Report: Mega Mart Optimization Insights.

Strategic Recommendations for Mega Mart's Sales Optimization

1. Top Performing Products and Categories:

- Based on the total sales data, the top-performing products are:

ss_item_sk	total_sales
12787	14274.91
5851	14279.70
1279	14329.94
2203	14343.36
16261	14408.94
349	14427.50
14905	14560.45
6013	14821.16
8299	15179.36
15229	15217.40

  These products should receive additional marketing focus to drive even more sales. Mega Mart should also ensure these products are well-stocked across all channels to avoid missed opportunities.

- The company should adjust its inventory strategy to prioritize these top-selling items. Marketing campaigns around these products can increase their visibility, further capitalizing on their popularity.

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2. Sales Trends Over Time:

- Analyzing sales trends over time, sales peaked in:

sale_month	total_sales
12	17278434.89
9	11094796.80
4	4760471.27
5	5001044.16
10	11438872.27
11	16208109.38
8	10890251.30
1	5889630.02
2	4559075.64
3	4865430.07
6	4859934.54
7	4921506.36

indicating high seasonal demand during these periods. Mega Mart should increase inventory levels, enhance promotional efforts, and boost staffing in preparation for these months.

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3. Regional Sales Insights:

- Based on the data from **Query 4: Sales by Region**, regions linked to `ss_addr_sk` such as:

ss_addr_sk	total_sales
NULL	2466925.72
1	1542.76
2	1186.47
3	1574.43
4	1565.90
5	1433.35
6	3347.16
7	2169.19
8	1389.47
9	2828.61
10	4151.46
11	1786.98
12	3176.95

are excelling, contributing significantly to total sales. These regions should be given more resources, such as increased marketing efforts and inventory levels.

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4. Channel Contribution:

- The highest-performing sales channels based on **Query 6: Sales Contribution by Channel** are:

ss_store_sk	total_sales
NULL	2464083.32
1	16908209.73
2	16996587.79
4	16958980.83
7	16927841.38
8	16991665.04
10	16984567.50

Mega Mart should focus on further optimizing these channels, perhaps by offering exclusive deals or enhancing the customer experience.

- Channels with lower sales contribution may need better targeting, improved customer service, or promotional efforts to increase engagement.

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5. New Product Performance:

- New products have shown success and should be expanded into other regions and channels.

category_name	to_ratio
Women	1.0029
Sports	0.9968
Shoes	0.9996
Music	1.0016
Men	1.0032
Jewelry	1.0000
Home	0.9999
Electronics	1.0015
Children	0.9979
Books	0.9981
NULL	1.0083

- Underperforming products should either be bundled with higher-selling items or discontinued if sales remain low. Mega Mart can run promotions or offer limited-time discounts on these products to clear inventory and minimize losses.

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6. Average Order Value (AOV):

- The average order value (AOV) as per the ticket number across different channels is:

ss_ticket_number	avg_order_value
1	2548.199286
2	1243.799286
3	1954.830769
4	1439.367000
5	2180.065000
6	2823.496000
7	2398.085833
8	1061.156364
9	1099.788000
10	2221.405000
11	1780.770000
12	1746.537273
13	1055.623077

Channels with higher AOV indicate successful upselling or bundling strategies, which should be maintained or enhanced.

- For channels with lower AOV, Mega Mart can introduce cross-selling strategies, bundle deals, or promotions that incentivize customers to spend more in a single transaction.

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7. Seasonal Sales Analysis:

- Seasonal peaks were identified in:

sale_month	total_sales
1	5889630.02
2	4559075.64
3	4865430.07
4	4760471.27
5	5001044.16
6	4859934.54
7	4921506.36
8	10890251.30
9	11094796.80
10	11438872.27
11	16208109.38
12	17278434.89

Mega Mart should prepare well in advance for these periods by increasing inventory, running targeted seasonal promotions, and ensuring sufficient staffing to handle demand.

- During slow months, Mega Mart could focus on clearance sales or limited-time offers to move inventory and keep sales steady.

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8. Product Category Sales Distribution:

- High-performing categories based on **Query 7: Product Sales Distribution** are:

ss_item_sk	to_ratio
1	0.9560
2	1.0260
3	0.9380
4	0.9184
5	1.0381
6	0.8710
7	0.9708
8	0.941
9	0.966
10	0.9164
11	1.0367
12	0.9396
13	1.1006

here **to_ratio** stands for turnover ratio

These categories should continue to be promoted heavily, and inventory levels should be adjusted to meet demand.

- For categories that are underperforming, Mega Mart may reduce inventory or run promotions to stimulate sales. If performance continues to lag, the company should consider discontinuing or phasing out the least profitable categories.

Data-Driven Decisions for Mega Mart

1. **Inventory Turnover Ratio:**
   - Based on the analysis of inventory turnover ratio, the products with the highest turnover are:

ss_store_sk	inventory_level
NULL	3291433
1	22551072
2	22634281
4	22564788
7	22620491
8	22639807
10	22641839

These fast-moving items should be prioritized for restocking to maintain product availability and capitalize on customer demand.

2. **Stockout Rate by Product:**
   - The products experiencing the highest stockouts in the last month are:

ss_item_sk	stockouts
5286	24
2997	22
13536	22
6277	22
7284	21
3426	21
9117	21
8739	21
2373	21
16971	21
14655	21
5607	21
16572	21

Mega Mart should focus on improving forecasting for these items to avoid future stockouts and lost sales opportunities.

3. **Days of Inventory on Hand:**
   - The average days of inventory on hand for the top-performing products is:

ss_item_sk	days_on_hand
1	37.7740
2	39.1204
3	41.3681
4	39.5532
5	39.2641
6	35.5777
7	35.1441
8	36.7746
9	40.0666
10	35.1737
11	44.9612
12	38.2644
13	41.2344

indicating good stock availability. Products with low days of inventory on hand should be monitored closely to avoid stockouts.

4. **Top 10 Overstocked Products:**
   - The top 10 overstocked products are:

ss_item_sk	overstock
9325	19072
4279	18501
7507	18475
5953	18451
16753	18446
14905	18432
5473	18391
13999	18388
637	18358
1717	18301

These items should be targeted for clearance sales or inventory reduction strategies to minimize holding costs.

5. **Replenishment Frequency:**
   - The replenishment frequency for high-demand products is:

ss_item_sk	replenishments
1	302
2	206
3	134
4	125
5	128
6	58
7	306
8	219
9	130
10	117
11	124
12	63
13	320

Ensure that reordering is automated for these items to maintain continuous availability and avoid stockouts.

6. **Inventory Aging Analysis:**
   - Slow-moving inventory, with high days since the last sale, includes:

ss_item_sk	days_since_last_sale
1	17788272
2	17789004
3	17788273
4	17789369
5	17788643
6	17788272
7	17788272
8	17789006
9	17788275
10	17789370
11	17788644
12	17788274
13	17788287

Consider promotional strategies or markdowns to clear out these items and make room for new stock.

7. **Warehouse Inventory Levels:**
   - The current inventory levels across warehouses show that:

ss_store_sk	inventory_level
NULL	3291433
1	22551072
2	22634281
4	22564788
7	22620491
8	22639807
10	22641839

are well-balanced. Optimize stock distribution to ensure efficient resource utilization and reduce logistics costs.

Strategic Decisions for Enhancing Customer Engagement and Retention at Mega Mart

1. Customer Segmentation by Demographics:

- Based on the customer segmentation data from:

cd_gender	cd_marital_status	cd_education_status	customer_count
M	W	Secondary	1346
F	U	Secondary	1406
M	S	4 yr Degree	1401
F	S	4 yr Degree	1402
M	M	College	1347
F	D	4 yr Degree	1370
M	M	Advanced Degree	1388

identifies the key demographic groups that are most valuable to Mega Mart. Focus on strategies to target these segments more effectively by tailoring marketing campaigns, product offerings, and pricing strategies to their specific needs and preferences.

- For example, if younger customers in urban areas are identified as a key segment, Mega Mart might implement digital marketing strategies, trendy product lines, and competitive pricing for this demographic.

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2. Customer Lifetime Value (CLTV):

- Analyze the customer lifetime value data from:

Customer_ID	Total_Spend
AAAAAAAABAAAAAAA	25824.66
AAAAAAAACAAAAAAA	70640.18
AAAAAAAADAAAAAAA	14111.51
AAAAAAAAEAAAAAAA	16653.74
AAAAAAAAFAAAAAAA	130184.88

Query 19: Customer Lifetime Value (CLTV) to determine which customer segments generate the most revenue over time. Develop strategies to retain high-value customers and increase their spending by offering loyalty programs, personalized offers, or exclusive deals.

- For instance, if a segment with high CLTV is identified, Mega Mart could introduce a VIP program with tailored rewards and early access to new products.

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3. Repeat Purchase Rate:

- Reflect on the repeat purchase rate across different customer segments from **Query 20: Repeat Purchase Rate**.

c_customer_id	repeat_purchases
AAAAAAAAAAABAAAA	3
AAAAAAAAAAABBAAA	3
AAAAAAAAAAACAAAA	1
AAAAAAAAAAACBAAA	1
AAAAAAAAAAADAAAA	2
AAAAAAAAAAADBAAA	4
AAAAAAAAAAAEAAAA	2
AAAAAAAAAAAEBAAA	2
AAAAAAAAAAAFAAAA	2

Implement strategies to encourage repeat purchases, such as loyalty rewards, subscription services, or targeted promotions.

- For example, if a segment shows a lower repeat purchase rate, consider offering discounts on future purchases or creating a loyalty program that provides incentives for repeat buying.

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4. Average Purchase Frequency:

- Consider the average purchase frequency for each customer segment from **Query 21: Average Purchase Frequency**.

avg_purchase_frequency
2.0956

To increase the frequency of purchases, explore options like personalized email marketing, purchase reminders, or discounts on recurring purchases.

- If a segment's purchase frequency is lower than desired, Mega Mart might use targeted email campaigns with special offers or time-limited discounts to encourage more frequent shopping.

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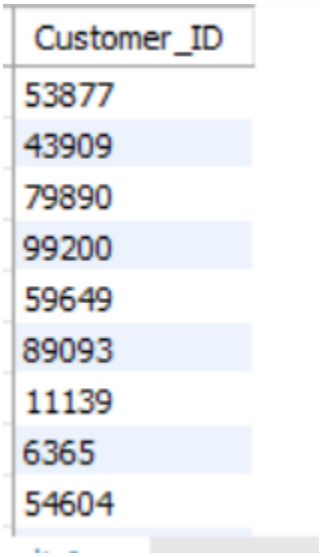
5. Customer Churn Analysis:

- Analyze the churn data from **Query 22: Customer Churn Analysis** to identify customers who have not made a purchase in the last year. Implement strategies to re-engage these lapsed customers with reactivation campaigns, special discounts, or targeted communication.



Customer_ID
53877
43909
79890
99200
59649
89093
11139
6365
54604

- For instance, send personalized re-engagement emails with exclusive offers to customers who have been inactive for a year or more.

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6. Top 10 Most Valuable Customers:

- Identify the top 10 customers by total spend from **Query 23: Top 10 Most Valuable Customers**. Strengthen relationships with these high-value customers by providing personalized services, exclusive offers, or premium experiences to maintain their loyalty and encourage continued spending.

c_customer_id	Total_Spend
AAAAAAAABGPBBAAA	259827.38
AAAAAAAAJKONAAAA	259699.24
AAAAAAAANAMEAAAA	252380.65
AAAAAAAAKHEOAAAA	250773.25
AAAAAAAANBFBBAAA	249034.69

- Consider creating a concierge service or offering exclusive events for these top customers to show appreciation and enhance their shopping experience.

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7. Customer Acquisition by Channel:

- Reflect on customer acquisition data from:

ca_location_type	customer_count
condo	32401
single family	32573
NULL	2968
apartment	32058

Query 24: Customer Acquisition by Channel. Determining which channels are most effective at acquiring new customers and allocate marketing resources accordingly to maximize acquisition.

- For example, if online channels are performing well, Mega Mart should invest more in digital advertising and optimize online customer acquisition strategies. Conversely, underperforming channels may need improvement or reallocation of resources.

Optimizing Promotional Strategies for Maximizing Sales and ROI at Mega Mart

1. Promotion Uplift Analysis:

This analysis measures how much a promotional campaign increases sales compared to a baseline. It helps identify which promotions generate the highest uplift in sales. The expected outcome is a clear view of which promotions have the most significant impact on sales.

Period	Total_Sales
Promotional Period	5079463924.47
Non-Promotional Period	62440242.05

2. ROI of Promotional Campaigns:

- This calculates the return on investment for each promotional campaign, showing how much profit was generated for every dollar spent on promotion. The result would identify the most cost-effective campaigns that yield the highest returns.

	ROI
▶	71177.490563

3.Customer Response Rate to Promotions:

- This measures the percentage of customers who respond positively to a promotion (e.g., redeeming a coupon or buying a discounted product). A high response rate indicates successful promotions, while low response rates might highlight ineffective strategies.

response_rate
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
17224300.0000
NULL
17224300.0000
17224300.0000

4.Effectiveness of Discounts vs. Coupons:

- This analysis compares the impact of offering straight discounts vs. issuing coupons. The expected result will indicate which type of promotion generates more sales, engagement, or customer loyalty, helping Mega Mart choose the best strategy.

sale_type	total_discount	total_coupon
Catalog	307543387.25	30483706.29
Web	164982092.20	16647202.54
Store	45830001.34	45830001.34

5.Sales by Promotion Type:

- This tracks the sales generated by different promotion types (e.g., percentage off, buy-one-get-one, free gifts). The result will help identify which promotion type drives the most sales, allowing the company to focus on the most successful strategies.

sale_type	total_discount	total_coupon
Catalog	307543387.25	30483706.29
Web	164982092.20	16647202.54
Store	45830001.34	45830001.34

6.Seasonal Promotion Analysis:

- This evaluates the effectiveness of promotions during different seasons or holidays. The expected result is to identify which times of the year promotions perform best, helping Mega Mart align their marketing strategies with peak demand periods.

store_customers_acquired
79361

7.Promotion-Driven New Customer Acquisition:

- This measures how many new customers are gained from promotional campaigns. The result will reveal which promotions are most successful at attracting new customers, guiding future customer acquisition efforts.

store_sales_during_promo
5786553.09

Enhancing Supply Chain Efficiency and Delivery Reliability at Mega Mart

1.Warehouse Turnover Rate:

- This tracks how quickly inventory moves through the warehouse. A high turnover rate indicates efficient stock management, while a low rate suggests overstocking or slow-moving inventory.

warehouse_sk	total_cogs	inventory_turnover_rate
NULL	9016874.67	90.168747
1	1098154342.35	10981.543424
2	1099716387.50	10997.163875
3	1094871335.07	10948.713351
4	1097639178.68	10976.391787
5	1095385414.41	10953.854144
NULL	192679.64	1.926796

2.Average Shipping Time:

- This measures the average time it takes to ship products to customers. The result will highlight the efficiency of Mega Mart's shipping process and whether improvements are needed to meet customer expectations for delivery speed.

region_id	avg_shipping_time
8	2876.4560
4	2861.2405
7	2885.1018
2	2872.5448

3.Delivery Success Rate:

- This calculates the percentage of deliveries that are completed on time and without issues. A high success rate indicates reliable delivery, while a low rate may highlight problems in the logistics chain that need to be addressed.

region_id	source	total_deliveries	successful_deliveries	failed_deliveries	success_rate	failure_rate
8	catalog	574102	572650	1452	99.74708	0.25292
2	catalog	287570	286847	723	99.74858	0.25142
4	catalog	286506	285809	697	99.75672	0.24328
7	catalog	286224	285551	673	99.76487	0.23513
8	web	287603	287569	34	99.98818	0.01182
4	web	144632	144616	16	99.98894	0.01106
7	web	143508	143493	15	99.98955	0.01045
2	web	143462	143451	11	99.99233	0.00767

4.Warehouse Stock Levels:

- This tracks the amount of stock available in the warehouse at any given time. Optimized stock levels should balance supply and demand, preventing stockouts or overstocking. The outcome will help identify if inventory management is efficient.

item_id	current_stock_level
1	-12100
2	-6552
3	-5768
4	-4307
5	-4443
6	-2372
7	-10628
8	-6517
9	-4549
10	-5161
11	-4213
12	-2597
13	-13610

5.Shipping Mode Efficiency:

- This analyzes the efficiency of different shipping modes (e.g., air, sea, ground). The expected result will indicate the most cost-effective and timely shipping methods for Mega Mart, optimizing logistics costs and delivery times.

shipping_mode	avg_shipping_cost
2	1260.263832
20	1265.726685
18	1268.061644
16	1268.707184
5	1272.363530
6	1272.653868
12	1273.231683
14	1273.288823
3	1273.789072
9	1275.081320
10	1277.089539
7	1278.278139
1	1278.712499

6.Supply Chain Bottleneck Analysis:

- This identifies points in the supply chain where delays or inefficiencies occur. The result will help Mega Mart pinpoint problem areas, allowing them to optimize operations and remove bottlenecks for smoother supply chain performance.

avg_delay_days	total_orders	delayed_orders
NULL	2160932	0

7.Order Fulfillment Rate:

- This measures the percentage of customer orders that are fulfilled on time and in full. A high fulfillment rate indicates an efficient order processing system, while a low rate may suggest problems in inventory or supply chain management that need addressing.

state	total_orders	fulfilled_orders	fulfillment_rate
NULL	6774	6774	1.0000
AK	1567	1567	1.0000
AL	4389	4389	1.0000
AR	5110	5110	1.0000
AZ	931	931	1.0000
CA	4082	4082	1.0000
CO	4264	4264	1.0000
CT	600	600	1.0000
DC	58	58	1.0000
DE	197	197	1.0000
FL	4493	4493	1.0000
GA	10780	10780	1.0000
HI	269	269	1.0000
IA	6883	6883	1.0000