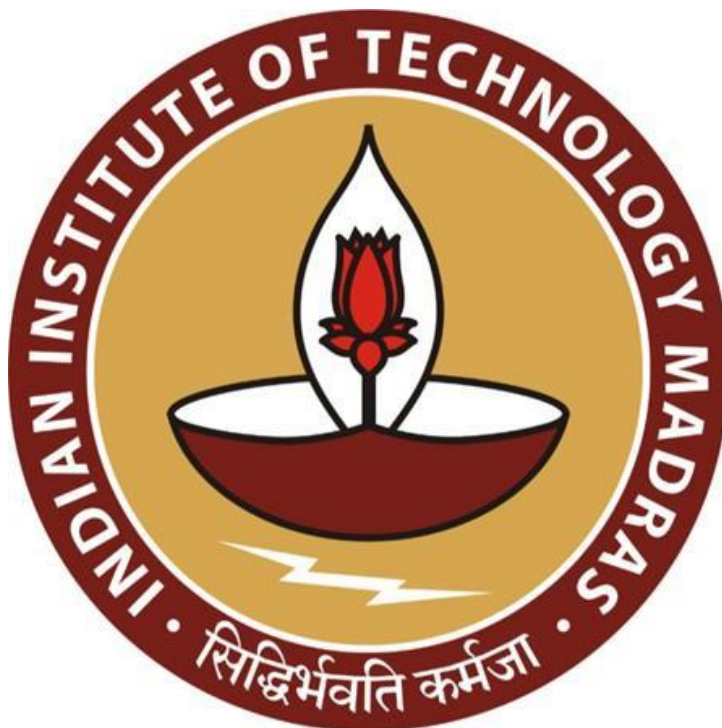
Boosting Sales and Profit Margins for a Pharmacy Store

A Final report for the BDM Capstone Project

Submitted by

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1. Executive Summary

Rudra Medical & General Stores is a retail pharmacy in Nagarkurnool, Telangana, India. It was established in 2021 and is affiliated with Shanvi Children's Hospital. The business has had a steady revenue of ₹12 to 14 lakhs annually. However, it struggles with uneven profit margins because of high procurement costs and possible inventory waste. While the analyzed data from June to August 2024 showed no losses related to expiry, the inventory turnover for certain SKUs is slow.

The analysis used manually collected sales data (10,349 transactions) and purchase data (410 records) from June to August 2024 to assess profitability and inventory efficiency. Techniques like ABC analysis, margin calculations, and inventory turnover rate (ITR), Gross Margin Return on Investment (GMROI) and categorical sales segmentation were applied using Excel and OpenRefine to find cost-saving opportunities and improve stock management. This approach helped ensure informed decision-making for the pharmacy.

As part of the analysis, 82 products in 17 medical groups were analysed and it was found that just a few fast-selling, high-profit items made up most of the profit. Injections and tablets were the largest revenue-generating categories by far, while items like BIO-POLIO and CIDAL INJ delivered exceptionally high GMROI. Overall, most SKUs performed very well and the majority of SKUs were located in the ideal zone for profitability and good enough turnover indicating scope for the next seasonal pediatric care demand.

The study revealed key inefficiencies in stocking and pricing of some categories like drops and tablets. Bundling low-margin pediatric essentials, renegotiating purchase rates, and prioritizing high-GMROI SKUs is recommended, to boost overall profitability and inventory turnover.

2. Detailed Explanation of Analysis Process/Method

2.1 Data Collection and Preprocessing

The primary data for this project was collected from the billing and procurement records of Rudra Medical & General Stores. Since the store's database system did not have export options, all data was manually entered into Excel worksheets. This process created two main datasets: Sales Data and Purchases Data, with 82 SKUs shared between them. Manual data entry created several challenges, including misspellings, duplicate records and incomplete entries.

To ensure accuracy and consistency, the data went through a thorough cleaning process. OpenRefine was used to cluster and fix naming inconsistencies in drug names, such as "DOLO 650" and "Dolo650." Entries with missing, zero, or illogical values, such as a zero quantity with a non-zero value are filtered out. After cleaning, the dataset included 10,292 validated sales entries across 2,246 unique bill numbers and 410 valid purchase entries across 102 purchase bills.

Data preprocessing began with calculating the actual received quantity in the Purchases Data dataset. This included both paid and free units. Purchase quantities were also standardized to show package-based units, like strips, bottles, or vials. Then, per-unit purchase rates were calculated. To manage pricing changes over time, a weighted average purchase rate per SKU was calculated using quantity as the weight. On the sales side, each entry was linked to a specific bill number. The per-unit sale price, weighted average selling price per SKU was calculated across all bills. These steps ensured consistency and comparability across transactions, enabling accurate profit and inventory efficiency calculations.

2.2 Profit Margin Analysis

The initial approach to analyze the profitability of each SKU overall, was to first see how profitable it was at the profit margins. For each drug, unit-level profit and total profit were calculated using the cleaned and processed numbers from both the sales data and the purchase data. Each SKU's profit margin was determined through the weighted average selling price and the weighted average purchase price.

Profit Margin (%) = ((Weighted Average Sale Rate - Weighted Average Purchase Rate) / Weighted Average Sale Rate) × 100

Total Profit = (Weighted Avg. Selling Price - Weighted Avg. Purchase Price) × Total Quantity Sold

Justification: It was important to do so with the weighted averages to factor in any effects of changes to transaction-level rates. In both cases, the charts were sorted to show those SKUs with high margins and high quantities. This also allowed a corresponding view of drugs with high profit, and high inventory turnover. This analysis directly addresses the core business goal of maximizing profit per rupee sold.

2.3 Batch-wise Cost Efficiency Analysis

To identify the most cost-effective batches, the purchases dataset was analyzed by comparing per-unit purchase rates across different batch numbers for each SKU.

Per-unit Cost (Purchase Rate) = (Total Purchase Value / Total Quantity (Paid + Free))

Justification: This allowed for fair comparison even when free units were included in deals. For each SKU, batches with the lowest weighted average rates were flagged and listed in a summary pivot table. These batches represent the best buying opportunities since they are mapped to respective suppliers, from a cost-efficiency standpoint.

2.4 ABC Profit-Based Segmentation

ABC Profit-Based Segmentation was performed by ranking SKUs according to their total profit contribution, to understand which items drive the majority of profitability. After sorting SKUs in descending order of total profit, these calculations were performed:

$$\text{Cumulative Sum}_i = \sum_{j=1}^i \text{Total Profit per SKU}_j$$

$$\text{Cumulative \%}_i = (\text{Cumulative Sum}_i / \sum_{k=1}^n \text{Total Profit}_k) \times 100$$

Based on these values, SKUs were categorized into categories A, B and C. The segments were represented using a pie chart and categorised bar chart, providing a quick look at how profits were allocated.

Justification: This classification guided recommendations on stock prioritization decisions, supplier negotiation strategies, and products to place on pharmacy shelves. This information is aligned with the goal of the project to maximize profit margin within the pharmacy.

2.5 Category-wise Sales Contribution Analysis

Category-wise Sales Contribution Analysis was conducted to see how different product categories, such as tablets, syrups, vials, injections, and syringes, contributed to total sales revenue. Each SKU was assigned to a broad category based on its dosage form or packaging. Then, total sales per SKU were combined and grouped by category to calculate:

$$\text{Total Sales}_{\text{Category}} = \sum_{\text{SKU} \in \text{Category}} (\text{Issued Quantity} \times \text{Wt. Avg S Rate})$$

Justification: This assisted in better quantifying the portion of each category's contribution to total business performance. For example, injections and vaccines contributed more than those categories which are frequently utilized in pediatric care. This information will guide future product mix choices and shelf space allocation based on patient demand.

2.6 Inventory Turnover Rate Analysis

Inventory Turnover Rate Analysis was performed to understand how efficiently each SKU was moving through stock. ITR represents how many times a product's inventory is sold and replaced over a given period. Since detailed opening and closing stock values weren't available, average inventory was approximated from available purchase records using the mean of quantities purchased per SKU across the period.

$$\text{Inventory Turnover Rate (ITR)} = (\text{Total Quantity Sold} / \text{Average Inventory})$$

Justification: This analysis was done to associate sales velocity with profitability and to identify SKUs that may be overstocked or underused. It helped to strengthen the knowledge of the stores approach to inventory and pricing because overall the analysis resulted in a nod for the stores to validate their decisions on SKU's for the store both financially and operationally.

2.7 Gross Margin Return on Investment (GMROI) Analysis

The GMROI analysis evaluated how effectively each rupee put into inventory was converted into gross profit. The GMROI value for every SKU was calculated, and arranged in descending from most to least efficient. The GMROI inventory results were ultimately summarized in a ranked table that highlighted the highest GMROI items/amounts. In considering the GMROI values, we considered the following SKUs

to be strong performing stocks, all of which fell substantially above GMROI 1, meaning that for every ₹1 put into purchasing this item, traders/traders derived more than ₹1 as gross margin.

$$\text{GMROI} = (\text{Total Gross Profit} / \text{Cost of Goods Sold}) = ((\text{Total Sales} - \text{Total Cost}) / \text{Total Cost})$$

$$\text{Total Sales} = \text{Issued Quantity} \times \text{Selling Price (weighted average)}$$

$$\text{Total Cost} = \text{Issued Quantity} \times \text{Purchase Price (weighted average)}$$

Justification: This analysis was critical to identifying high-margin, low-cost stockkeeping units (SKUs) that offered the highest return on investment for inventory. It also identified low performing (GMROI < 1) items that should be reconsidered for discontinuation or substitution, or find better suppliers. This directly supports the goal of increasing inventory efficiency and maximizing total profitability.

3. Results and Findings

The analysis phase of this project was done using Microsoft Excel as the primary tool for data collection, formula-based computation, and charting. Custom formulas, pivot tables, conditional logic (IF, SUMIF, AVERAGEIFS, COUNTIFS) and statistical measures such as weighted averages, cumulative percentages, and gross margins were applied to draw meaningful business insights. A mix of bar charts, pie charts, and scatter plots was used to effectively visualize SKU-level data. 82 SKUs were analyzed using metrics like total quantity sold, profit margin, total profit, inventory turnover rate, and gross margin return on investment (GMROI).

3.1 Profit Margin Analysis

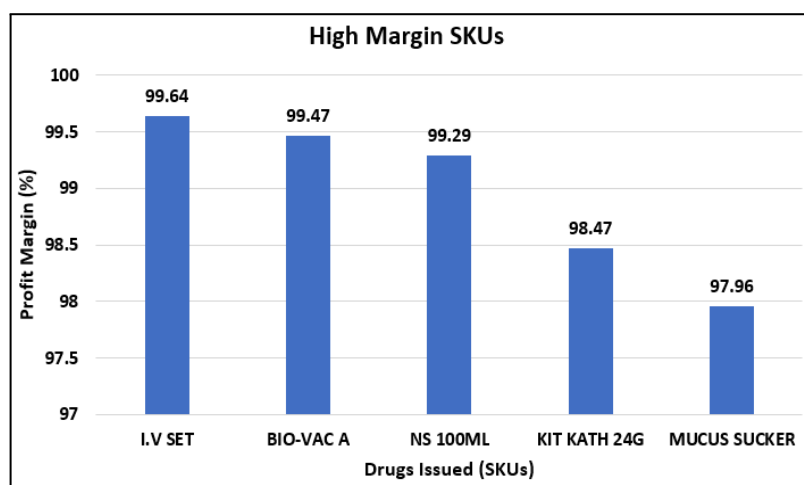


Figure 1: Top 5 SKUs by Profit Margin (%)

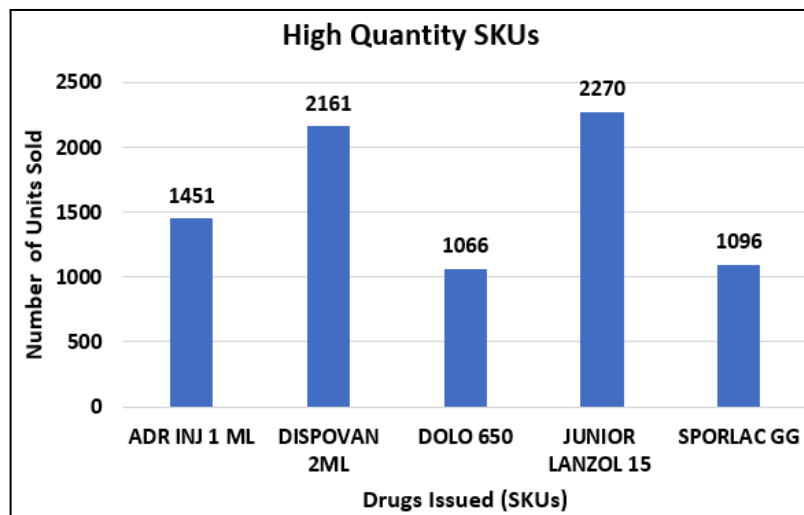


Figure 2: Top 5 SKUs by Sales Quantity (Issued Qty)

Explanation:

Figure 1 is based on getting profit margins, and highlighted SKUs based on the highest percentage margin per unit sold. This is typical of this high-margin category; low cost disposable medical accessories purchased in bulk for resale. Figure 2 shows the SKUs with the most units sold. Those SKUs are usually commonly needed for the purpose of pediatric care and injections and are therefore in consistent demand especially during monsoon period.

As Figure 2 illustrated those items creating revenue for the retailer through volume, Figure 1 chart reflects those margins creating profit for the retailer. Volume and margin are both important for reviewing overall profitability by SKU.

Insights:

- Products like DISPOVAN 2ML syringes and JUNIOR LANZOL tablets are the two most sold SKUs, reflecting their critical role in clinical practice. Their consistent sales underscore not just patient demand but their essential utility in pediatric medical care.
- High-margin items, such as I.V. Sets and BIO-VAC A, generate substantial profit per unit due to bulk purchasing discounts. According to the store operator, these products are often used in bulk for inpatient procedures or emergency protocols rather than individual prescriptions, amplifying their financial impact.
- The contrast between high-volume and high-margin stock-keeping units (SKUs) highlights the pharmacy's dual mission: delivering essential care while capitalizing on profitable products. This duality supports the problem statement's emphasis on optimizing profit margins without sacrificing quality care.

3.2 Batch-wise Cost Efficiency Analysis

Drug Name	
Batch No	Per Unit Purchase Rate
5D ACULIFE	30.80
1G24873	30.80
ACECLOSER	9.10
SPB240299	9.10
ACTIBILE 50	19.94
BRA1178	19.94
ADR INJ 1ML	44.80
AD411	44.80
AMOKAV DUO DRY	83.87
CAAH5001	83.87
ATARAX-25	5.51
E2401658	5.51
E2401939	5.51
ATARAX-SYR	106.60
ZP40056	106.60
ATOCOR	6.28
E2401491	6.28

Figure 3: Best Batch Numbers (Lowest Purchase Rate) for Each Drug

Explanation:

This analysis aimed to pinpoint the most cost-efficient batches for each stock-keeping unit (SKU) by examining purchase records. The data is organized into a pivot table with columns: Batch Number for each SKU, and Per Unit Purchase Rate. By identifying the lowest-cost batch for each SKU, the analysis revealed specific procurement instances that maximized savings. This granular approach uncovers cost advantages that remain hidden when looking only at SKU-average prices.

Insights:

- Commonly used SKUs like DISPOVAN 2ML syringes reflected high Cost of Goods Sold (COGS) likely due to different vendors in the children's hospital pharmacy.
- Certain batches of high-turnover items such as FLAURIX TETRA vaccine had unexpectedly low unit prices, highlighting opportunities to bulk order or time purchases and abundant availability of this influenza vaccine.
- This batch-level analysis quantified procurement efficiency beyond broad SKU averages, ensuring the pharmacy avoids overpaying for essential inventory by addressing overlooked pricing variations.

3.3 ABC Profit-Based Segmentation

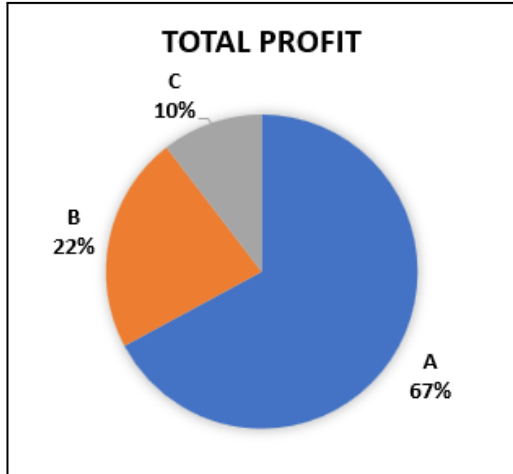


Figure 4: SKUs by Total Profit

Drug Name	ABC Class
ORS L	A
CORT-S 100MG	A
RABEKIND DSR CAP	A
DEXONA	A
VOMIKIND MD 4MG	A
FEEDY-6FG	A
DEWAX EAR DROPS	B
BROZEDEX LS	B
SENSICLAV 1.2G	B
STEZYME	B
TAZOTER 4.5MG	B
DISPOVAN 2ML	B
NEOMOL I.V 100ML	B
STAGLO M 50/500MG	B
RAZO-D CAP	B
PEDIA DRIP SET	C
LANZOL JR 15 TAB	C
MONOCEF 500MG INJ	C
IBUGESIC PLUS	C
NS 100ML	C
ATOCOR	C

Figure 5: Picture of ABC Category Table

Explanation:

The ABC analysis chart presents the percentage contribution of each category (A, B and C) to the overall profit, based on the cumulative profit percentage of all SKUs. A detailed ABC classification table (like Figure 5) was prepared, listing each Drug Name and its respective ABC class, making it easier to identify which specific SKUs fall into which category without overcrowding the visual. Figure 4 visually emphasizes the skewed nature of profit contribution, where a small number of SKUs drive most of the profitability.

Insights:

- Category A SKUs like ORS L and CORT-S 100MG deliver impressive profit margins, contribute about 67% of the total profit during the period and are go-to prescriptions for common pediatric issues like diarrhea and allergies, making them vital drivers of revenue in the pharmacy.
- Category B drugs, such as DEWAX EAR DROPS and BROZEDEX LS, address seasonal or specific symptoms, offering steady demand that bolsters a reliable profit stream, justifying their role as key secondary inventory.
- Category C items, including NS 100ML and ATOCOR, carry low margins and slower turnover but are clinically indispensable, supporting bundled treatments and procedural needs, which ensures their ongoing presence despite limited profitability, according to the doctor of the hospital.

3.4 Category-wise Sales Contribution Analysis

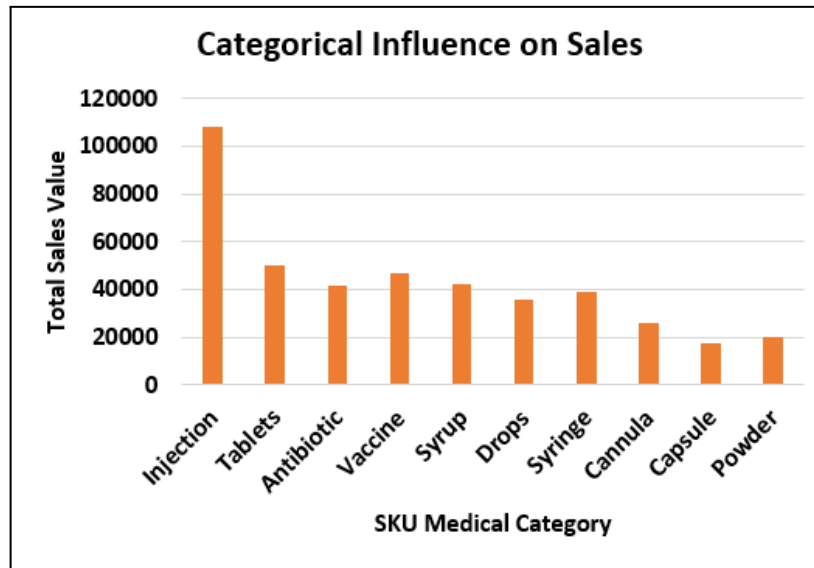


Figure 6: Sales Contribution by Medical Category (₹)

Explanation:

Figure 6 represents the total sales value contributed by each SKU medical category, aggregating revenue generated across all items within a category such as Injection, Tablet, Antibiotic, etc. The data was grouped based on the form of drug administered, and corresponding sales values were summed to assess the commercial impact of each group. Excel's SUMIF and UNIQUE functions were used to derive total sales per category from the cleaned dataset. This visualization helped evaluate which forms of medication are driving the most revenue in the store, offering insight into both prescription patterns and patient needs.

Insights:

- Injections lead with the highest sales value (over ₹1.08L), reflecting robust demand tied to the children's hospital's frequent use of injectables for emergencies, IV fluids, and vitamin boosters.
- Tablets are the second-highest revenue contributors, driven by their widespread use in chronic condition management and low per-unit cost but high turnover.
- Antibiotics and Vaccines follow closely in total sales, reflecting their essential role in both treatment and prevention protocols, especially in child care settings.
- Categories like cannulas, capsules, and powders trail with the lowest revenue, are due to higher purchase-to-sale price ratios, which may not justify aggressive stocking.
- High-selling categories like Injections and Tablets don't always align with high-margin SKUs. Conversely, some high-margin products like NS 100ML are

not strong contributors to total sales. This trade-off reinforces the need for a balanced strategy, which is, to push high-margin SKUs while efficiently managing high-volume ones to improve overall Gross Margin Return on Investment (GMROI).

3.5 Inventory Turnover Rate Analysis

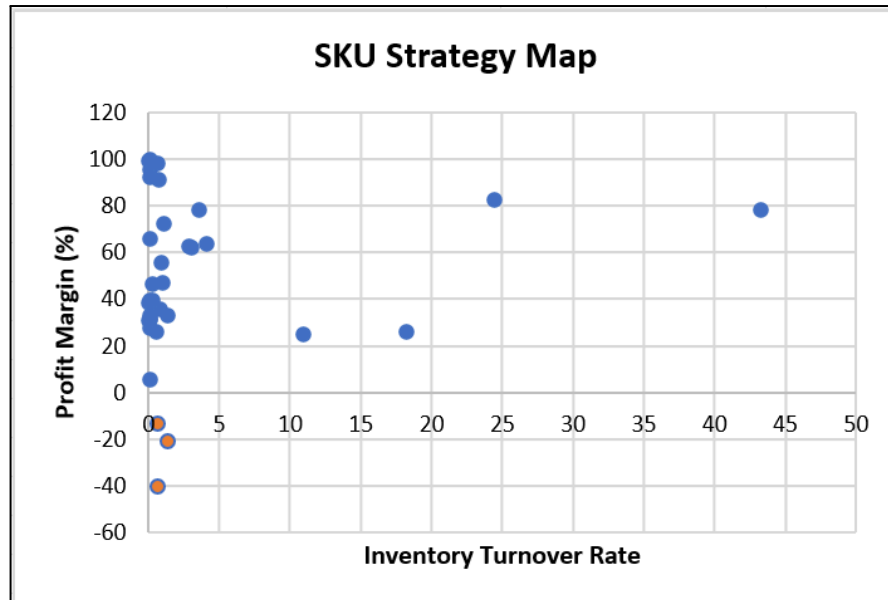


Figure 7: Inventory Efficiency vs Profitability of SKUs

Explanation:

The SKU Strategy Map (Figure 7) illustrates Inventory Turnover Rate (ITR) on the X-axis and Profit Margin (%) on the Y-axis for each of the SKUs in the dataset. Each point on the chart represents a single SKU positioned on the ITR axis according to how well the SKU turns over and correspondingly on the Margin (%) axis for how much profit each unit generates. After calculating ITR values for every SKU, they were plotted against profit margins in a two-dimensional scatter plot with the specific intention of segmenting SKUs into four quadrants:

Q1 (High ITR, High Margin): Ideal SKUs

Q2 (Low ITR, High Margin): Profitable, but slow-moving

Q3 (Low ITR, Low Margin): Unprofitable and slow

Q4 (High ITR, Low Margin): High demand, but low profits

This scatter plot is quite useful to categorize the SKUs into strategic quadrants for better inventory management or merchandising decisions. It is significant because inventory and stock management accounts for the primary problem of overall pharmacy profitability as well as stocking efficiency.

Insights:

- The majority of drugs lie in Q1, indicating strong performers such as DICLOTAL with an ITR of 45 and margin of 78%, that combine profitability with good enough stock turnover. These should be protected and stocked adequately.
- An ITR under 5 is typically considered low by medical retail standards, often indicative of slow-moving stock. However, in this situation, the store had carefully purchased larger quantities in advance of all the stock, because they were taking advantage of good purchase prices, according to pharmacist's analysis of pricing and were preparing for expected seasonal demand.
- Q4 SKUs include essential items such as LEVERA INJ and CERELAC, have good demand but poor margins due to higher procurement costs from limited suppliers as informed by the store operator. These are useful for building customer trust and repeat visits, but bundling them with Q1 drugs could improve revenue per bill.
- Lack of Q3 drugs is a good sign so the store isn't overburdened with dead stock. If any SKUs fall there, they should be reconsidered for future purchase.
- The map helps balance strategic decisions and validates the SKUs kept by the pharmacy but low ITR seems concerning and could lead to potential expiry losses in the near future if the demand falls.

3.6 Gross Margin Return on Investment (GMROI) Analysis

Drug Name	GMROI
BIO-POLIO	488.78
CIDAL 2.25MG INJ	364.69
CIDAL 1.125GM INJ	106.44
HEXAXIM	78.70
FLUARIX TETRA	45.19
KIT KATH 24G	23.80
INSED SPRAY	22.17
DURATAZ 4.5 INJ	13.39
DEWAX EAR DROPS	11.18
GASTIKA DROPS	5.92
CPINK SYR	3.41
BI-FOLATE GEL	2.00
DNS 500ML	1.85
IMPINOZ 10GM	1.69
I.V SET	0.77
CERELAC RAGI APPLE	0.71
5D ACULIFE	0.39
BROZEDEX LS	0.24
IBUGESIC PLUS	0.22

Figure 8: GMROI Heatmap of Key SKUs

Explanation:

The GMROI (Gross Margin Return on Investment) table ranks SKUs based on how effectively each one converts inventory investment into gross profit. GMROI was derived for each SKU, by using gross profit (sales revenue less cost of goods sold), and average inventory cost per drug. The results were sorted in descending order, so that the majority profitable SKUs, from the perspective of investment return, were readily visible. The visual was supplemented with a heatmap to quickly identify high and low performers using color intensity. The color gradient, from green (high GMROI) to red (low GMROI), allows for rapid identification of top and underperforming SKUs.

This analysis is critical to the problem statement, which focuses on improving profit margins and optimizing inventory investment. While ITR tells how fast a product moves, GMROI tells how efficiently each rupee invested is working while making it a key profitability metric in retail pharmacy operations.

Insights:

- With a GMROI of 488.78, BIO-POLIO occupies the top position, indicating that an investment in its inventory returns close to ₹4.9 in terms of gross profit, possibly due to the low cost of procurement since it is manufactured by Bharat Biotech, near Hyderabad, which is about 2-2.5 hours away from the store as well as its need as a key vaccination for polio.
- CIDAL 2.25MG and 1.125GM INJ also demonstrate a high GMROI (>100), and can be classified as such and prioritized on our inventory dispensing plan, despite not necessarily being volume candidates to this point.
- HEXAXIM, FLUARIX TETRA, and DURATAZ 4.5 INJ are important therapeutic interventions in pediatric early immunisation schedules and acute care. These products returned good GMROI, above 10.
- Other items like DEWAX ear drops have also exhibited good GMROI, possibly due to the high prevalence of pediatric otitis media, indicating the requirement for these ear drops for effective treatment.
- Having identified multiple vaccine and injectable products with good GMROI, it's essential to recognise there are also items like DNS 500ML and BI-FOLATE GEL, that have weaker GMROI (< 2) regardless of how often they are used, that

could indicate low profitability.. While both medications may make sense in routine inventory in terms of supposition demand for critical therapeutic items available in the inventory.

4. Interpretation of Results and Recommendations

4.1 Profit Margin Analysis

Interpretation:

The profit margin analysis showed that SKU profitability varied. High-margin SKUs like I.V Set, BIO-VAC A, and NS 100ML had margins over 99%, mainly because of low procurement costs and consistent demand. These products often support pediatric IV therapy or neonatal care, where volumes might be low, but prices are well-managed. On the other hand, high-volume products like JUNIOR LANZOL 15 and DISPOVAN 2ML had moderate to low profit margins. These are key pediatric prescriptions for gastric relief and injections, showing a balance between high turnover and profit per unit.

Recommendations:

Short-term:

- Prioritize pushing high-margin supportive SKUs (like I.V sets and BIO-VAC A) during outpatient or procedure-based sales.
- Revisit pricing strategies for high-volume but low-margin SKUs like JUNIOR LANZOL 15 to improve profitability through vendor negotiation.

Long-term:

- Conduct quarterly reviews of unit margins for pediatric-focused products to identify underperforming SKUs.

Implementation Impact:

Implementing these recommendations can stabilize revenue by improving the equilibrium between high-margin SKUs like vaccines and essential medications. This ensures continuous profitability while preserving patient access, especially important in pediatric care where regular appointments and long-term problems (like digestive disorders) are common. A small rise in margin on high-volume SKUs can significantly impact net profitability

4.2 Batch wise Cost Efficiency Analysis

Interpretation:

The batch-wise cost efficiency analysis identified significant variation in per-unit purchase rates across different batches of the same SKU. By isolating batches with the lowest procurement prices, especially for frequently sold pediatric items like JUNIOR LANZOL 15 and BROZEDEX LS, the store can realize better gross margins without changing retail prices.

Recommendations :

Short-term:

- Maintain a rolling report of per-unit batch prices to identify and prioritize the most cost-efficient batches during procurement.

Long-term:

- Negotiate great terms with suppliers to lock in batch prices for high-volume pediatric SKUs ahead of seasonal spikes.
- Integrate batch-level pricing dashboards using online business software into routine inventory planning to identify high-cost outliers and avoid repeat orders.

Implementation Impact:

Implementing batch-level tracking and procurement decisions based on lowest per-unit cost will directly improve gross margins, especially for pediatric medications where bulk usage and small per-unit margins make pricing sensitive. Over time, this will also build vendor accountability and improve the cost predictability of essential pediatric stock.

4.3 ABC Profit-Based Segmentation

Interpretation:

The ABC analysis classified the SKUs based on their cumulative profit contribution. Category A, which includes only 7% of the SKUs, accounted for 67% of total profit, with key items like ORS L and CORT-S 100MG playing a major role. These are often prescribed in cases of pediatric dehydration and inflammation, making them high-demand and high-margin. Category B SKUs, such as DEWAX EAR DROPS and BROZEDEX LS, contributed around 22%, indicating moderately consistent demand. Category C drugs contributed just 10%, including essentials like NS 100ML and

ATOCOR, which deliver lower profits.

Recommendations:

Short-term:

- Ensure all Category A SKUs are maintained at a minimum stock level of 2 weeks average sales and place them in front-facing, easily accessible shelves with visible labels or posters to increase pharmacist recall.

Long-term:

- Use ABC classes to guide shelf space allocation, ensuring high-profit pediatric drugs receive more visibility and access.

Implementation Impact:

The use of ABC classification for procurements and shelf stocking enhances allocation of working capital, as well as holding costs. This ensures that fast-selling and critical medications are given priority, while low-contribution SKUs have a more controlled management approach to counter stockpile/expiry risk. Over time, this approach can significantly increase the profit per square foot of pharmacy space.

4.4 Categorical Sales Analysis

Interpretation:

Categorical sales analysis revealed that injections, tablets, and syrups dominate the sales mix both in volume and revenue for pediatric SKUs. Injections like CIDAD INJ and BIO-POLIO had high demand due to immunization and acute care needs in children. Syrups like BROZEDEX LS and CPINK were frequent purchases, aligning with pediatric respiratory and general infections. Tablets contributed steadily as part of routine prescriptions, while medical supplies like syringes and IV sets supported these primary categories. The categorical breakdown helped identify which dosage forms and treatment types are most relevant for pediatric patient flows in the store.

Recommendations:

Short-term:

- Keep high-ITR categories like pediatric syrups and injections well-stocked, especially during peak infection periods.
- Use category-wise display zones to help pharmacists access the right dosage forms quickly, improving service efficiency.

Long-term:

- Track seasonal category trends to predict demand surges for pediatric dosage forms and plan procurement accordingly.
- Re-evaluate low-contribution categories quarterly and rotate underperforming SKUs with updated alternatives introduced by Medical Representatives (MRs) from pharma companies, preferred in pediatric care.

Implementation Impact:

By aligning stock planning with category-wise pediatric demand, the pharmacy can minimize missed sales and improve overall customer satisfaction. Injections and syrups, being more sensitive to prescription urgency and compliance, benefit the most from proactive stocking. Over time, category-focused strategies will help reduce shelf clutter, improve inventory flow, and ensure the right formulations are always available for patients.

4.5 ITR Analysis

Interpretation:

The Inventory Turnover Rate (ITR) analysis showed a high average of 14.75, but a very low median of 0.585, revealing that only a few fast-moving pediatric products are driving inventory movement, while most SKUs are turning over slowly. This is due to planned overstocking of seasonal pediatric essentials at lower prices in anticipation of demand during the monsoon-winter period. While this reflects a smart buying strategy, it also indicates that careful monitoring is needed to avoid shelf stagnation for slow-moving items. High-ITR SKUs, such as syringes, ORS, and certain injectables, continue to perform well and support operational liquidity.

Recommendations:

Short-term:

- Focus on gradually moving low-ITR items by suggesting them during relevant prescriptions or bundling with fast-movers.
- Avoid fresh purchases of already overstocked pediatric SKUs until stock levels normalize.

Long-term:

- Use ITR trends to plan next season's stocking volumes more accurately and avoid

excess buildup.

- Review ITR quarterly to identify underperforming pediatric SKUs and avoid future deadstock risk.

Implementation Impact:

With better ITR awareness, the pharmacy can free up shelf space, reduce working capital lock-in, and still stay prepared for pediatric seasonal spikes. Over time, this balance ensures better cash flow without compromising availability of essential child-focused medications.

4.6 GMROI Analysis

Interpretation:

The GMROI analysis helped us understand how much gross profit each rupee invested in inventory is returning. Some pediatric SKUs, like BIO-POLIO, CIDAL INJ, and HEXAXIM, had GMROI values above 100. They were incredibly efficient at turning investment into profit. These are typically vaccines or pediatric injections that are in constant demand and often come at lower purchase costs. On the other hand, commonly used syrups and consumables like BROZEDEX LS or I.V SET showed low GMROI, often below 1, which means they returned less profit than the cost of stocking them. These products still serve essential pediatric needs but may be tying up capital unnecessarily. The GMROI chart really brought out which items were quietly making the most financial sense and which weren't pulling their weight.

Recommendations:

Short-term:

- Highlight and restock SKUs with high GMROI more confidently since they contribute strongly to profit with minimal capital.
- Avoid repeat orders of low-GMROI pediatric products unless demand is critical or part of prescriptions.

Long-term:

- Consider setting a GMROI threshold (e.g. 2.0) to regularly review inventory health and identify SKUs to drop, retain, or renegotiate pricing for.
- Use GMROI as a guiding metric while onboarding new pediatric formulations or suppliers.

Implementation Impact:

GMROI allows the pharmacy to focus on stocking decisions based on profitability rather than strictly based on volume or turnover. In a pediatric environment, where margins may be small but reliability is important, GMROI allows Rudra Medical and General Stores to stay financially stable while providing medical care services to children in need.

5. Conclusion

The project, in addition to focusing on sales and purchases figures, allowed me to gain additional insight into how a pediatric pharmacy, Rudra Medical and General Stores, in particular, operates on an operational scale day in and day out, not just selling limits, but what's keeping the pharmacy open. A few pediatric SKUs are quietly gaining the majority of profit, and in terms of ordering and displaying them, should receive careful consideration through profit margin and ABC analysis. The category-wise sales breakdown showed how injections, syrups, and tablets deliver the bulk of demand (particularly during seasonal highs), and batch-level cost analysis reaffirmed that small price differentials can have a major impact on margins.

The inventory turnover results revealed a smart, push strategy; that is, items had been stocked effectively before seasonal demands. However, the need for clearance quickly became evident. Through GMROI, it became clear that not every quickly-moving item will be considered profitable, but that some less-movement drugs were delivering good overall returns in terms of profit margins. The findings supported some practical recommendations such as keep Category A SKUs always available, considering pairing slower-moving drugs with fast-moving, and regular reviews of SKUs especially in terms of using GMROI or ITR.