**E-COMMERCE SALES DASHBOARD**

**Architecture**

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| Document Version | **1.0** |
| Last Revised Date | **12-Aug-2024** |

**Document Control**

**Change Records:**

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| --- | --- | --- | --- |
| Version | Date | Author | Comments |
| 1.0 | **12-Sep-2024** | **Bhavika Pathak** | Introduction & Architecture defined |
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**Reviews:**

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| Version | Date | Reviewer | Comments |
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**Approval Status:**

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| Version | Review Date | Reviewed By | Approved By | Comments |
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**1. Introduction**

**1.1. What is Low-Level design document?**

A Low-Level Design (LLD) document provides the internal design and logic for a Business Intelligence (BI) Excel-based E-commerce Sales Dashboard. It details how various components of the dashboard are constructed, including data sources, metrics, and functionalities. It also provides insights into data manipulation using Excel features like pivot tables, formulas, and charts.

**1.2. Scope**

The scope of this LLD is to design a comprehensive E-commerce Sales Dashboard using Microsoft Excel. The dashboard will provide insightful visualizations and analytics to help stakeholders make informed business decisions. This document covers data collection, processing, visualization techniques, user interface design, and deployment strategies.

**2. Architecture**

**3. Architecture Description**

**3.1 Data Source (Excel Sheets)**

Data is collected in Excel sheets from the company's E-commerce platform, which contains information about sales, customers, and product details. The dataset can be accessed through the following link: <https://drive.google.com/drive/folders/1tbkYiO17DHpm428WwXKyCAwqrqNAgzzF>

* **Sources**: Collect historical sales data, customer information, product details, and transactional records.
* **Formats**: Data may be in CSV, Excel, or fetched through database queries.
* **Frequency**: Data updates could be daily, weekly, or monthly.

**3.2 Data Collection**

Data is gathered from multiple sources, including transaction logs, customer data, and inventory. The information is structured into various Excel sheets for analysis, including fields like Order ID, Order Date, Ship Mode, Product Category, Sales, Quantity, Discount, Profit, Shipping Cost, Customer ID, and other related metrics. These Excel sheets provide a comprehensive view of the company's E-commerce operations for dashboard creation and insights.

* **Data Import**: Use Power Query to import data into Excel.
* **Handling Missing Values**: Identify and fill or remove missing data.
* **Data Transformation**: Convert data types, normalize formats, and create calculated columns (e.g., Total Sales = Quantity × Unit Price).
* **Data Consolidation**: Merge data from multiple sources to create a unified dataset.

**3.3 Data Preprocessing**

The raw data undergoes preprocessing steps such as handling missing values, correcting data formats, and removing any duplicates. This process is performed using Excel functions like IFERROR, CLEAN, and TRIM to ensure data is cleaned and ready for analysis.

**3.4 Dashboard Design**

The dashboard layout is designed to display key business metrics using Excel’s built-in tools. It features an intuitive layout with easily navigable components like charts, slicers, and pivot tables to ensure a user-friendly experience.

**3.5 Dashboard Metrics**

Metrics tracked include:

* Total Sales: Total revenue generated.
* Average Order Value (AOV): Average value of a customer order.
* Product Performance: Best-selling products and product categories.
* Sales by Region: Insights into geographical sales performance. These metrics are calculated using Excel functions such as SUMIF, AVERAGEIF, and COUNTIF.

**3.6 Data Validation**

Validation rules are implemented to ensure data quality and accuracy. Excel’s validation features are used to prevent erroneous data entry, ensuring that sales and customer information are in the correct format.

**3.7 Excel Formulas and Pivot Tables**

Pivot tables are used to summarize sales data by category, region, or time period. Excel formulas, such as VLOOKUP, INDEX, MATCH, and SUMIFS, are used to dynamically calculate metrics and provide insights.

**3.8 Chart Creation and Visualizations**

Visual elements such as bar charts, pie charts, and line graphs are created to display key metrics and trends in sales performance. These charts are dynamically linked to pivot tables, ensuring that the visuals update in real-time as the data changes.

**3.9 Report Generation**

The dashboard is designed to generate periodic sales reports based on the data. Reports are customizable, allowing users to filter by date ranges, regions, or products. The report can be easily exported to PDF or shared online.

**3.10 Automation Using Macros**

Excel macros are used to automate tasks like data updates and report generation. Macros are scripted to handle repetitive processes, reducing manual effort and improving efficiency in generating insights.

**3.11 User Interface**

An interactive user interface is built within Excel, allowing users to select filters (such as date ranges or product categories) using slicers and dropdowns. This allows for easy navigation and data exploration, improving user engagement.

**4. Unit Test Cases**

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| --- | --- | --- |
| Test Case Description | Pre-requisite | Expected Result |
| |  | | --- | | Verify if the Excel file is accessible |  |  | | --- | |  | | Excel file should be stored on the cloud/server | The file should open without issues |
| Verify if data imports correctly into the dashboard | Data must be properly structured in Excel | Data should populate the correct fields in the dashboard |
| Verify if pivot tables update with new data | Pivot tables should be linked to the data | Pivot tables should refresh dynamically when data changes |
| Verify if charts display correct data | Charts must be linked to pivot tables | Charts should update in real-time as data is modified |
| Verify if macros automate report generation tasks | Macros must be enabled and programmed | Macros should run without errors and generate reports |
| Verify if users can interact with slicers and filters | Filters and slicers must be configured | Filters should work as intended and update the dashboard |
| Verify data validation ensures correct entries | Validation rules must be applied | Invalid data entries should trigger an error message |