FUNCTIONAL REQUIREMENTS DOCUMENT (FRD)

Project: E-Commerce Sales Insights Dashboard

Version: 1.0

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1. Introduction

1.1 Purpose of the Document

This FRD outlines the functional requirements, data structure, calculations, and dashboard behaviour for the **E-Commerce Sales Insights Dashboard**, which provides business stakeholders with insights on revenue, orders, profitability, customer trends, product performance, and category/regional breakdowns.

1.2 Intended Audience

- Business Analysts
- Product Managers
- BI Developers
- Data Analysts
- Leadership & Strategy Teams

1.3 Scope

The dashboard will offer:

- High-level KPIs
- Revenue & order trends
- Profitability metrics
- Category & product performance
- Regional segmentation
- Customer behaviour analysis (if applicable)

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2. System Overview

The dashboard is built in **Power BI** using a star-schema model with one fact table (Sales) and multiple dimension tables (Product, Customer, Date, Region).
Data is cleaned and prepared in Power Query; DAX is used for KPI calculations.

The primary goal is to support decision-making related to product strategy, pricing, discounts, marketing spend, and demand forecasting.

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3. Data Requirements

3.1 Fact Table: Sales

Column Name	Description
order_id	Unique order identifier
order_date	Date of order
customer_id	Customer identifier
product_id	Product identifier
region	Region of sale
quantity	Units sold
price	Selling price (per unit)
cost	Cost price (per unit)
revenue	quantity × price

3.2 Dimension Tables

Product Dimension

Column	Description
product_id	Unique product ID
product_name	Name of product
category	Product category

Customer Dimension

Column	Description
customer_id	Unique customer ID
age	Age
city	Customer location

Region Dimension

Column	Description
region	Region / state / country

Date Dimension

Auto-generated or custom date table including:

- Year
- Quarter
- Month
- Week
- Day

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4. Functional Requirements

4.1 KPI Cards

The dashboard must display the following metrics:

KPI	Formula	Description
Total Revenue	SUM(Sales[revenue])	Total value of all orders
Total Orders	DISTINCTCOUNT(Sales[order_id])	Unique order count
Total Quantity	SUM(Sales[quantity])	Units sold
Profit	SUM(Sales[revenue]) - SUM(Sales[cost * quantity])	Profitability metric
AOV (Avg Order Value)	Total Revenue / Total Orders	Indicates order size

4.2 Revenue Trend Visualization

Description:

A line chart showing total daily/weekly/monthly revenue.

Functional Behaviour:

- Users must be able to drill from Year → Quarter → Month → Day.
- Revenue should update based on filters (region, category, product, date).

4.3 Orders and Quantity Trend

- Display daily/weekly/monthly order volume.
- Allow trend comparison across time periods.

4.4 Profitability Analysis

Visuals Required:

- Profit trend over time
- Profit by category
- Profit by region
- Profit per product

Functional Logic:

Profit = Revenue − Cost

4.5 Region-Level Sales Performance

Requirements:

- Map or bar chart representation
- Values: Total Revenue, Total Orders, Profit
- Filters should dynamically update the visual
- Region drilldown enabled (Country → State → City if data exists)

4.6 Product Category Insights

Visuals:

- Revenue by category (bar chart)
- Orders by category
- Profit by category

Functional Behaviour:

- Clicking a category should filter all visuals for that category.

4.7 Top 10 Product Table

Columns:

- Product Name
- Total Revenue
- Total Quantity
- Profit

Functionality:

- Sorted by revenue (descending)
- Dynamic Top N based on filters

4.8 Customer Insights (Optional Based on Data Availability)

Visuals:

- Revenue by age group
- Orders by customer type
- Repeat customers vs new customers

Functional Requirements:

- Users can filter by region, product, date, and category
- Age buckets auto-generated (18–25, 26–35, 36–45, etc.)

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5. Filters / Slicers Requirements

The dashboard must include the following slicers:

Filter	Field
Date Range	order_date
Region	region
Category	category

Filter	Field
Product	product_name
Customer	customer_id or type
Quantity Range (optional)	quantity

Slicers must filter all relevant visuals on the page.

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6. DAX Measures (Required)

Revenue

```
Total Revenue = SUM(Sales[revenue])
```

Total Orders

```
Total Orders = DISTINCTCOUNT(Sales[order_id])
```

Total Quantity

```
Total Quantity = SUM(Sales[quantity])
```

Profit

```
Profit = SUM(Sales[revenue]) - SUMX(Sales, Sales[cost] * Sales[quantity])
```

AOV

```
AOV = DIVIDE([Total Revenue], [Total Orders], 0)
```

Revenue per Unit

```
Revenue per Unit = DIVIDE([Total Revenue], [Total Quantity], 0)
```

Cost per Unit

```
Cost per Unit = DIVIDE(SUM(Sales[cost] * Sales[quantity]), [Total Quantity])
```

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7. User Interaction Requirements

7.1 Drill through Pages

- Click product → opens product-level detailed page
- Click region → opens region performance page

7.2 Tooltips

Tooltips must show:

- Revenue
- Orders
- Quantity
- Profit
- Category
- Region

7.3 Cross-filtering

All visuals must interact to update one another.

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8. Non-Functional Requirements

Category	Requirement
Performance	Dashboard should load under 3 seconds
Scalability	Supports 1M+ rows
Usability	Clean UI, intuitive layout
Security	No customer PII except IDs
Availability	Should refresh without breaking visuals

9. Assumptions

- Data is clean and validated before ingestion.
- Revenue and cost calculations follow standard definitions.
- Product and category mapping is correct and complete.
- No real-time data is required for this version.

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10. Acceptance Criteria

ID	Criteria
AC-01	All KPI cards display correct values
AC-02	Revenue trend updates with date filter
AC-03	Category and region visuals interact correctly
AC-04	Drilldown and drillthrough work as expected
AC-05	Top 10 product table updates dynamically
AC-06	Dashboard loads in < 3 seconds
AC-07	No broken visuals or missing fields