Project Report: Sales Insights Data Analysis

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1. Executive Summary

This project focuses on delivering a comprehensive analysis of sales performance using SQL for data preparation and Power BI for visualization. The goal is to derive actionable business insights from raw sales data stored in a relational database. Using interactive dashboards, we aim to enable business stakeholders to identify revenue-driving markets, top-performing products and customers, and monthly sales trends.

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2. Problem Statement

A retail business operating across various markets in India wants to understand its sales trends and performance better. Despite having a well-structured sales database, decision-makers lack a visual interface to:

- Track key performance indicators (KPIs) like revenue and sales quantity
- Monitor market-specific performance
- Identify top customers and products
- Understand sales trends over time

This project provides a robust solution by combining the querying power of SQL with the visualization capabilities of Power BI.

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3. Data Source & Schema

The data was provided as a SQL dump and restored into a relational database. The following tables were used:

- customers — Contains customer information
- products — Product IDs and details
- transactions — Contains transaction-level sales and revenue data
- markets — Market/city information
- date — Calendar table

The key relationships were established as follows:

- transactions.customer_id → customers.customer_id
- transactions.product_id → products.product_id
- customers.market_code → markets.code
- transactions.order_date → date.date

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4. Data Preparation in SQL

Key SQL operations included:

- Joining fact and dimension tables
- Creating aggregated views for Power BI import
- Calculating revenue as sales_qty * price
- Filtering NULLs and verifying data consistency

Example SQL Query for Aggregation:

```
SELECT
  m.market_name,
  SUM(t.sales_qty * p.price) AS revenue,
  SUM(t.sales_qty) AS total_qty
FROM transactions t
JOIN products p ON t.product_id = p.product_id
JOIN customers c ON t.customer_id = c.customer_id
JOIN markets m ON c.market_code = m.code
GROUP BY m.market_name;
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5. Power BI Modeling & Measures

After importing the cleaned SQL data into Power BI:

- Established relationships between tables
- Created calculated columns and DAX measures:
    - Revenue = Sales_Qty * Price
    - Total Revenue = SUM(Revenue)
    - Total Sales Qty = SUM(Sales_Qty)

Created a date hierarchy for time-series visuals using the date table.

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6. Dashboard Overview

The dashboard contains the following key visuals:

- **KPI Cards**: Displaying total revenue (~984.81M) and total sales quantity (~2M)
- **Bar Charts**:
    - Revenue by Market (Delhi, Mumbai, Ahmedabad, etc.)

    - Sales Quantity by Market
- **Line Chart**: Revenue trend over time (monthly)
- **Top 5 Products and Customers**
- **Slicers**: Time-period and market-based filtering

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7. Business Insights

- **Delhi** is the top-performing market with ~519M revenue.
- A product marked as **(Blank)** generated the highest revenue, indicating a potential data quality issue.
- **Electricalsara Stores** is the leading customer contributing ~413M revenue.
- Steady growth in revenue from 2018 to 2020.

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8. Tools & Technologies Used

- **SQL**: For data extraction, transformation, and loading (ETL)
- **Power BI Desktop**: For data modeling and dashboarding
- **DAX**: For calculated measures

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9. Conclusion & Future Scope

This project successfully showcases how to convert raw relational data into meaningful insights using SQL and Power BI. Future improvements may include:

- Resolving data quality issues like missing product names
- Including profit and cost analysis
- Enhancing interactivity with drill-through reports

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10. Resume Summary (Optional)

Built an end-to-end Sales Insights Dashboard using SQL for data modeling and Power BI for visualization. Extracted key business metrics like revenue trends, top customers, and market-wise sales to deliver decision-ready insights. Demonstrated data cleaning, SQL joins, DAX calculations, and interactive dashboarding skills.