Competitive Marketing Analysis Dashboard in Power BI

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1. Project Overview

Objective:

To design and develop a professional-grade Power BI dashboard that offers a deep analysis of competitive market performance. The dashboard enables marketing teams and business strategists to visualize and explore key performance indicators such as sales, profit, market share, product performance, customer segments, and geographic trends. It is designed to support strategic decision-making and competitive benchmarking.

Scope:

- Analyse sales and marketing metrics across various brands.
- Compare performance across regions, time periods, and product categories.
- Evaluate brand-wise and product-wise contribution to total revenue and profit.
- Visualize customer segmentation and distribution.
- Enable dynamic filtering and drill-down for interactive storytelling.

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2. Tools & Technologies Used

Tool / Technology	Purpose
Power BI Desktop	Visual report creation, data modelling, and publishing
DAX (Data Analysis Expressions)	Creation of KPIs, calculated columns, and business metrics
Power Query (M Language)	Data transformation, cleaning, and integration
Excel/CSV	Data source format for sales, products, customers, etc.
Power BI Service	Online sharing and collaboration

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3. Data Sources and Structure

The report incorporates multiple datasets designed to represent different facets of a competitive market. These datasets are structured to follow a star schema.

Table Name	Description
Sales	Fact table containing transactional sales data with revenue, cost, and date
Products	Product dimension including category, sub-category, brand, and product ID
Competitors	List of competing brands with market segments and descriptions
Customers	Customer metadata including region, segment, and demographic information
Date	A complete calendar table with year, month, quarter, week, and day columns

Data Storage Format: Excel or CSV

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4. Data Loading and Transformation (Power Query)

Steps performed in Power BI Power Query Editor:

1. **Importing Data**: All source files (Sales.csv, Products.xlsx, etc.) were loaded.
2. **Data Cleaning**:
    - Removed unnecessary columns (e.g., blank IDs, unused codes)
    - Filtered null values and incomplete records
    - Ensured date columns were in Date/Time format
3. **Data Transformation**:
    - Created calculated columns such as Year-Month and Profit = Revenue - Cost
    - Extracted hierarchy from full date (Year, Quarter, Month)
    - Merged datasets (e.g., appended competitor data with brand info)
    - Performed unpivoting for segment-wise or brand-wise sales where necessary
4. **Naming Conventions**:
    - Columns were renamed to follow Pascal Case or snake_case conventions
    - Tables were renamed for clarity and consistency

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5. Data Modelling

5.1 Star Schema Design

The model is cantered around the Sales fact table, which connects to several dimension tables.

[Customers] [Products] [Competitors]

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[Sales] -------- [Date]

5.2 Relationships and Cardinality

From Table	Column	To Table	Column	Cardinality	Direction
Sales	ProductID	Products	ProductID	Many-to-One	Single
Sales	Date	Date	Date	Many-to-One	Single
Sales	CustomerID	Customers	CustomerID	Many-to-One	Single
Sales	Brand	Competitors	Brand	Many-to-One	Single

All relationships are created with referential integrity. Surrogate keys are used when natural keys are inconsistent.

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6. DAX Measures and Calculated Columns

6.1 Key Performance Indicators (KPIs)

Total Sales = SUM (Sales [Revenue])

Total Cost = SUM (Sales [Cost])

Total Profit = [Total Sales] - [Total Cost]

6.2 Profitability Analysis

Profit Margin % = DIVIDE ([Total Profit], [Total Sales], 0)

6.3 Market Analysis

Market Share % = DIVIDE ([Total Sales], CALCULATE ([Total Sales], ALL (Competitors [Brand])), 0)

6.4 Time Intelligence

YOY Sales Growth = VAR (PrevYear = CALCULATE ([Total Sales], SAMEPERIODLASTYEAR (Date [Date]))

RETURN DIVIDE ([Total Sales] - PrevYear, PrevYear, 0)

6.5 Rank Metrics

Brand Rank = RANKX (ALL (Competitors [Brand]), [Total Sales], , DESC)

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7. Visualizations

Page Name	Visual Types	Description
Executive Summary	KPI Cards, Clustered Bar	High-level metrics: Total Sales, Profit, Market Share, Growth
Market Share	Donut Chart, Column Chart	Competitor comparison based on revenue and share
Revenue Trends	Line Chart, Area Chart	Monthly/quarterly sales and YOY growth trends
Profit Analysis	Waterfall Chart, Treemap	Breakdown of revenue and cost drivers
Regional Insights	Map Visual, Column Chart	Sales performance across countries/regions
Product Performance	Matrix, Heatmap	Product-category-wise profit and revenue
Customer Segments	Stacked Bar, Tree Map	Distribution of customers by segments, loyalty tiers, etc.

Interactive visuals include drill-downs, cross-filtering, and page tooltips.

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8. Filters, Slicers, and Parameters

Dynamic slicers enable end-users to customize their view:

- **Time Period**: Year, Quarter, Month
- **Region**: Country, State, City
- **Brand/Competitor**: Specific brand filter
- **Product Category**: Filter based on hierarchy (Category → Sub-Category → SKU)
- **Customer Segment**: Business, Individual, Premium, Budget, etc.

Page Navigation: Implemented using buttons/bookmarks for guided analysis.

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9. Optimization and Best Practices

- Used **composite models** and query folding wherever possible
- Reused **DAX measures** across visuals to improve consistency
- Removed unused columns post modelling to reduce memory footprint

- Used **tooltips** and **data labels** for better user experience
- Applied color-coding consistent with brand identity and accessibility standards
- **Bookmarks** used to simulate interactive storytelling

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10. Final Deliverables

- .pbix Power BI report file with all visuals, interactions, and measures
- PDF version of dashboard views
- Data dictionary with table/column descriptions
- Deployment guide with RLS and refresh instructions
- Executive summary document for stakeholders

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11. Business Impact

This dashboard delivers measurable business value by:

- Identifying top-performing and underperforming products
- Tracking competitor movement across markets
- Enhancing visibility of customer trends and demands
- Improving decision-making in marketing strategy
- Supporting presentations with real-time, interactive data

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