Low Level Design (LLD)

BUDGET SALES ANALYSIS

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15-12-2023	**1.0**	Abstract, Introduction	**Dhanshri Manusmare**
02-01-2024	**1.1**	Problem Statement	**Dhanshri Manusmare**
09-01-2024	**1.2**	Dataset Information	**Dhanshri Manusmare**
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1. Introduction

1.1 Why this Low-Level Design Document?

The purpose of this document is to present a detailed description of the heart disease diagnostic analysis. LLD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document. This document is intended for both the stakeholders and the developers of the system and will be proposed to the higher management for its approval.

The LLD will be focusing on the below objectives:

- Problem Understanding.
- Data Acquisition
- Data Pre-Processing and Exploratory Analysis.
- Dashboard report for important activities.

1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step by step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

1.3 Project Introduction

Budget and Sales are by far most important attributes that defines a business's success and failure. Therefore, it is very important to keep a track on various features related to these attributes to keep on increasing the Sales and to allocate the Budget so that it can be utilized wisely and efficiently. So, it is very important for businesses to dig deep into the customer, sales, budget and product data to make better marketing strategy, to know the target customers, to make market friendly product upgrades and to keep a strong track on the budget efficiency. Good data driven systems can help achieve these goals and take the businesses forward towards success.

1.4 Problem Statement

Domain Sale process is structured to help potential buyers purchase the domain they want immediately without the hassle of contacting the seller directly. A seller lists a domain for sale at a specific price in our Marketplace. An interested buyer sees this domain for sale and decides to buy it. The dataset consists of information about Budget distribution, previous customers, product details and sales details. As there is a huge amount of data with various features present with us, we have to find various key insights that can be useful in making business decisions and present the data in easy-to-understand visualizations.

2. Technical specifications

2.1 Dataset

Various Excel files available in the dataset: -

- **Customer Data:** This file consists of the features related to the data about the customers. i.e., 'CustomerKey', 'FirstName', 'LastName', 'FullName', 'BirthDate', 'MaritalStatus', 'Gender', 'YearlyIncome', 'TotalChildren', 'NumberChildrenAtHome', 'Education', 'Occupation', HouseOwnerFlag', 'NumberCarsOwned', AdressLine1', 'DateFirstPurchase', 'CommuteDistance'.

- **Product Data:** This file consists of the features related to the data about the product. i.e., 'ProductKey', 'ProductName', 'Subcategory', 'Category', 'StandardCost', 'Color', 'List Price', 'DaysToManufacture', 'ProductLine', 'ModelName', 'Photo', 'ProductDescription', 'StartDate'.

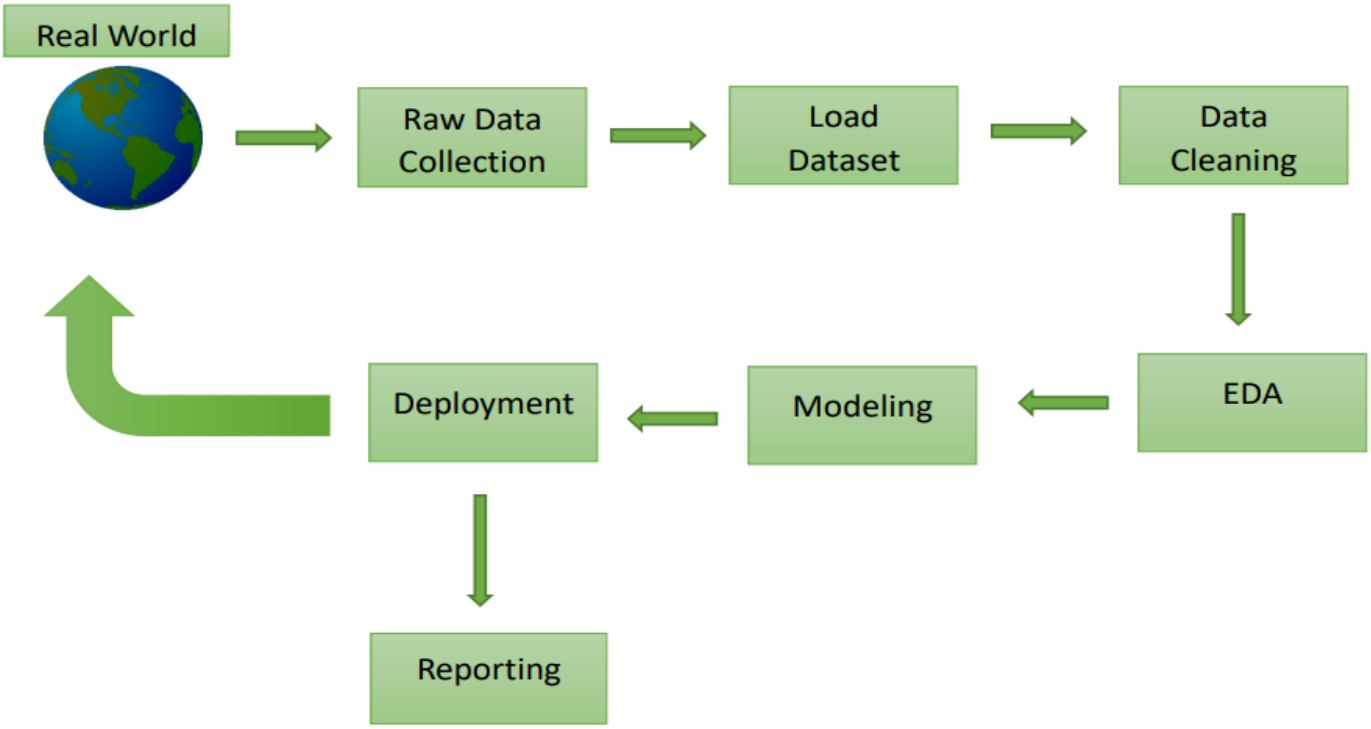
- **Sales Data:** This file consists of the features related to the data about the Sales. i.e., 'ProductKey', 'OrderDate', 'ShipDate', 'CustomerKey', 'PromotionKey', 'SalesTerritor yKey', 'SalesOrderNumber', 'SalesOrderLineNumber', 'OrderQuantity', 'UnitPrice', 'T otalProductCost', 'SalesAmount', 'TaxAmt'.

- **Territory Data:** This file consists of the features related to the data about the Territory. i.e., 'SalesTerritoryKey', 'Region', 'Country', 'Group', 'RegionImage'.

- **Budget Data:** This file consists of the features related to the data about the Budget 2016. i.e., 'Category', 'Subcategory', 'ProductName', 'ProductKey', 'Jan, 2016', 'Feb, 2016', 'Mar, 2016', 'Apr, 2016', 'May, 2016', 'Jun, 2016', 'Jul, 2016', 'Aug, 2016', 'Sep, 2016', 'Oct, 2016', 'Nov, 2016', 'Dec, 2016', 'Grand Total'

3. General Description

3.1 Architecture



4. Architecture Description

4.1 Raw Data Collection

The Dataset was taken from iNeuron's Provided Project Description Document. Dataset link: DhanshriM24/Budget_analysis (github.com)

4.2 Data Pre Processing

Before building any model, it is crucial to perform data pre-processing to feed the correct data to the model to learn and predict. Model performance depends on the quality of data feeded to the model to train. This Process includes:

- Handling Null/Missing Values
- Handling Skewed Data
- Outliers Detection and Removal

4.2.1 Data Cleaning

Data cleaning is the process of fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset.

- Remove duplicate or irrelevant observations.
- Filter unwanted outliers.
- Renaming required attributes.

4.3 Exploratory Data Analysis

Exploratory Data Analysis refers to the critical process of performing initial investigations on data to discover patterns, spot anomalies, test hypothesis and to check assumptions with the help of summary statistics and graphical representations.

4.4 Reporting

Reporting is a most important and underrated skill of a data analytics field. Because being a Data Analyst you should be good in easy and selfexplanatory report because your model will be used by many stakeholders who are not from technical background.

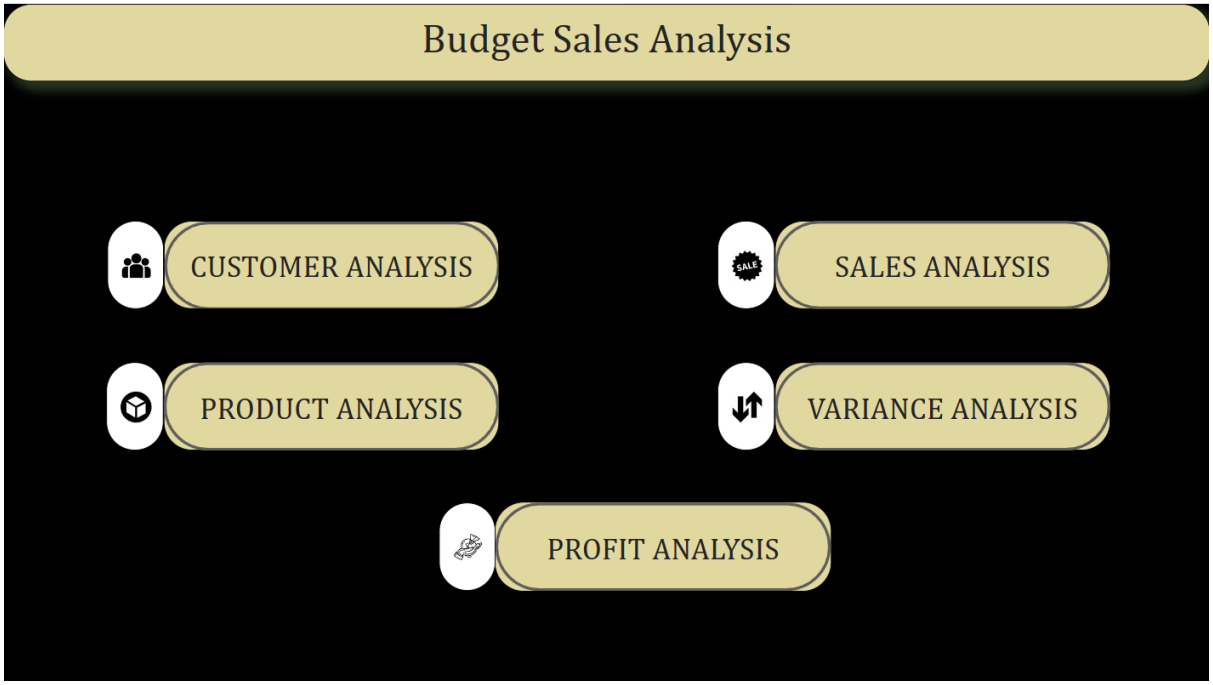
a) High Level Design Document (HLD)
b) Low Level Design Document (LLD)
c) Architecture
d) Wireframe
e) Detailed Project Report
f) Power Point Presentation

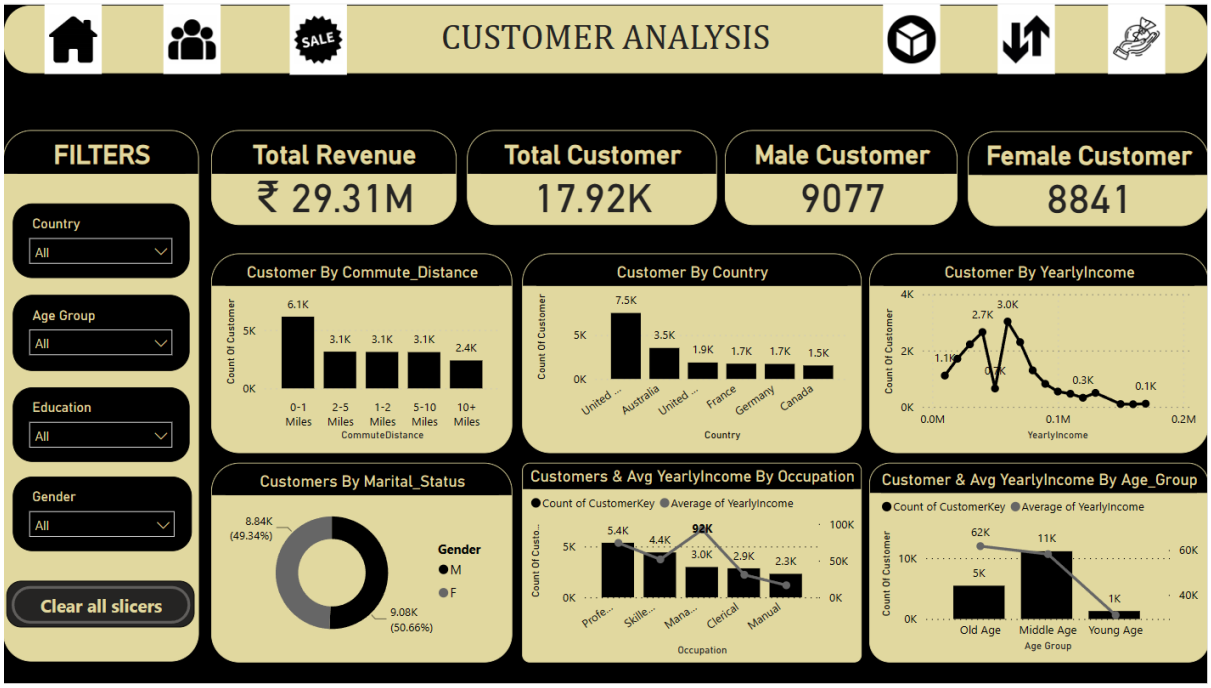
4.5 Modelling

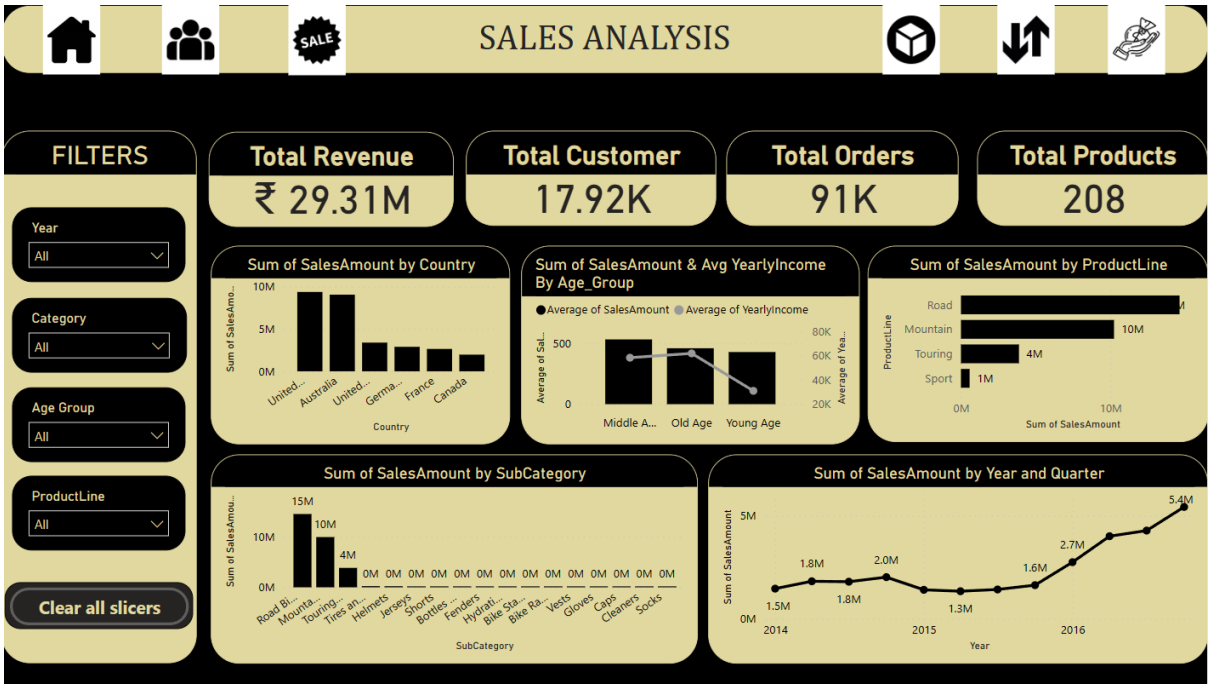
Data Modelling is the process of analyzing the data objects and their relationship to the other objects. It is used to analyze the data requirements that are required for the business processes. The data models are created for the data to be stored in a database. The Data Model's main focus is on what data is needed and how we have to organize data rather than what operations we have to perform

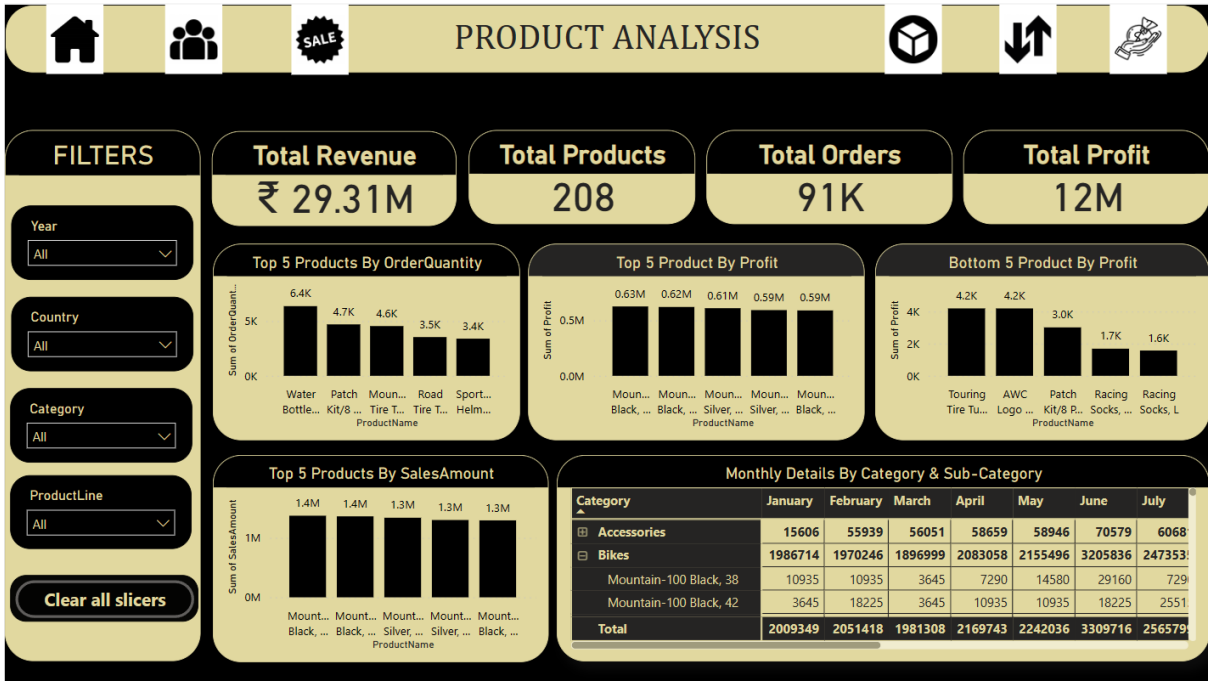
4.6 Deployment

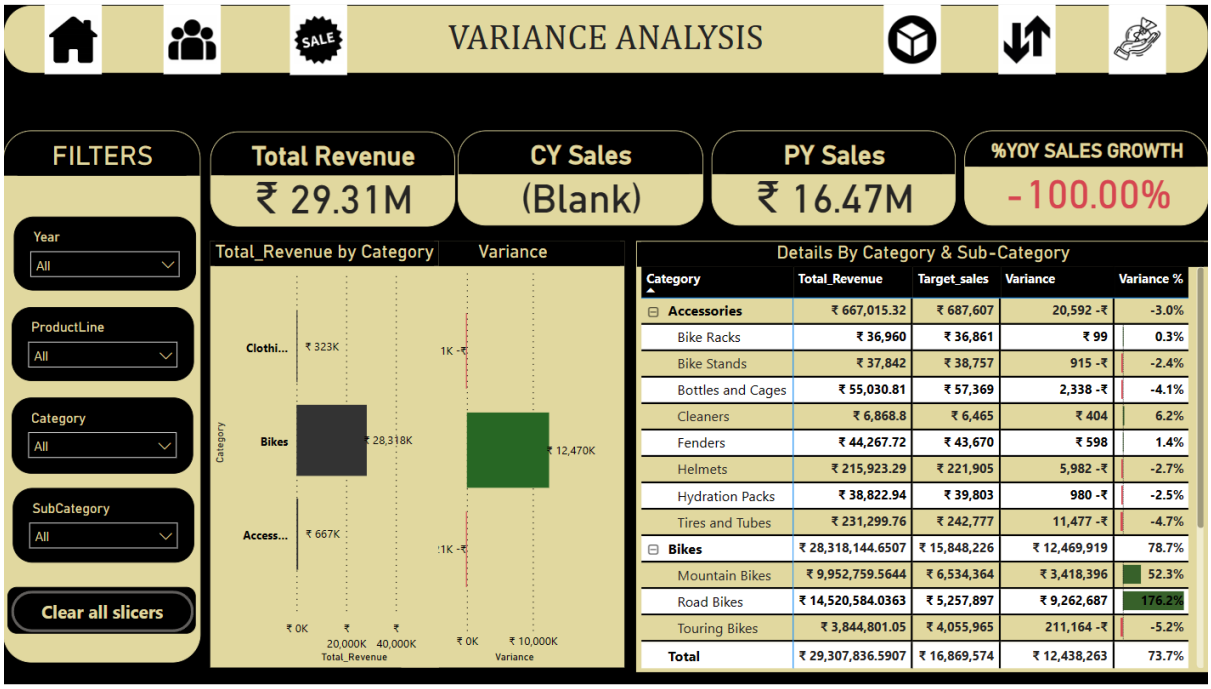
We created a Power BI Dashboard and published it on Power BI Service.

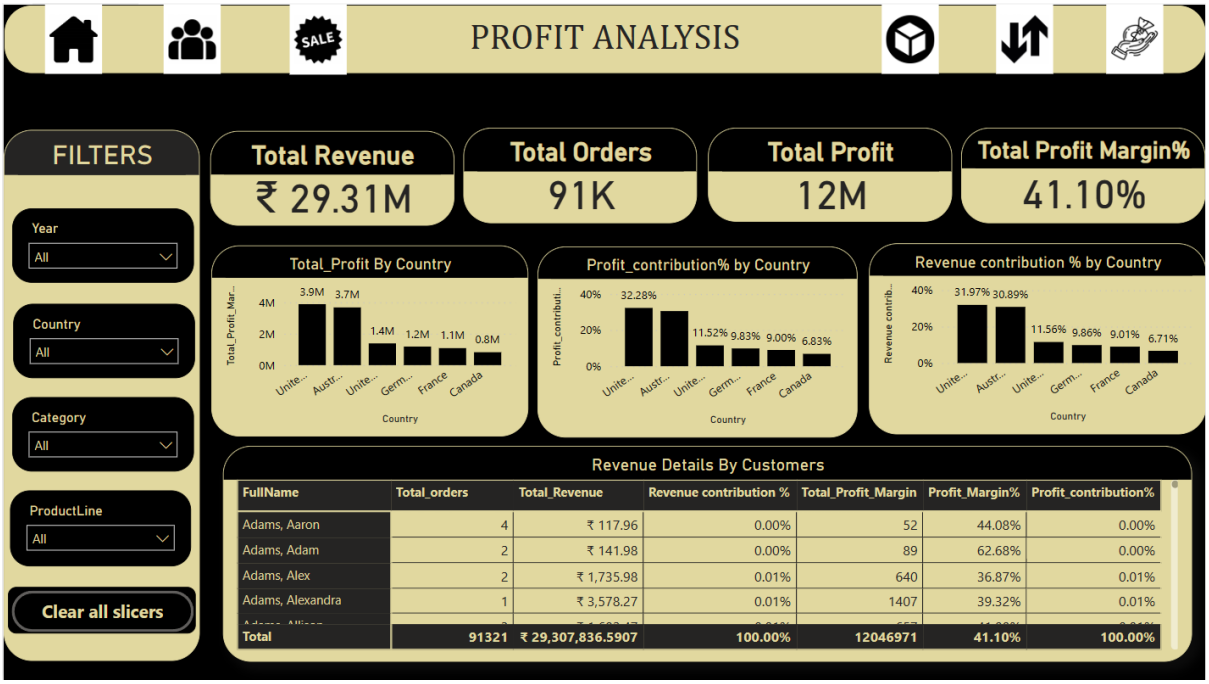



CUSTOMER ANALYSIS
FILTERS
Country
All
Age Group
All
Education
All
Gender
All
Clear all slicers
Total Revenue
₹ 29.31M
Total Customer
17.92K
Male Customer
9077
Female Customer
8841
Customer By Commute_Distance
Count Of Customer
6.1K
3.1K
3.1K
3.1K
2.4K
0-1 Miles
2-5 Miles
1-2 Miles
5-10 Miles
10+ Miles
CommuteDistance
Customer By Country
7.5K
3.5K
1.9K
1.7K
1.7K
1.5K
United ...
Australia
United ...
France
Germany
Canada
Country
Customer By YearlyIncome
2.7K
3.0K
1.1K
0.3K
0.1K
0.0M
0.1M
0.2M
YearlyIncome
Customers By Marital_Status
8.84K (49.34%)
9.08K (50.66%)
Gender
M
F
Customers & Avg YearlyIncome By Occupation
Count of CustomerKey
Average of YearlyIncome
5.4K
4.4K
3.0K
2.9K
2.3K
Profe...
Skille...
Mana...
Clerical
Manual
Occupation
Customer & Avg YearlyIncome By Age_Group
62K
11K
5K
1K
Old Age
Middle Age
Young Age
Age Group


SALES ANALYSIS
FILTERS
Year
All
Category
All
Age Group
All
ProductLine
All
Clear all slicers
Total Revenue
₹ 29.31M
Total Customer
17.92K
Total Orders
91K
Total Products
208
Sum of SalesAmount by Country
Australia
Country
Sum of SalesAmount & Avg YearlyIncome By Age_Group
Average of SalesAmount
Average of YearlyIncome
Middle A...
Old Age
Young Age
Sum of SalesAmount by ProductLine
Road
Mountain
10M
Touring
4M
Sport
1M
Sum of SalesAmount
Sum of SalesAmount by SubCategory
15M
10M
4M
SubCategory
Sum of SalesAmount by Year and Quarter
5.4M
1.8M
2.0M
1.5M
1.8M
1.3M
2.7M
1.6M
2014
2015
2016
Year


PRODUCT ANALYSIS
FILTERS
Year
All
Country
All
Category
All
ProductLine
All
Clear all slicers
Total Revenue
₹ 29.31M
Total Products
208
Total Orders
91K
Total Profit
12M
Top 5 Products By OrderQuantity
Sum of OrderQuant...
6.4K
4.7K
4.6K
3.5K
3.4K
5K
0K
Water Bottle...
Patch Kit/8 ...
Moun... Tire T...
Road Tire T...
Sport... Helm...
ProductName
Top 5 Product By Profit
Sum of Profit
0.63M
0.62M
0.61M
0.59M
0.59M
0.5M
0.0M
Moun... Black, ...
Moun... Black, ...
Moun... Silver, ...
Moun... Silver, ...
Moun... Black, ...
ProductName
Bottom 5 Product By Profit
Sum of Profit
4.2K
4.2K
3.0K
1.7K
1.6K
4K
2K
0K
Touring Tire Tu...
AWC Logo ...
Patch Kit/8 P...
Racing Socks, ...
Racing Socks, L
ProductName
Top 5 Products By SalesAmount
Sum of SalesAmount
1.4M
1.4M
1.3M
1.3M
1.3M
1M
0M
Mount... Black, ...
Mount... Black, ...
Mount... Silver, ...
Mount... Silver, ...
Mount... Black, ...
ProductName
Monthly Details By Category & Sub-Category
Category
January
February
March
April
May
June
July
Accessories
15606
55939
56051
58659
58946
70579
6068
Bikes
1986714
1970246
1896999
2083058
2155496
3205836
247353
Mountain-100 Black, 38
10935
10935
3645
7290
14580
29160
729
Mountain-100 Black, 42
3645
18225
3645
10935
10935
18225
2551
Total
2009349
2051418
1981308
2169743
2242036
3309716
256579


VARIANCE ANALYSIS
FILTERS
Year
All
ProductLine
All
Category
All
SubCategory
All
Clear all slicers
Total Revenue
₹ 29.31M
CY Sales
(Blank)
PY Sales
₹ 16.47M
%YOY SALES GROWTH
-100.00%
Total_Revenue by Category
Variance
Clothi...
₹ 323K
Bikes
₹ 28,318K
Access...
₹ 667K
Category
₹ 0K
₹ 20,000K
₹ 40,000K
Total_Revenue
1K -₹
1K -₹
₹ 12,470K
₹ 0K
₹ 10,000K
Variance
Details By Category & Sub-Category
Category
Total_Revenue
Target_sales
Variance
Variance %
Accessories
₹ 667,015.32
₹ 687,607
20,592 -₹
-3.0%
Bike Racks
₹ 36,960
₹ 36,861
₹ 99
0.3%
Bike Stands
₹ 37,842
₹ 38,757
915 -₹
-2.4%
Bottles and Cages
₹ 55,030.81
₹ 57,369
2,338 -₹
-4.1%
Cleaners
₹ 6,868.8
₹ 6,465
₹ 404
6.2%
Fenders
₹ 44,267.72
₹ 43,670
₹ 598
1.4%
Helmets
₹ 215,923.29
₹ 221,905
5,982 -₹
-2.7%
Hydration Packs
₹ 38,822.94
₹ 39,803
980 -₹
-2.5%
Tires and Tubes
₹ 231,299.76
₹ 242,777
11,477 -₹
-4.7%
Bikes
₹ 28,318,144.6507
₹ 15,848,226
₹ 12,469,919
78.7%
Mountain Bikes
₹ 9,952,759.5644
₹ 6,534,364
₹ 3,418,396
52.3%
Road Bikes
₹ 14,520,584.0363
₹ 5,257,897
₹ 9,262,687
176.2%
Touring Bikes
₹ 3,844,801.05
₹ 4,055,965
211,164 -₹
-5.2%
Total
₹ 29,307,836.5907
₹ 16,869,574
₹ 12,438,263
73.7%



FullName	Total_orders	Total_Revenue	Revenue contribution %	Total_Profit_Margin	Profit_Margin%	Profit_contribution%
Adams, Aaron	4	₹ 117.96	0.00%	52	44.08%	0.00%
Adams, Adam	2	₹ 141.98	0.00%	89	62.68%	0.00%
Adams, Alex	2	₹ 1,735.98	0.01%	640	36.87%	0.01%
Adams, Alexandra	1	₹ 3,578.27	0.01%	1407	39.32%	0.01%
Total	91321	₹ 29,307,836.5907	100.00%	12046971	41.10%	100.00%

5. KPIs (Key Performance Indicators)

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the sales. 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. Key indicators displaying a summary of the sales and its relationship with different metrics.

- Customer By Commute_Distance
- Customer By Country
- Customer By YearlyIncome
- Customer By Marital_Status
- Customer & Avg YearlyIncome By Occupation
- Customer & Avg YearlyIncome By Age_Group
- Sales By Country
- Sales & Avg YearlyIncome By Age Group
- Sales By ProductLine
- Sales By Sub Category
- Sales By Year,Quarter,Month
- Top 5 Produts By Order Quantity
- Top 5 Produts By Order Profit
- Bottom 5 Produts By Order Profit
- Top 5 Produts By Order Sales Amount
- Monthly Details By Category & Sub Category
- Variance to target comparison by category
- Actual sales and target sales matrix
- Revenue contribution by country
- Profit contribution by country
- Profit % by country
- Revenue Details By Customers