

Amazon Sales Data Analysis

High Level Design (HLD)

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Abstract

In the world of rising new technology and innovation, the Amazon sales is advancing with the role of Data Science and Analytics. Data analysis can help them to understand their business in a quite different manner and helps to improve the quality of the service by identifying the weak areas of the business. This study demonstrates how different analysis help to make better business decisions and help analyze customer trends and satisfaction, which can lead to new and better products and services. Different analyses were performed such as Exploratory Data Analysis and Descriptive Analysis on a variety of use cases to get the key insights from this data based on which business decisions will be taken. This dataset provides a huge amount of information on the sales of all over the world. Based on the Information the ultimate goal would be to predict the best sales product for common people and find important insights highlighting key indicators and metrics that influence customer choice.

1. Introduction

1.1. What is High-Level design document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all the design aspects and define them in detail.
- Describe the user interface being implemented.
- Describe the hardware and software interfaces.
- Describe the performance requirements.
- Include design features and the architecture of the project.
- List and describe the non-functional attributes like

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- ▶ Security
- ▶ Reliability
- ▶ Maintainability
- ▶ Portability
- ▶ Reusability
- ▶ Application Compatibility
- ▶ Resource utilization
- ▶ Serviceability

1.2. Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly technical terms which should be understandable to the administrators of the system.

2. General Descriptions

2.1 Product Perspective and Problem Statement

Sales management has gained importance to meet increasing competition and the need for improved methods of distribution to reduce cost and to increase profits. Sales management today is the most important function in a commercial and business enterprise. The objective of the project is to perform data visualization techniques to understand the insight of the data. This project aims apply various Business Intelligence tools such as Tableau or Power BI to get a visual understanding of the data. The goal of this project is to analyze sales of Amazon for the growth of sales and company, based on profit at particular cities and sales per month and per year that describes the trend of sales. To achieve the goal, we used a data set that is formed by taking into consideration some of the information of 100 record of sales. The problem is based on the given information about sales trend of Amazon.

2.2 Tools Used

a. Microsoft Excel

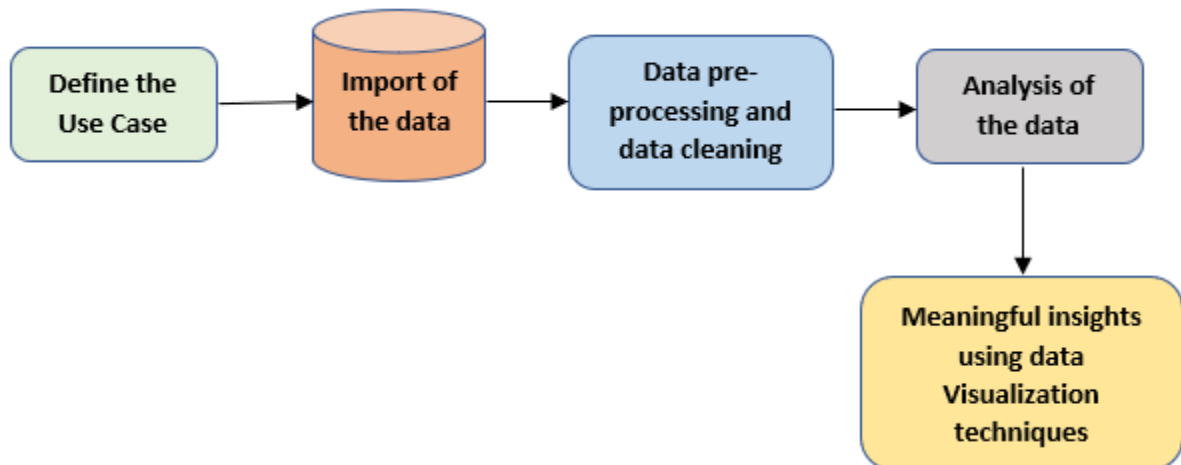
Microsoft Excel is a spreadsheet developed by Microsoft for Windows, macOS, Android and iOS. It features calculation or computation capabilities, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications. Excel forms part of the Microsoft Office suite of software. Microsoft Excel is used for loading the data in CSV format, basic data cleaning and filter operations to execute the program. MS Excel file was loaded into Power BI software.

b. Microsoft Power BI

Power BI is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence. It is part of the Microsoft Power Platform. Power BI is a collection of software services, apps, and connectors that work together to turn unrelated sources of data into coherent, visually immersive, and interactive insights. Data may be input by reading directly from a database, webpage, or structured files such as spreadsheets, CSV, XML, and JSON. With the help of Power BI, we have done the complete analysis and visualization.

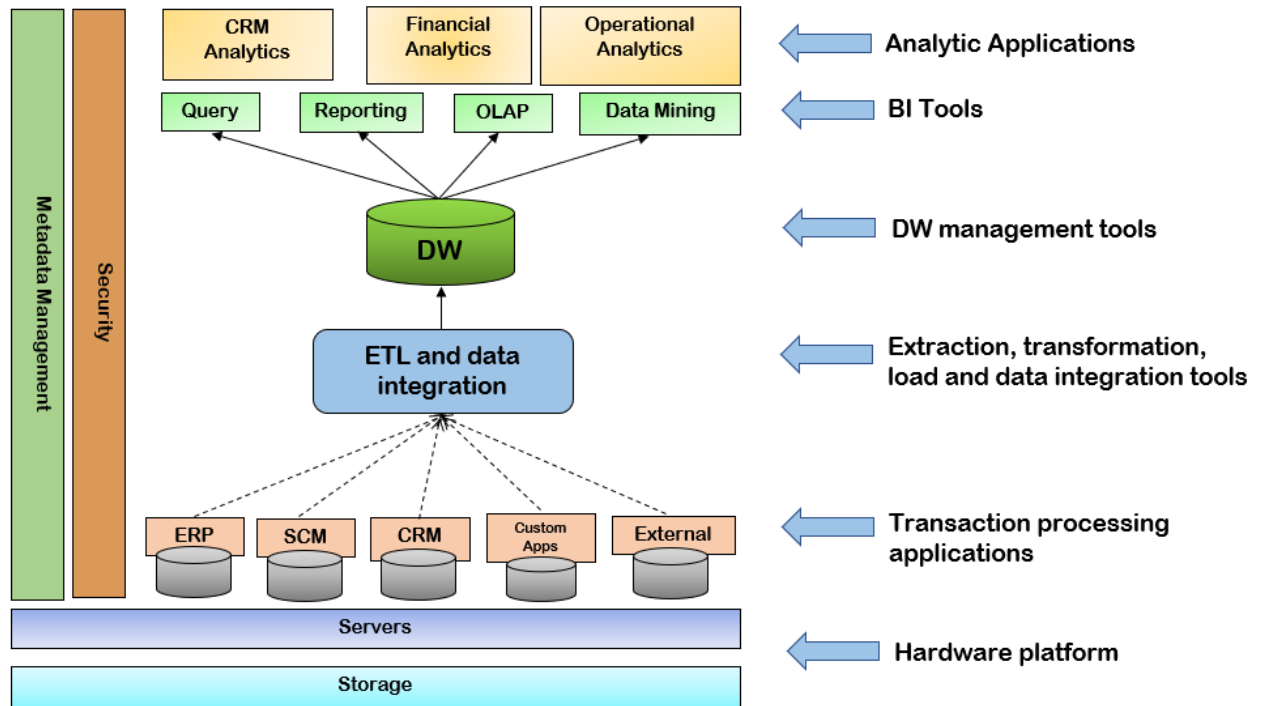
3. Design Details

3.1 Process Flow



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3.2 Functional Architecture



The current business environment is constantly evolving. The global economic scenario is providing opportunities as well as challenges. The factors affecting the business environment are consumer needs, globalization, and government policies, etc.

In such a business environment, an organization basically has four action steps. The organization can be reactive, anticipative, adaptive, or/and proactive. For this, the organization can develop a new strategy, get into partnerships, etc.

Today most the businesses are having computerized business support. This support is in form of a decision support system, business analysis, etc.

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The main objective of business intelligence is to bridge the gap between an organization's current status and its desired position. Business intelligence helps the organization achieve commercial success along with sound financial management.

Business intelligence is a framework designed to support the decision-making process.

This framework combines architecture, database, analytical tools and applications.

Business analytics forms an integral part of business intelligence. Framework of Business Intelligence.

More and more businesses are moving towards business intelligence. The reason for this movement is the business environment. Organizations are forced to capture, store and interpret data. This data is at the core of business success.

Organizations require correct information for any decision-making process.

Business intelligence combines data warehousing, business analytics, performance, strategy and user interface. Business receives data from various sources. This data is captured in the data warehouse where it is stored, organized and summarized as per further utilization. Authorized users can access this data and work on it to get desired results. These results are then shared with executives for decision-making process. These data results can be published through dashboards or share points.

Benefit of Business Intelligence

The benefits of Business intelligence are as follows:

- Business intelligence is faster more accurate process of reporting critical information.
- Business intelligence facilitates better and efficient decision-making process.
- Business intelligence provides timely information for better customer relationship management.
- Business intelligence improves profitability of the company.
- Business intelligence provides a facility of assessing organization's readiness in meeting new business challenges.
- Business intelligence supports usage of best practices and identifies every hidden cost.

3.3 Optimization

Our data strategy drives performance

- Minimize the number of fields
- Minimize the number of records
- Optimize extracts to speed up future queries by materializing calculations, removing columns and the use of accelerated views

Reduce the marks (data points) in our view

- Practice guided analytics. There's no need to fit everything you plan to show in a single view. Compile related views and connect them with action filters to travel from overview to highly granular views at the speed of thought.
- Remove unneeded dimensions from the detail shelf.
- Explore. Try displaying your data in different types of views.

Limit your filters by number and type

- Reduce the number of filters in use. Excessive filters on a view will create a more complex query, which takes longer to return results. Double-check your filters and remove any that aren't necessary.
- Use an include filter. Exclude filters load the entire domain of a dimension, while include filters do not. An include filter runs much faster than an exclude filter, especially for dimensions with many members.

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- Use a continuous date filter. Continuous date filters (relative and range-of-date filters) can take advantage of the indexing properties in your database and are faster than discrete date filters.
- Use Boolean or numeric filters. Computers process integers and Booleans (t/f) much faster than strings.
- Use parameters and action filters. These reduce the query load (and work across data sources).

Optimize and materialize your calculations

- Perform calculations in the database
- Reduce the number of nested calculations.
- Reduce the granularity of LOD or table calculations in the view. The more granular the calculation, the longer it takes. o LODs - Look at the number of unique dimension members in the calculations

4. KPI's

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the disease. As and when the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors.

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KPIs (Key Performance Indicators)

Key indicators displaying a summary of the Crop Production area and production information based on various parameters

- Region of respective order.
- Country of respective order.
- Order Date
- Ship Date
- Sum of profit
- Sum of sales
- Sum of quantity
- Sum of discount
- Sum of profit by category
- Sum of sales by sub category