MYSQL & POWER BI | Promotional Performance Analysis

Examine the promotions run by Atliq Mart during Diwali 2023 and Sankranti 2024 to evaluate their effectiveness. This analysis will help in making informed decisions for future promotional activities.

Skills Used:

SQL to analyse and ad-hoc-analysis

Power BI for visualization

The desired insights from this analysis are as follows:

- Which state witnessed the highest increase in revenue?
- Which promotion resulted in the highest incremental revenue and sales?
- Which promotion resulted in the lowest incremental revenue and sales?
- Which product showed the highest and lowest lift in sales and revenue?

Process:

- Load the data into MYSQL Workbench.
- Analyse the data and write queries for ad hoc requests.
- Import the data into Power BI.
- Create DAX measures for analysis and create the dashboard.
- Which promotion resulted in the highest incremental revenue
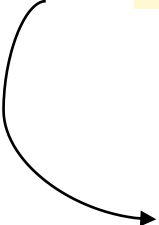
The project is divided into two parts:

1. Primary Analysis - Analyse the data and answer ad-hoc requests using MySQL.

List products priced over 500 and that are featured in promo type 'BOGOF' to identify valuable items with big discounts, helping evaluate pricing and promotion strategies.

```sql
SELECT DISTINCT
    (product_name), base_price
FROM
    fact_events
        JOIN
    dim_products USING (product_code)
WHERE
    base_price > 500
        AND promo_type = 'BOGOF';
```
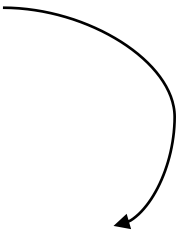
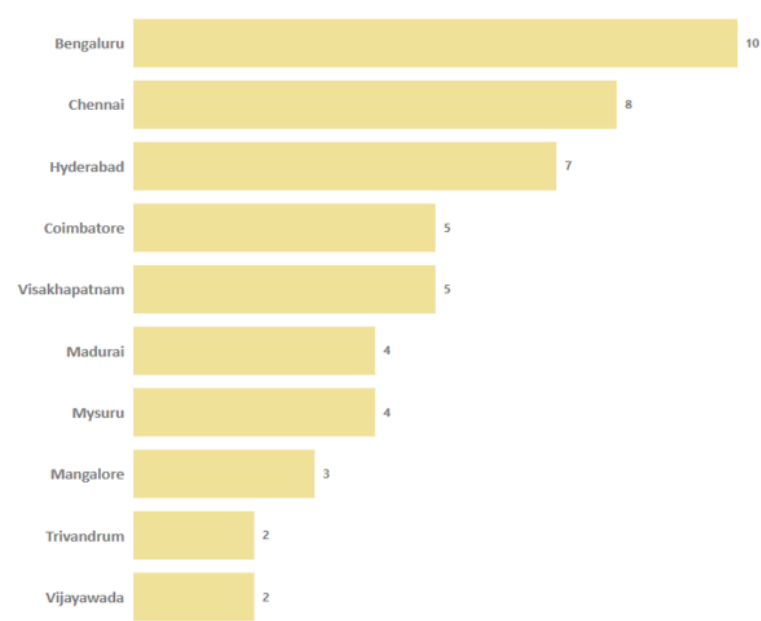**Product:** Atliq Waterproof Immersion Rod
Price: Rs 1190

Product: Atliq Double Bedsheet Set
Price: Rs 1020

Generate a report listing cities and their respective store counts, sorted by descending order of store presence, to optimize retail operations.

```sql
SELECT
    city, COUNT(store_id) AS store_count
FROM
    dim_stores
GROUP BY city
ORDER BY store_count DESC;
```

Store Distribution by City

| City	Store Count
Bengaluru	10
Chennai	8
Hyderabad	7
Coimbatore	5
Visakhapatnam	5
Madurai	4
Mysuru	4
Mangalore	3
Trivandrum	2
Vijayawada	2

Bengaluru has the most stores, and Chennai has the second most. In contrast, Trivandrum and Vijayawada have the fewest stores.

Generate a report showing each campaign's total revenue before and after promotion, helping assess the financial impact of promotional campaigns.

```sql
SELECT
    campaign_name,
    ROUND(SUM(base_price * `quantity_sold(before_promo)`) / 1000000,
        2) AS total_revenue_before_promotion,
    ROUND(SUM(CASE
                WHEN promo_type = 'BOGOF' THEN base_price * 0.5 * (`quantity_sold(after_promo)` * 2)
                WHEN promo_type = '500 Cashback' THEN (base_price - 500) * `quantity_sold(after_promo)`
                WHEN promo_type = '50% OFF' THEN base_price * 0.5 * `quantity_sold(after_promo)`
                WHEN promo_type = '33% OFF' THEN base_price * 0.67 * `quantity_sold(after_promo)`
                WHEN promo_type = '25% OFF' THEN base_price * 0.75 * `quantity_sold(after_promo)`
            END) / 1000000,
        2) AS total_revenue_after_promotion
FROM
    fact_events
        JOIN
    dim_campaigns USING (campaign_id)
GROUP BY campaign_name;
```

Campaign Revenue Analysis: Before and After Promotion

● Revenue Before Promotions ● Revenue After Promotions

171M

124M

83M

58M
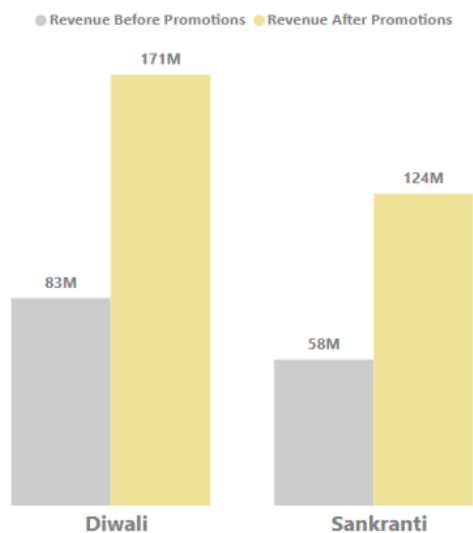
Diwali   Sankranti

During both Diwali and Sankranti, there has been a significant increase in revenue, indicating a positive impact of promotion on sales during these festive periods.

Generate a report calculating ISU% for each category during the Diwali campaign, along with rankings. This will help assess category-wise success and impact of the campaign on incremental sales.

```sql
With  Diwali_campaign_sale as ( Select category ,
Round(Sum((
Case
When promo_type = "BOGOF" Then `quantity_sold(after_promo)`*2
Else `quantity_sold(after_promo)`
End
 - `quantity_sold(before_promo)`) * 100)
 / Sum(`quantity_sold(before_promo)`),2) as `ISU%`
From fact_events
Join dim_products using(product_code)
Join dim_campaigns using(campaign_id)
Where campaign_name = "Diwali"
Group by category)

Select Category , `ISU%`, row_number() Over(order by `ISU%` desc)
as rank_order From Diwali_campaign_sale ;
```

Category Analysis during Diwali Campaign based on ISU% and Rankings

CATEGORY	ISU% ▲	Rank Order
Home Appliances	588.45	1
Home Care	203.14	2
Combo1	202.36	3
Personal Care	31.06	4
Grocery & Staples	18.05	5

Home Appliances and Home care have the highest Incremental Sold quantity percentage (ISU%). On the other hand, the Grocery & Staples category shows the lowest ISU%, indicating the smallest rise in units sold.

Generate a report listing the Top 5 products by IR% across all campaigns, providing product name, category, and IR%. This assists in identifying successful products for optimization.

```sql
SELECT
    product_name,
    category,
    ROUND((SUM(CASE
                WHEN promo_type = 'BOGOF' THEN base_price * 0.5 * (`quantity_sold(after_promo)` * 2)
                WHEN promo_type = '500 Cashback' THEN (base_price - 500) * `quantity_sold(after_promo)`
                WHEN promo_type = '50% OFF' THEN base_price * 0.5 * `quantity_sold(after_promo)`
                WHEN promo_type = '33% OFF' THEN base_price * 0.67 * `quantity_sold(after_promo)`
                WHEN promo_type = '25% OFF' THEN base_price * 0.75 * `quantity_sold(after_promo)`
                ELSE 0
            END) - SUM(base_price * `quantity_sold(before_promo)`)) / SUM(base_price * `quantity_sold(before_promo)`) * 100,
        2) AS `IR%`
FROM
    fact_events
        JOIN
    dim_products USING (product_code)
GROUP BY product_name , category
ORDER BY `IR%` DESC
LIMIT 5;
```

Top 5 Products by IR% across All Campaigns

CATEGORY	PRODUCT NAME	IR%
Home Appliances	Atliq_waterproof_Immersion_Rod	266.19
	Atliq_High_Glo_15W_LED_Bulb	262.98
Home Care	Atliq_Double_Bedsheet_set	258.27
	Atliq_Curtains	255.34
Grocery & Staples	Atliq_Farm_Chakki_Atta (1KG)	160.01

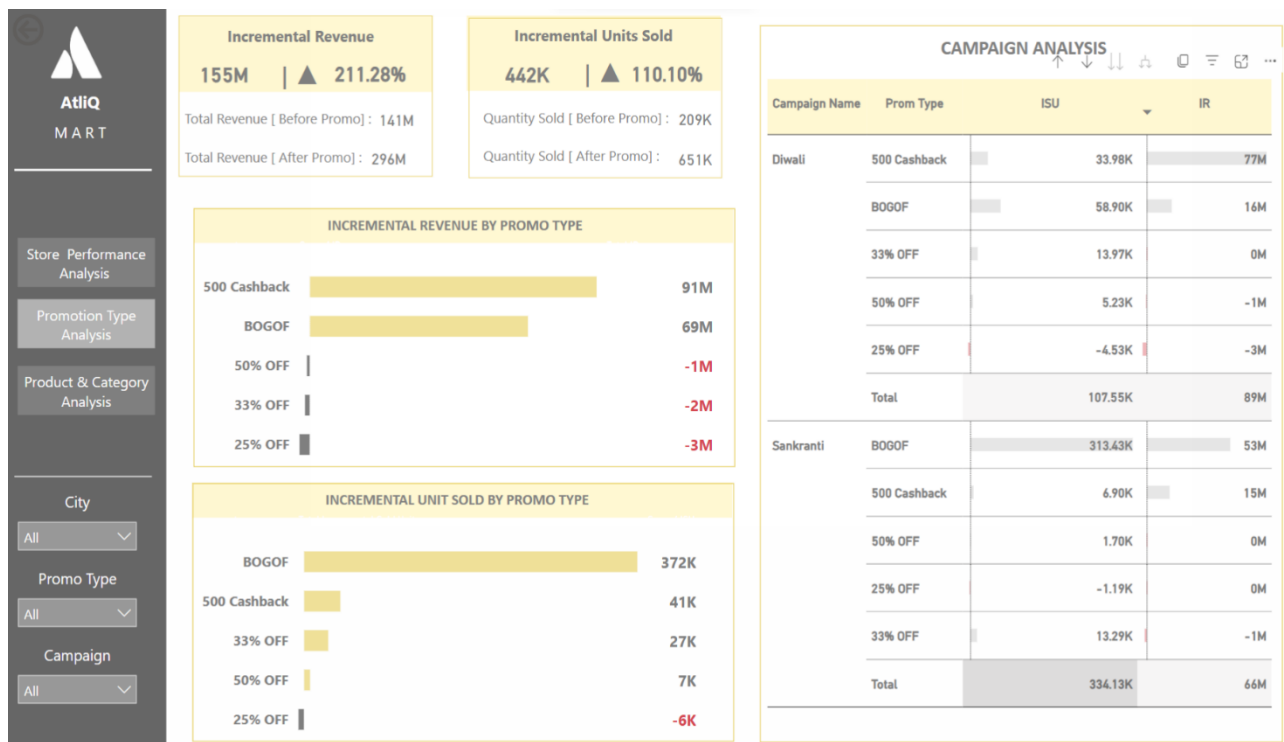The Atliq Waterproof Immersion Rod shows the highest increase in revenue (IR%)

2. Secondary Analysis – Create a dashboard with important metrics and visualizations using Power BI.

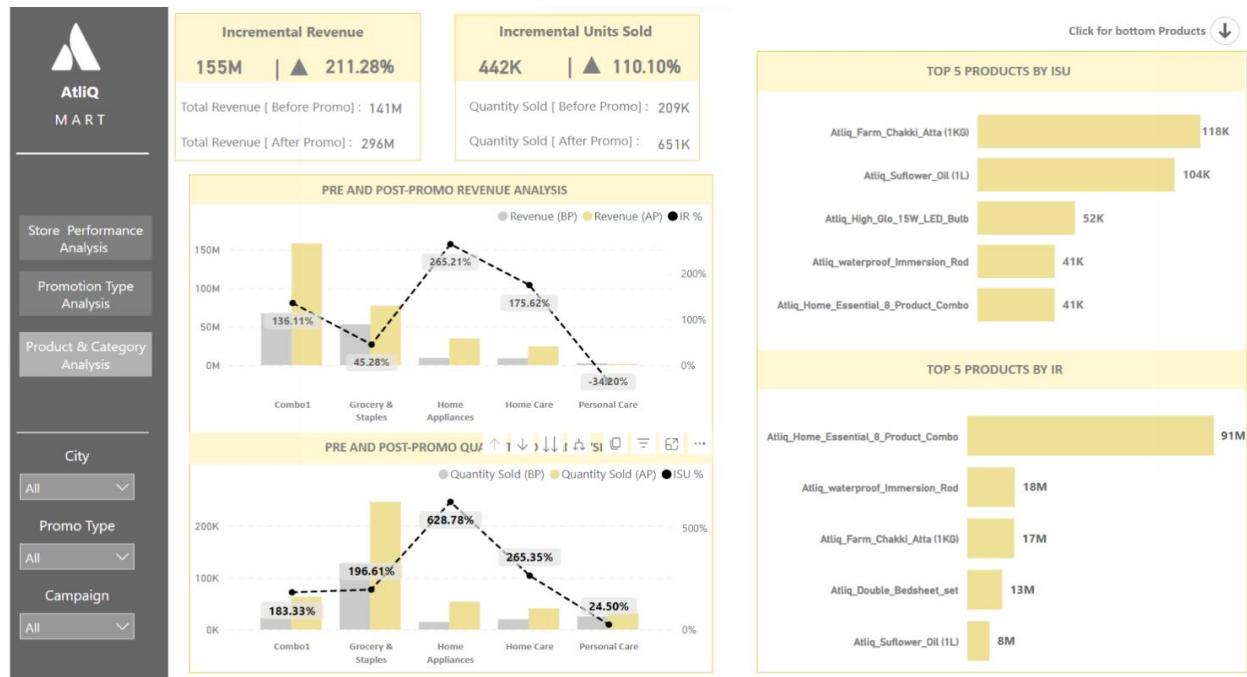The dashboard consists of three pages –

1. Store Performance Analysis View:
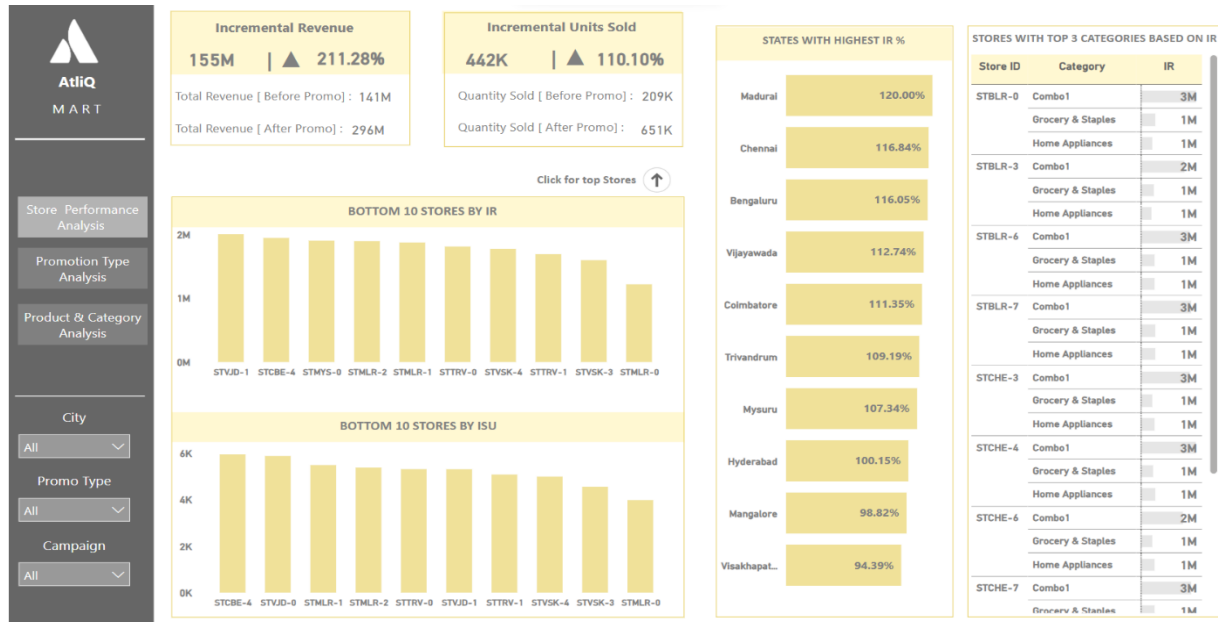
2. Promotion Type Analysis View:

3. Product and Category Analysis View:

DAX Measures:

Here are some DAX measures that are required for the analysis.

Quantity sold after promotions:

```
Qunatity Sold After Promotion =
SWITCH (
    TRUE(),
    fact_events[promo_type] = "BOGOF", fact_events[quantity_sold(after_promo)] * 2,
    fact_events[quantity_sold(after_promo)]
)
```

Revenue after promotions:

```
Revenue after promotion =
SWITCH(TRUE(),
    fact_events[promo_type] = "BOGOF", fact_events[Qunatity Sold After Promotion] * fact_events[base_price] * (1-0.5),
    fact_events[promo_type] = "500 cashback", fact_events[Qunatity Sold After Promotion] * (fact_events[base_price]-500),
    fact_events[promo_type] = "50% OFF", fact_events[Qunatity Sold After Promotion] * fact_events[base_price] * (1-0.5),
    fact_events[promo_type] = "33% OFF", fact_events[Qunatity Sold After Promotion] * fact_events[base_price] * (1-0.33),
    fact_events[promo_type] = "25% OFF", fact_events[Qunatity Sold After Promotion] * fact_events[base_price] * (1-0.25))
```

Revenue before promotion:

```
Total Revenue(before_promo) = fact_events[base_price] * fact_events[quantity_sold(before_promo)]
```

Incremental sold unit:

```
ISU =
fact_events[Qunatity Sold After Promotion] - fact_events[quantity_sold(before_promo)]
```

Incremental Revenue:

```
IR = fact_events[Revenue after promotion] - fact_events[Total Revenue(before_promo)]
```

Incremental Revenue %:

```
IR % =
DIVIDE(
    SUM(fact_events[Revenue after promotion])-SUM(fact_events[Total Revenue(before_promo)]),
    SUM(fact_events[Total Revenue(before_promo)])
)
```

Incremental unit sold %:

```
ISU % =
DIVIDE(
    SUM(fact_events[Qunatity Sold After Promotion])-SUM(fact_events[quantity_sold(before_promo)]),
    SUM(fact_events[quantity_sold(before_promo)])
)
```

Conclusion:

Stores Insights

Focus Efforts on High IR Store Categories:

- Prioritize categories with the highest Incremental Revenue (IR), including Combo1, Grocery, Staples, and Home Appliances.

Target Key Cities:

- Concentrate efforts on cities with the highest incremental revenue %, such as Madurai, Chennai, and Bengaluru.

Promotion Type Insights

Leverage Effective Promotion Types:

- Capitalize on promotions like **500 cashback** and **BOGOF** (Buy One Get One Free) due to their positive impact on Incremental Revenue and Unit Sales.

Avoid Ineffective Discounts:

- Steer clear of discount promotions, especially **25% OFF** and **33% OFF**, as they have shown limited effectiveness in driving revenue.

Optimize Seasonal Promotions:

- Focus on maximizing revenue during **Diwali** compared to Sankranti by refining promotional strategies for this key period.

Product and Category Analysis

Maximize Revenue from High-Performing Categories:

- Allocate resources towards categories with the highest incremental revenue growth, such as Home Appliances and Home Care.

Promote Top Revenue Generating Products:

- Focus on products like the **Atliq Waterproof Immersion Rod, Atliq LED Bulb** and **Atliq Double Bedsheet Set** to capitalize on their strong revenue contributions.

Video Presentation link - https://www.linkedin.com/feed/update/urn:li:activity:7168941818028474368/

Thank you!!

For taking the time to explore my portfolio!