Low-Level Design (LLD)

Project Name: Amazon Sales Data Analysis
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Date	Version	Description	Author
08 July 2025	1.0	Initial version of LLD	Sourav Patra

1. Introduction

1.1 What is Low-Level Design Document?

The Low-Level Design (LLD) document explains the technical implementation and component-level architecture of the Amazon Sales dashboard project. It includes the data model, Power BI transformations, DAX formulas, Power Query logic, and unit-level functionality of each visual component used in the dashboard.

1.2 Scope

This LLD includes:

- Table relationships
- Field-level transformations
- DAX formulas
- Visual-level logic and filtering
- Slicer behaviour
- Deployment steps

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2. Architecture

This project uses a **Power BI + Excel** stack with local data storage. The user loads and transforms CSV data via Power Query, then builds dashboards in Power BI using imported tables and a custom Date Table.

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3. Architecture Description

3.1 Data Description

The dataset contains 100 rows of Amazon sales records with the following fields:

- Region, Country, Item Type, Sales Channel, Order Priority
- Order Date, Ship Date, Order ID
- Units Sold, Unit Price, Unit Cost, Total Revenue, Total Cost, Total Profit

Additionally, a **Date Table** was generated using DAX with the following columns:

- Date, Year, Month, YearMonth

3.2 Data Transformation (via Power Query)

Steps performed:

1. Converted Order Date and Ship Date columns to proper date format

2. Removed duplicate rows and nulls

3. Added derived columns like Year, Month, YearMonth

4. Ensured data types were set (numeric, text, date)

3.3 Data Model

- **Main Table:** Amazon Sales Records

- **Date Table:** Related to Order Date with a *Many-to-One (Single)* relationship

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3.4 DAX Calculations

Measure	DAX Code
Total Revenue	`SUM('Amazon Sales Records'[Total Revenue])`
Total Profit	`SUM('Amazon Sales Records'[Total Profit])`
Total Units Sold	`SUM('Amazon Sales Records'[Units Sold])`
Avg Unit Price	`AVERAGE('Amazon Sales Records'[Unit Price])`

3.5 Dashboard Visuals (Power BI)

Visual	Description	Data Source
Line Chart	Monthly Sales Trend	`DateTable[YearMonth]` + `Total Revenue`
Bar Chart	Profit by Region	`Region` + `Total Profit`
Card	Total Revenue	`Total Revenue`
Card	Total Profit	`Total Profit`
Card	Units Sold	`Units Sold`
Pie Chart	Revenue by Item Type	`Item Type` + `Total Revenue`
Slicers	Region, Year, Item Type	Dimensions from dataset and Date Table

3.6 Deployment

- Developed in **Power BI Desktop**

- Data stored locally (CSV → Excel → Power BI)

- File exported as .pbix

- Can be published to Power BI Service for sharing

4. Unit Test Cases

Visual	Description	Data Source
Line Chart	Monthly Sales Trend	`DateTable[YearMonth]` + `Total Revenue`
Bar Chart	Profit by Region	`Region` + `Total Profit`
Card	Total Revenue	`Total Revenue`
Card	Total Profit	`Total Profit`
Card	Units Sold	`Units Sold`
Pie Chart	Revenue by Item Type	`Item Type` + `Total Revenue`
Slicers	Region, Year, Item Type	Dimensions from dataset and Date Table