



BDM Capstone Project [May 2025]

Boosting Sales and Profit Margins for a Pharmacy Store

by Bingi Sai Mohith [22F3001702]

The Business and Problems

About the Business:

- **Name:** Rudra Medical & General Stores
- **Type:** Pediatric-focused retail pharmacy (B2C)
- **Owner:** Mrs. Macharla Shruthi
- **Manager:** Mr. Ashfaq Ahmed
- **Established:** 15th August 2021
- **Turnover:** ₹12–14 lakhs annually
- **Profit (FY 2024–25):** ~₹3.6 lakhs
- **Team Size:** 3 staff, including licensed pharmacist (Mrs. Farzana)
- **Sales Channel:** In-store only (no online sales)

Problem Statement:

The store faces irregular profit margins due to fluctuating vendor purchase prices and inconsistent sales across SKUs



Data Collection


CASH BILL									
 RUDRA MEDICAL & GENERAL STORES Snehapuri Colony, Mainroad, Opp. Mallikarjuna Enterprises, Nagarkurnool-509209 Phone : 9440537392, 7993716989					D L No : 20 : TS/NKL/2021-80268 21 : TS/NKL/2021-80268 GSTIN :				
Patient Name : SELF Bill No : 027170			Pay Mode : Cash Contact No. :		Bill Date : 14/03/2025 Consultant : DR .S.RAJESH GOUD M.D.(PAED)				
Sln	Product Description	Type	MFG	Sch	Batch No	Exp. Dt.	Qty	Rate	Amount
1	KIT KATH 24G	IV	HMD		43742G	08/29	1	234.50	234.50
2	EASY FIX	FIXA1	DYNAM		EFME39-1024	09/27	1	47.00	47.00
3	PEDIATRIC SPLINT	FIXA1	GEN		2024-09	09/27	1	85.00	85.00
4	CORT-S 100MG	INJ	NEON		V4471452	08/26	1	46.90	46.90
5	AVIL AMPS	INJ	AVENTI		2123034	05/26	1	6.16	6.16
6	NS100ML	IV	ALKEM		ANSA4236MG	10/27	1	19.61	19.61
7	DISPO VAN 2ML	INJ	HMD		436022NE1	08/29	3	5.40	16.20
8	AMOKAV DUO DRY SYP	SYP	KEPL		CAAH5005	05/26	1	130.00	130.00
9	ATARAX SYP 100ML	SYP			ZP40073	10/27	1	133.25	133.25
10	RITCH JUNIOR 30ML	LOT	CURATI		CH276	07/26	1	159.00	159.00
11	S-250 SYP	SYP	SUNPH		KL23559	09/25	1	45.00	45.00
12	DISPO VAN 5ML	VAN	ACULIFI		347056NC2	11/28	1	8.50	8.50
Note : 1) Items cannot be taken back without bill(Bill is Mandatory). 2) Return of Goods will not accepted after 5 days. 3) Only exchange. Return Amount cannot be given back. 4) Total GST : 117.99 CGST : 59.00 SGST : 59.00 Signature								Total Amount :	930.00
								Discount Amount :	0.00
								Paid Amount :	930.00
								Due Amount :	0.00

Fig 1: Sales Bill

SAI BALAJI DRUG HOUSE

1-3-100 Behind Kotak Bank, NEW TOWN, 9440259276
MAHABOOB NAGAR, MAHABOONAGAR-509 001
Phone: 9490130758

GSTIN: 36ACPPB6766P1ZS
DL Nos: 41/mn/ap/09/w/g
41/mn/ap/09/w/g

From: RUDRA MEDICAL&GEN STORES

NAGAR KURNOOL
NAGAR KURNOOL

Ph:9949975792

DL Nos: ts/nkl,ts/nkl

GSTIN: 36JDXPS0108C1ZB

Number: NM00047

Date: 11/06/2024

Type: Credit

HSN	Product Name	Pack	Exp	Batch	Qty	Free	Rate	Amount	M.R.P	GST%	Dis%
3002	BIO-VAC - A	0.5ml	05/24	220220507-	1		1181.00	1181.00	1918.00	5.0	0.0

Note :

	Taxable	CGST Amt	SGST Amt	Taxable	CGST Amt	SGST Amt	Gross:	1181.00
5%:	1181.00	29.53	29.53	18%:	0.00	0.00	Disc:	0.00
12%:	0.00	0.00	0.00	28%:	0.00	0.00	GST:	59.05
0%:	0.00	Items: 1	Units: 1	Rnd Off: -0.05			Adjust:	0.00
One Thousand Two Hundred Forty Rupees Only							Net Amount:	1240.00

The goods supplied in this invoice do not contravene section 14 of the drugs & cosmetics act 1940.
K.V.G. Subject to MAHABOONAGAR Jurisdiction

For SAI BALAJI DRUG HOUSE

Fig 2: Purchases Bill

Type: Primary Data (Extracted from in-store DBMS and printed physical bills)

Time Period: June - August 2024

Data Collected:

- **Sales Data:** 10,349 transactions (bill-wise, SKU-wise, daily sales)
- **Purchase Data:** 410 records (batch-wise, vendor prices, free + paid stock)
- **Purpose:** To link procurement costs with sales performance for profitability and efficiency analysis

Data Preprocessing & Methodology

	Unit Price	Std Qnt.	Total Price
Mean	74.99	2	464.49
Min	0.62	1	1.00
25%	13.69	1	192.97
50%	47	1	350.11
75%	99	2	603.22
Max	5490	198	9412.29
Std. Dev	137.08	4.28	505.69

Fig 3: Sales Data Distribution

	Unit Price	Std Qnt.	Total Price
Mean	176.88	351	15721
Min	0	1	56
25%	15.12	12	4334.54
50%	42.78	48	9096.63
75%	106.20	101	15806.13
Max	13500	20000	433172.82
Std. Dev	324.89	2083.25	42849.60

Fig 4: Purchases Data Distribution

Drug Name	Wt Avg. P Rate	Wt Avg. S Rate	Per Unit Profit	Profit Margin	Type	Total Sales Q	Avg Inventory	COGS	ITR
5D ACULIFE	30.80	42.79	11.99	28.02	Injection	1	385	30.80	0.08
ATARAX-25	5.37	7.85	2.48	31.63	Tablets	90	100432	7260.16	0.07
ATOCOR	6.28	5.53	-0.75	-13.51	Tablets	18	338	202.92	0.60
ATOGLA LOTION	316.96	424.71	107.75	25.37	Lotion	273	3187	34800.58	10.92
AZIFINE XL 200	70.30	114.24	43.94	38.46	Antibiotic	1	1347	20.72	0.02
BI-FOLATE GEL	80.67	126.04	45.37	36.00	Gel	24	2770	2045.25	0.74

Fig 5: SKU level Analysis Table

Preprocessing Steps:

- Calculated actual received quantities (purchased + free).
- Standardized package units (strips, bottles, vials, syrups).
- Derived per-unit purchase & selling rates.
- Computed weighted averages (purchase & sale) for SKUs.
- Linked sales to unique bill numbers for accurate tracking.

Methodology:

- **Tools:** Excel, OpenRefine
- **Techniques Applied:**
 1. Profit Margin & Batch Cost Efficiency Analysis
 2. ABC Classification
 3. Category-wise Sales Analysis
 4. Inventory Turnover Rate (ITR)
 5. GMROI (Gross Margin Return on Investment)

Analysis 1

Profit Margin Analysis

Explanation:

- Per-unit purchase & selling prices calculated.
- Weighted average rates used to account for fluctuating vendor costs.
- Profit margin (%) and total profit computed per SKU.
- **Visualization:** Bar chart for top 5 SKUs by quantity margin + Table for top SKUs.

Key Insights:

- **High-volume essentials:** DISPOVAN 2ML syringes and JUNIOR LANZOL tablets were the most sold SKUs, reflecting their indispensable role in pediatric care.
- **High-margin items:** I.V. Sets and BIO-VAC A achieved profit margins above 90%, primarily due to bulk purchase discounts and their use in procedures.
- **Volume vs. Margin trade-off:** Products driving revenue through high turnover (like syringes and tablets) contrast with those driving profit through margins (like vaccines and IV sets).
- Injections, Vaccines, Infusions are among the star margin categories.
- Drops, Baby Food, Syringe are major loss drivers due to high procurement costs from the respective suppliers (batch numbers).

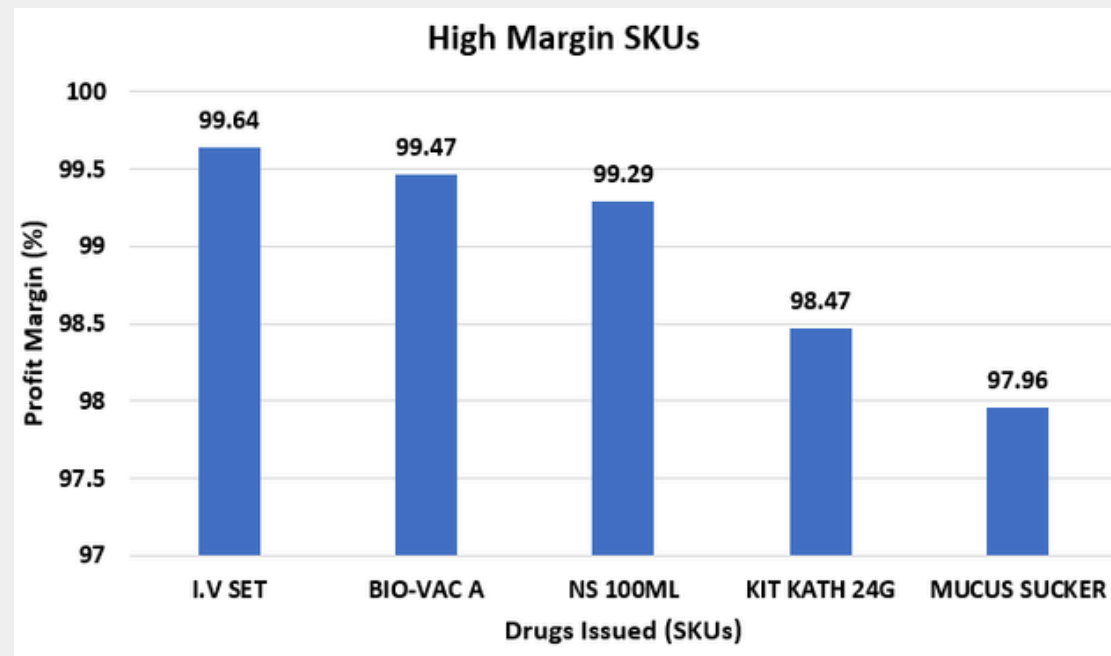


Fig 6: Top 5 SKUs by Profit Margin (%)

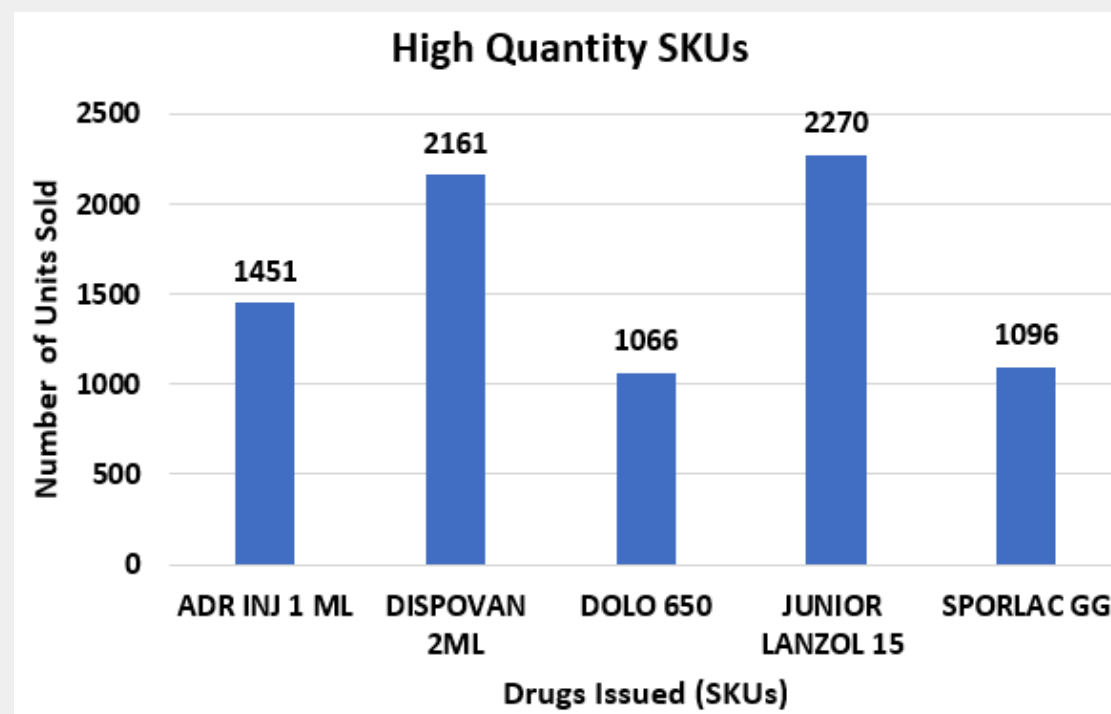


Fig 7: Top 5 SKUs by Sales Quantity (Issued Qty)

Analysis 2

ABC Profit-Based Segmentation

Explanation:

- ABC classification was applied to gross profit per SKU (i.e., total sales revenue - total purchase cost, before accounting for overhead expenses).
- SKUs are ranked in descending order of total profit, and cumulative profit percentages were calculated.
- Results are visualized through a pie chart and supported by a classification table of all 82 SKUs.

Key Insights:

- **Category A dominance (~67%):** Key SKUs like ORS L and CORT-S 100mg drove a majority of profit, making them indispensable for financial sustainability and inventory focus.
- **Category B contribution (~22%):** Moderate-profit items such as DEWAX ear drops showed consistent demand, requiring careful stock planning to avoid both shortage and overstocking.
- **Category C role (~11%):** Though individually low in profit (e.g., NS 100ml, ATOCOR), these SKUs are essential for pediatric coverage and patient trust, justifying their presence in inventory despite low returns.

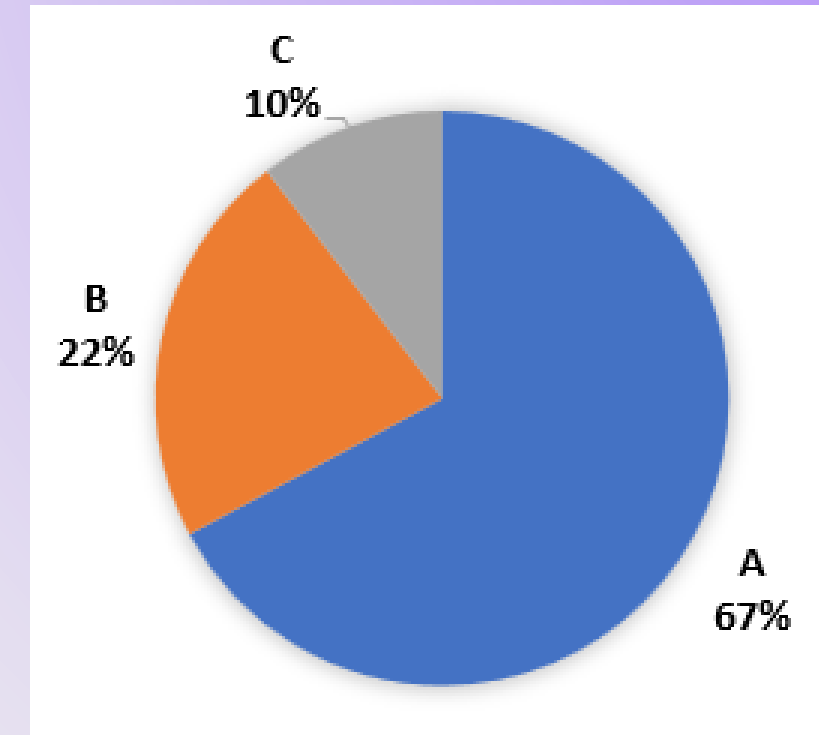


Fig 8: ABC Segment Chart based on Gross Profit (%)

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

Fig 9: ABC Table for all SKUs by Gross Profit

Analysis 3

Category-wise Sales Contribution Analysis

Explanation:

- Sales data was grouped by medicine categories (tablets, syrups, injections, syringes, vials, etc.).
- A Pivot Table was used to sum total sales quantity and revenue for each category.
- Results were visualized through a bar chart, showing the relative contribution of each category to total pediatric sales.

Key Insights:

- Injections dominate sales, crossing ₹1,00,000, reflecting their critical role in pediatric treatments where fast-acting delivery is often required.
- Tablets and vaccines form the second tier, maintain steady demand, requiring balanced inventory.
- Syrups and drops, though secondary, are essential for child-friendly administration.

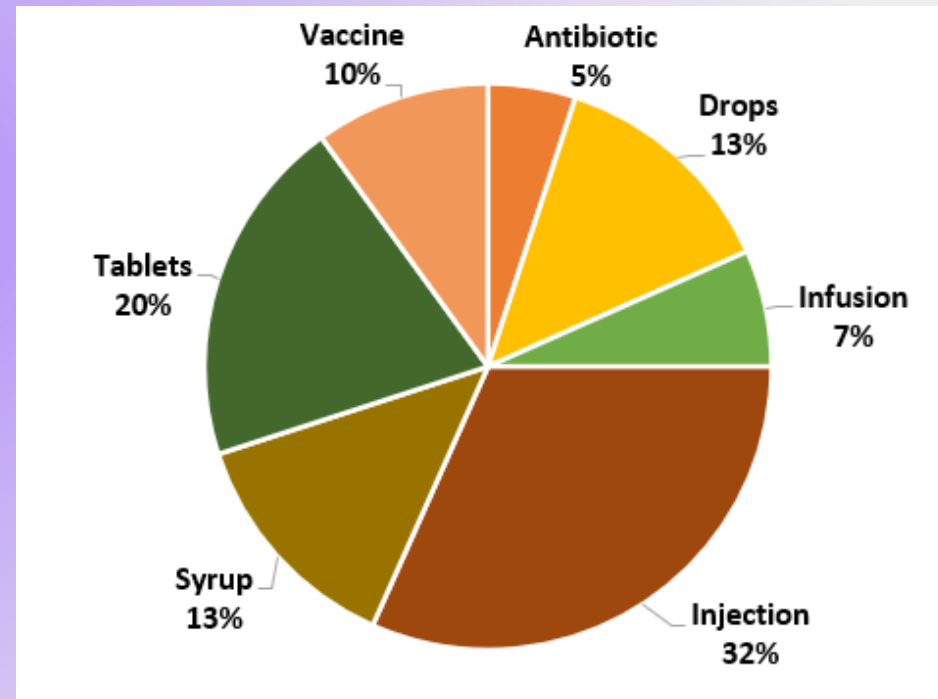


Fig 10: SKUs Classification based on Medical Usage

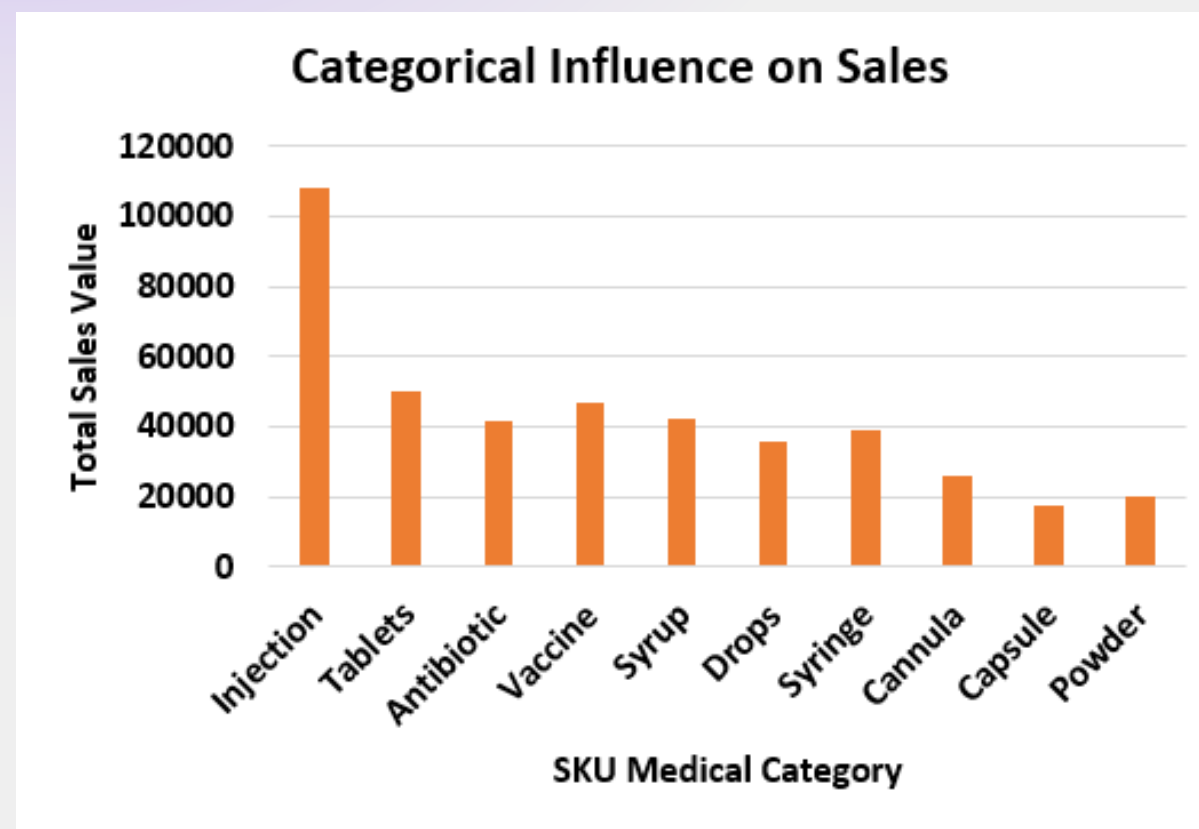


Fig 11: Medical Category wise Total Sales Value (₹)

Analysis 4

Batch-wise Cost Analysis

Explanation:

- Purchase data was analyzed batch-wise to identify per-unit cost differences across suppliers and procurement times.
- Actual quantity (purchased + free) was used to calculate per-unit purchase rates.
- A Pivot Table was used to aggregate drug names, batch numbers, and corresponding unit costs into a structured comparison table.

Key Insights:

- ORS powders, antibiotics, and syrups showed wide per-unit price differences across batches, with some savings reaching ₹2–₹3 per unit.
- High-volume essentials like syringes demonstrated how consistent vendor negotiations could generate significant cumulative savings.
- For several pediatric injectables, smart batch selection improved margins by 10–15%, proving critical for long-term profitability.
- Certain batches consistently had higher costs despite being from the same supplier, indicating missed opportunities in timing or vendor selection.

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

Fig 12: Best Batch No(s) for each SKU Table

Analysis 5 & 6

Inventory Turnover Rate Analysis & Gross Margin Return on Investment Analysis

ITR Insights:

- Average ITR = 14.75, but median is 0.585, which indicates skew: only a few SKUs move fast.
- High ITR products (syringes, ORS, certain injectables) support cash flow and operations.
- Overstocking of seasonal pediatric items explains low ITR for many SKUs due to relative lower procurement costs according to the store operator during peak season.
- No dead stock (Q3 items absent) is a positive sign for inventory health.

GMROI Insights:

- BIO-POLIO (GMROI ~489), CIDAL INJ, HEXAXIM are highly profitable SKUs; each ₹1 invested gives multiple ₹ returns.
- Syrups and consumables (e.g., BROZEDEX LS, I.V sets) have low GMROI (<1), tying up capital despite demand.
- Vaccines and injectables dominate top GMROI list, validating wide pediatrics related availability in general market.
- GMROI is a stronger measure of profitability than sales volume alone which helps prioritize SKUs strategically.

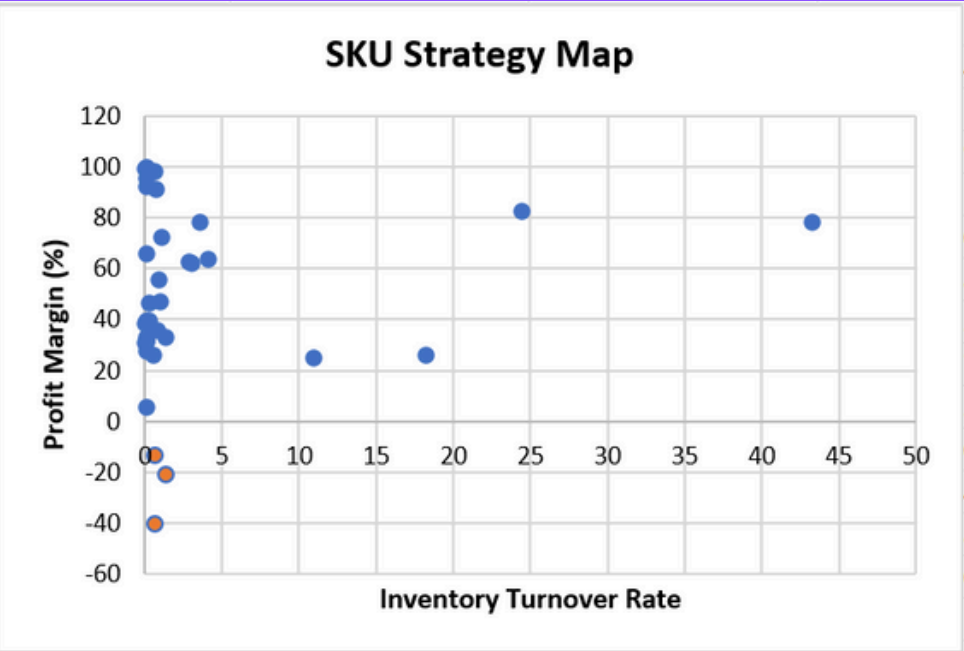


Fig 13: ITR vs Profit Margin (%) Scatter Plot

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

Fig 14: SKUs Heatmap Table based on GMROI



Recommendations

1. **Prioritize Category A SKUs:** Ensure ORS, key antibiotics, and vaccines are always in stock and prominently displayed.
2. **Optimize Procurement:** Choose lowest-cost batches for injectables and high-volume drugs to save 10–15% on purchase costs.
3. **Boost GMROI:** Focus capital on high-return SKUs like BIO-POLIO, CIDAL INJ, HEXAXIM; reduce overstocking of low-GMROI syrups.
4. **Improve Turnover:** Bundle slow-moving syrups/drops with fast-selling SKUs to reduce stagnant stock.
5. **Category Strategy:** Treat injections and syrups as revenue drivers, tablets as steady movers, and capsules as minimal stock essentials.
6. **Seasonal Planning:** Continue pre-season bulk buys but align with actual pediatric demand to avoid excess low-ITR inventory.

