Data-Driven Innovations in Supply Chain Management with Qlik Insights

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Innovation in supply chain management

Innovation in supply chain management through data analysis involves leveraging advanced tools and methodologies to improve efficiency, decision-making, and competitiveness. Here are some key areas where data analysis is transforming supply chain management:

    A. Supplier Performance Analytics
    B. Sustainability Analytics
    C. IoT and Real-time Monitoring
    D. Predictive Analytics for Demand Forecasting
    E. Robotic Process Automation (RPA) in Logistics

Technical Architecture
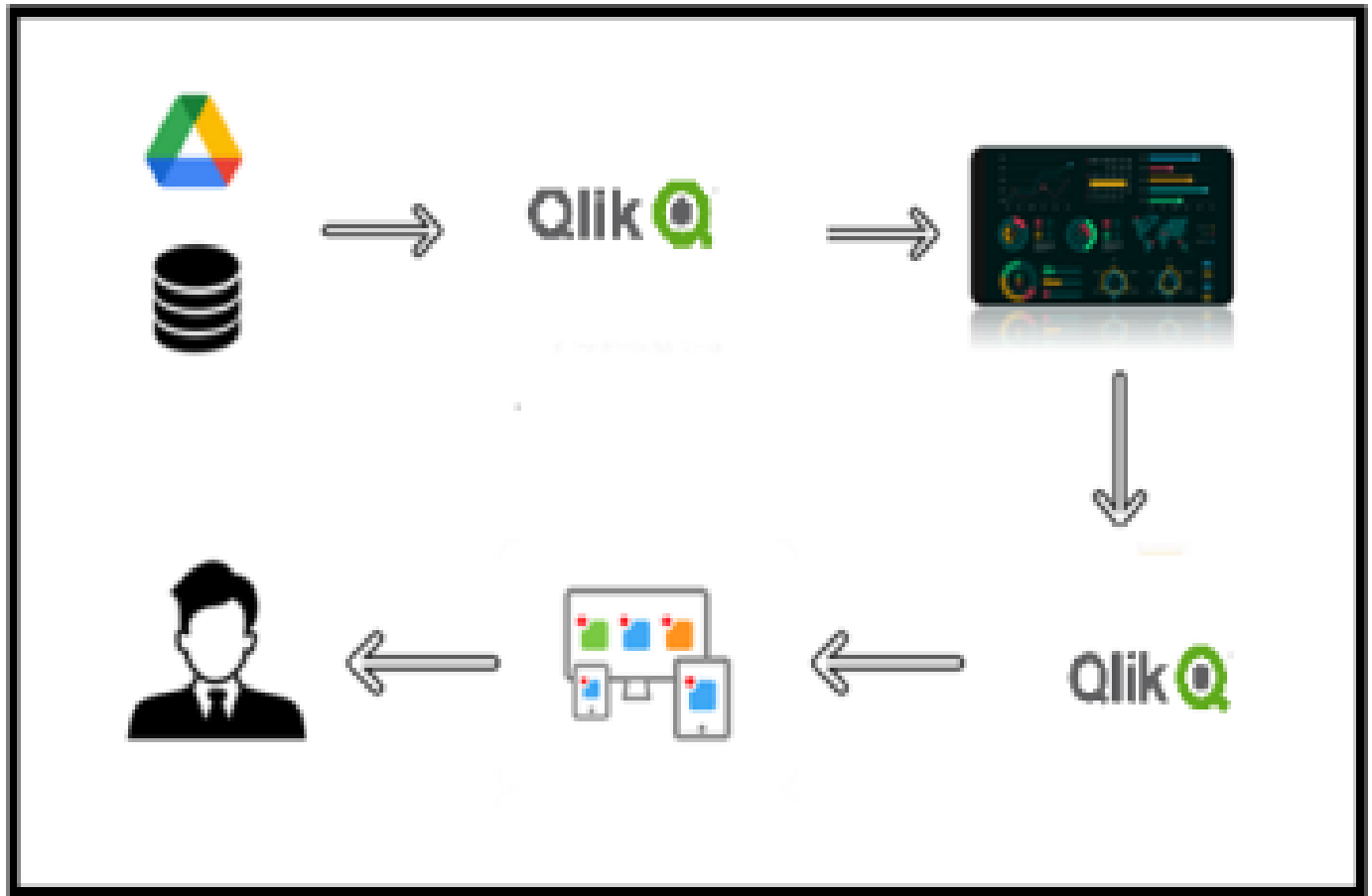
Steps to follows:-

1. The storage space of the dataset . We can take data from any source such as Databases, Computer storage files etc.
2. Upload the Cleaned data in Qlik Plateform to perform the process of cleaning and managing other requirements.
3. Create a Dashbord using Qlik user interface manually to show in the meeting and to analysis the trends.
4. Create an app with it and send it to all members of the team and meeting.
5. We can open the app in mobile, tablets and Pc as prefered.
6. Now at all every can access the dasboard to analysis the company position.

Define Problem / Problem Understanding

Specify the problem

Supply chain management is a complex process involving the coordination of various activities such as procurement, production, inventory management, distribution, and logistics. Traditional methods often fall short in handling the vast amounts of data generated and in providing actionable insights in real-time. This can lead to inefficiencies, increased costs, and missed opportunities.

This project aims to leverage data-driven innovations using Qlik's advanced analytics and visualization tools to optimize supply chain management, reduce costs, improve efficiency, and enhance decision-making processes for the achieving goal of business.

Business requirements

Business Requirements for data driven innovation in supply chain management using Qlik Insights:

By meeting these business requirements, organisations can leverage Qlik Insights to enhance supply chain management, Improve efficiency. Reduce costs, and make more informed, Data-driven decisions. These are as follows:

Integrate diverse data sources to provide a unified view of the supply chain.

Implement predictive analytics to improve demand forecasting and identify trends.

Monitor levels continuously to optimise stock levels and reduce holding costs.

Develop visualisation or tools to identify potential supply chain risks and disruption.

Literature survey

A literature survey on data-driven innovations in supply chain management with Qlik Insights would typically explore recent research, case studies, and industry reports that highlight the application of data analytics and visualization tools like Qlik in optimizing supply chain operations.

A comprehensive literature survey would synthesize findings from these areas, providing a holistic view of current research, best practices, and practical applications of Qlik Insights in transforming supply chain management through data-driven

innovations as follow: -

Integration of Data Sources: Studies Focusing on how organisation integrate data from various sources to gain a unified view of supply chain.

Predictive Analytics and Forecasting: To demonstrating how Qlik's predictive modelling capabilities are applied to anticipate demand fluctuation and optimize inventory levels.

Future trends and Directions: To predict and research directions regrading the future of data driven innovations in supply chain management.

Social or Business Impact

Social Impact

Data-driven innovations in supply chain management, particularly through advanced analytics and visualization tools like Qlik Insights, have a significant social impact. This impact can be observed in several areas are as following

Sustainability and Environmental Impact such as reduce waste, Energy Efficiency by improving logistics and transportation.

Economic impact to be creating new job in field of data science, IT, and supply chain management.

Consumer Benefits are regarding product availability and cost reduction.

Resilience and Disaster Response be achieved by risk management and community Support.

Business Impact

Business Impact of Data-Driven Innovations in Supply Chain Management with Qlik Insights in following ways;

Enhanced Decision-Making through providing real-Time Insights by real time data integration and visualisation and Predictive Analytics in anticipating future trends, optimising inventory levels and reducing the risk of stockouts and overstocking.

Cost Reduction by managing proper Inventory Management and Logistics Optimization.

Increased Efficiency through Process Automation and Supplier Performance Management.

Data Collection & Extraction from Database

Collecting the database

Use the following links to collect or download the datawhich are structured in nature.
Link:- https://www.kaggle.com/datasets/shashwatwork/dataco-smart-supply-chain-for-big-data-analysis/data

Understand the data

Data contains all the meta information regarding the columns described in the CSV files
Column Description of the Dataset: -

- Type: Type Count
- Days for shipping (real): Product shipment days
- Days for shipment (scheduled): product getting prepared for shipment
- Benefit per item: profit earned per product
- Sales per customer: No of products purchased by the customer
- Delivery: Products delivery date.
- Late_delivery_risk: percentage of late delivery risk
- Category Id: product category ID
- Category: product category
- Customer City: Customer purchase city
- Customer Country: Customer purchase country
- Customer Email: Customer purchase Email
- Customer Fname: Customer First name.
- Customer ID: Customer order ID
- Customer Lname: Customer's last name
- Customer Segment: Types of Customer
- Customer State: Customer order state
- Customer Street: Customer address
- Customer Zipcode: Customer area code.
- Market: top 10 country Market

- Order City: Customer purchase city
- Order Country: Customer purchase country
- Order Customer ID: Customer
- order date (DateOrders): Customer order date
- Order Item Product Price: product price
- Order Item Profit Ratio: profit ratio
- Order Item Quantity: No of orders placed
- Sales: total no of sales
- Order Item Total: total price of the order placed
- Order Profit Per: product
- Order Region: order placed region
- Order State: order placed State
- Order Status: order delivery status
- Order Zipcode: customer area code
- Product Card ID: product number
- Product Category Id: a product whose category belongs to
- Product: what product
- Product Image: image of the product
- Product Price: Price of the product.

Data Preparation

Data preparation involves cleaning, transforming, and organizing data for analysis. It includes handling missing values, removing duplicates, correcting errors, normalizing or standardizing data, encoding categorical variables, and feature engineering. The final step is splitting the data into training and testing sets, ensuring readiness for modeling.

This following link will provide the prepared data set used in visualisation and Dashboard making.

Link :-
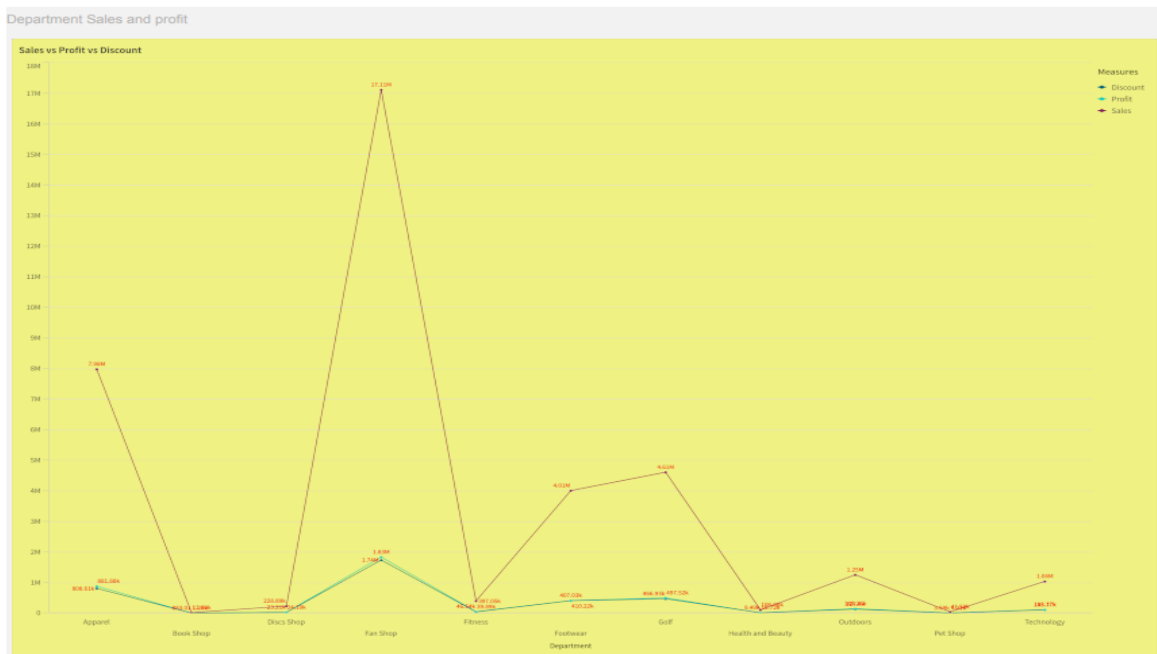https://drive.google.com/file/d/1o_qNHjkggZRFGgD35kblvJWOafTtPOLI/view?usp=drive_link

Data visualization

Data visualization is the process of representing data through graphical elements like charts, graphs, and maps. It helps in identifying patterns, trends, and outliers by transforming complex data into visual insights. Common visualization types include bar charts, histograms, scatter plots, heatmaps, and pie charts, aiding in effective data interpretation.
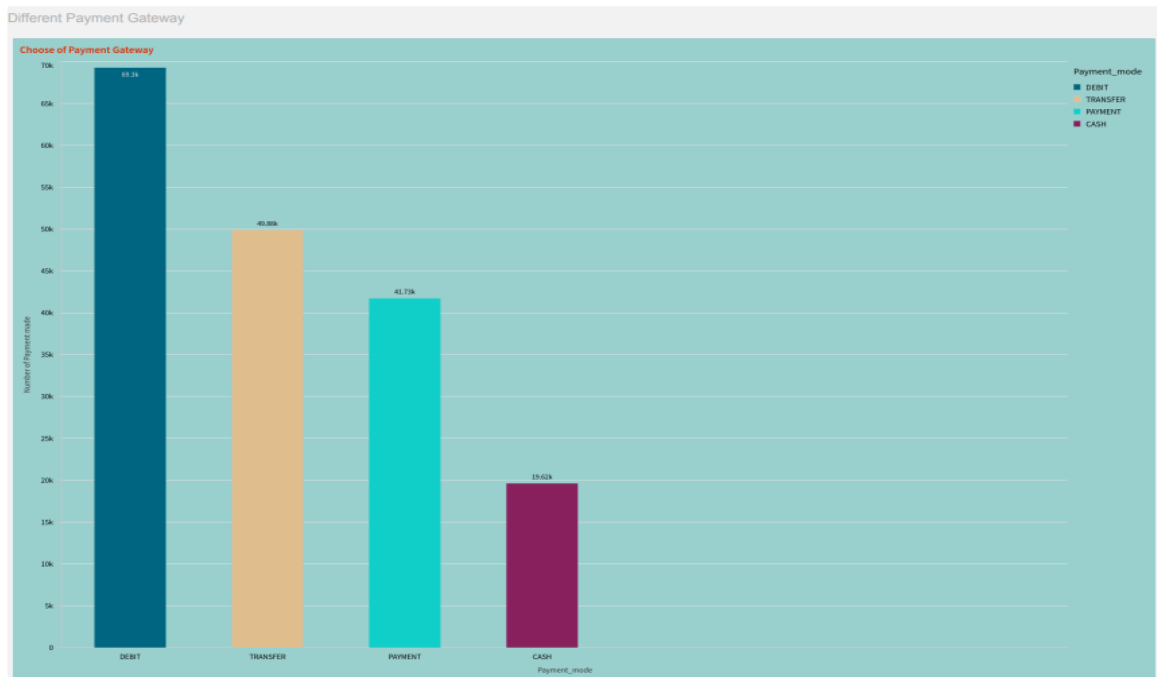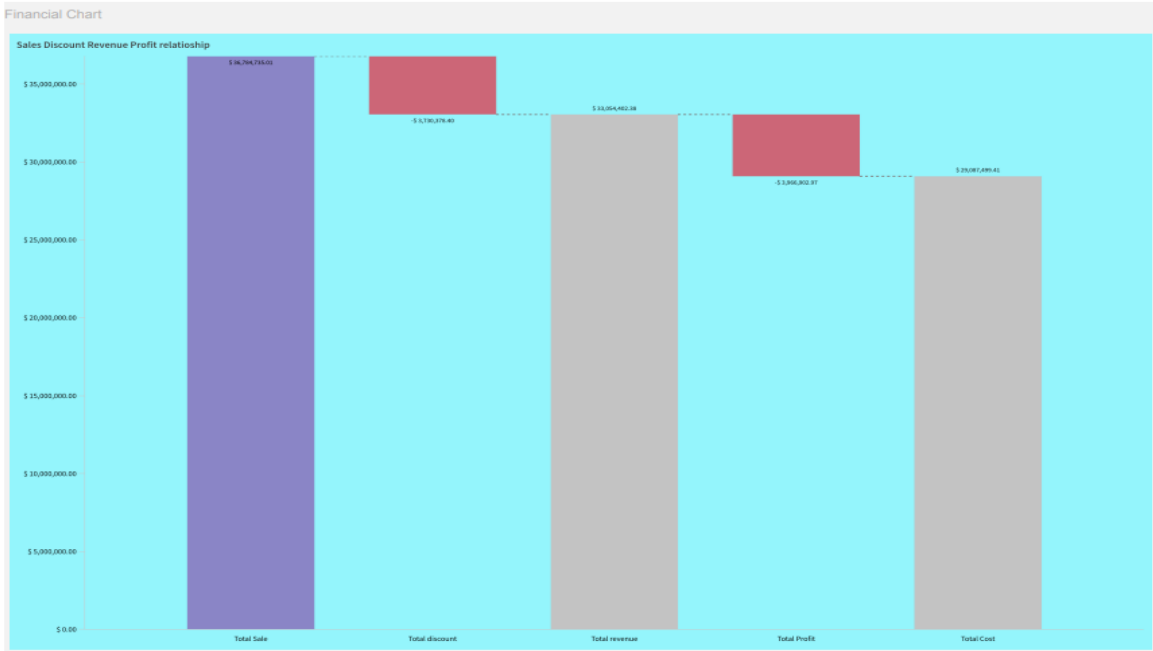
1. Customer market share
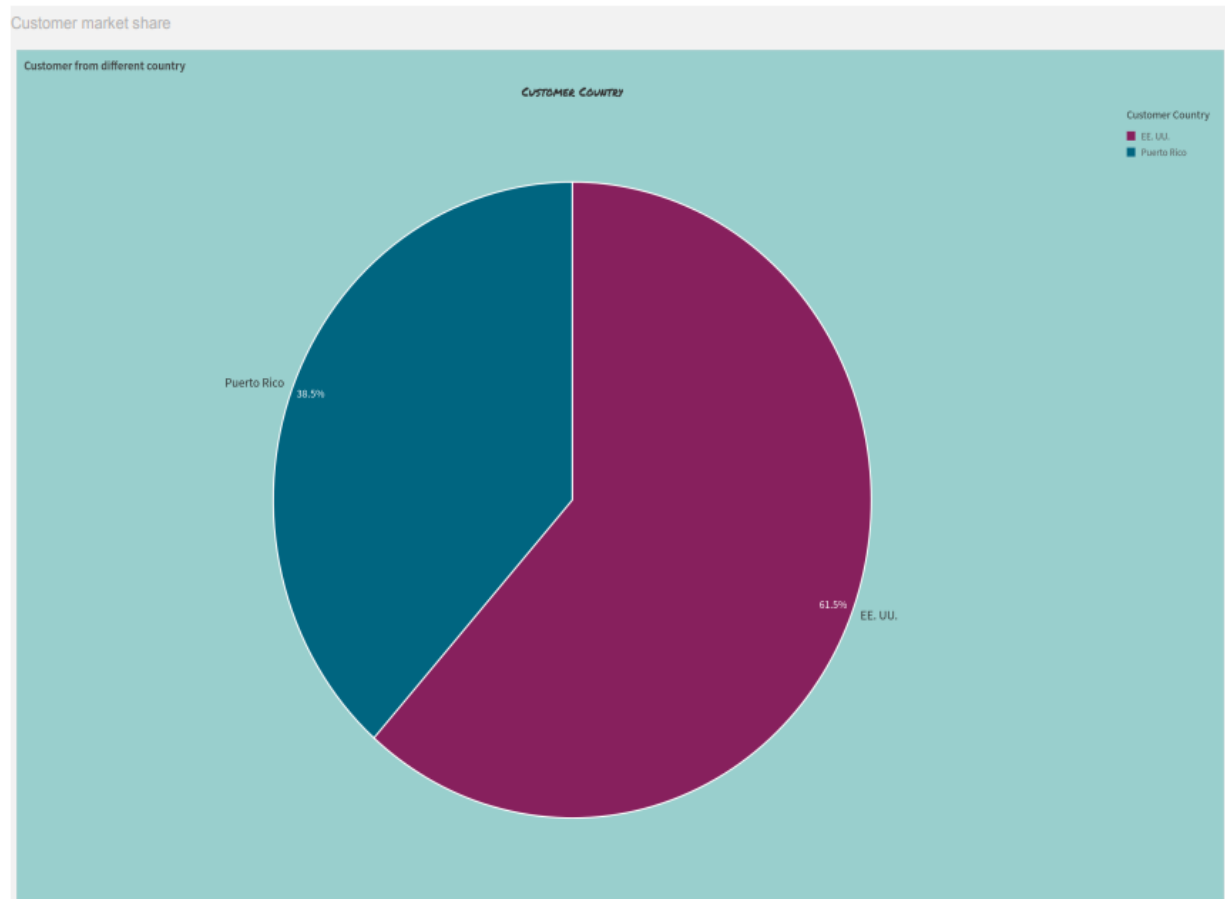
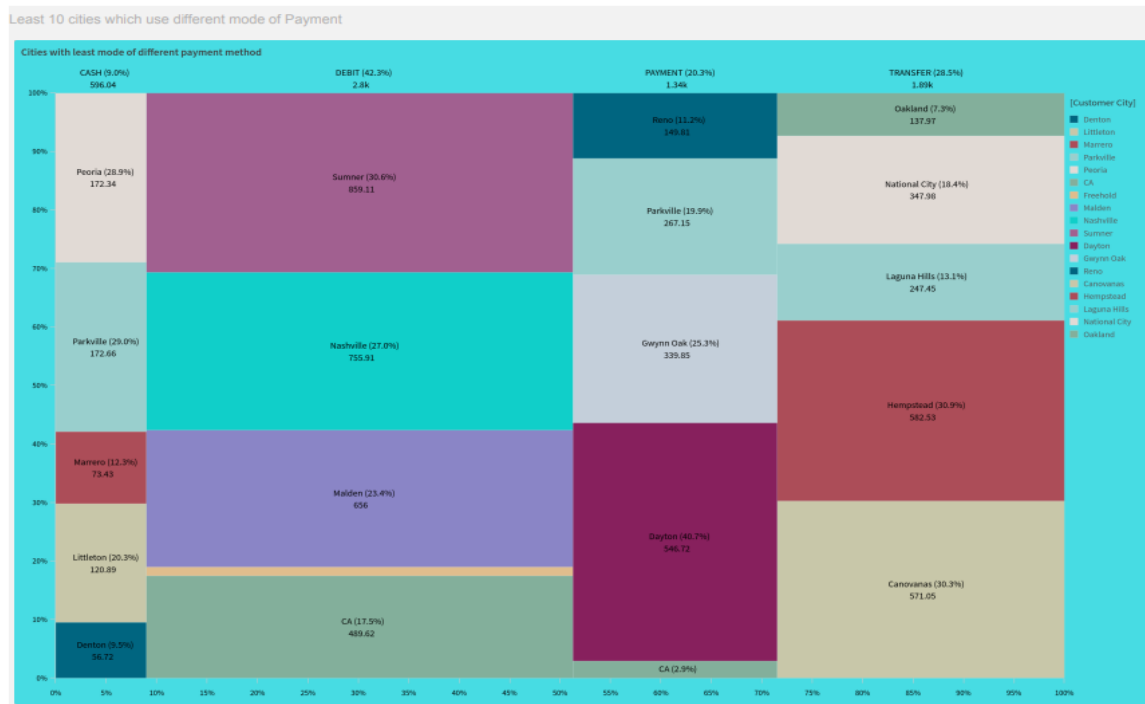2. Department sales and profit

3. Differrent Payment gateway

4. Financial Chart

Financial Chart

Sales Discount Revenue Profit relatioship

5. Finance Year Wise

Financial year wise

Sales, Profit, Revenue vs Time period

6. Least 10 cities which use different mode of payment

7. Market Analysis
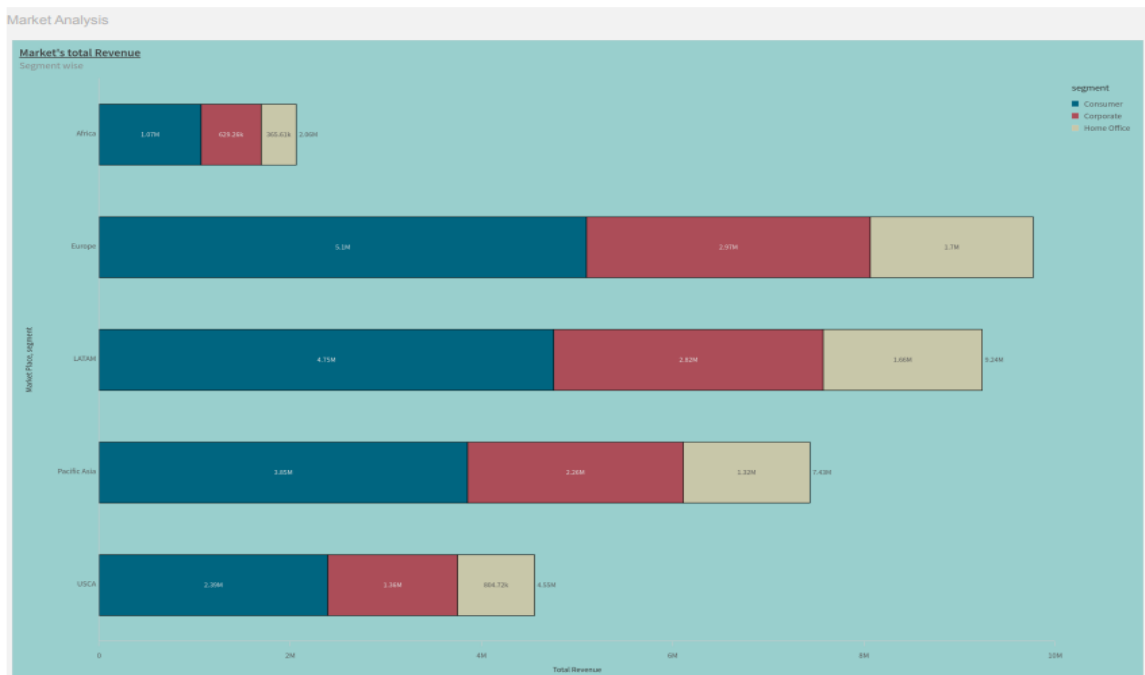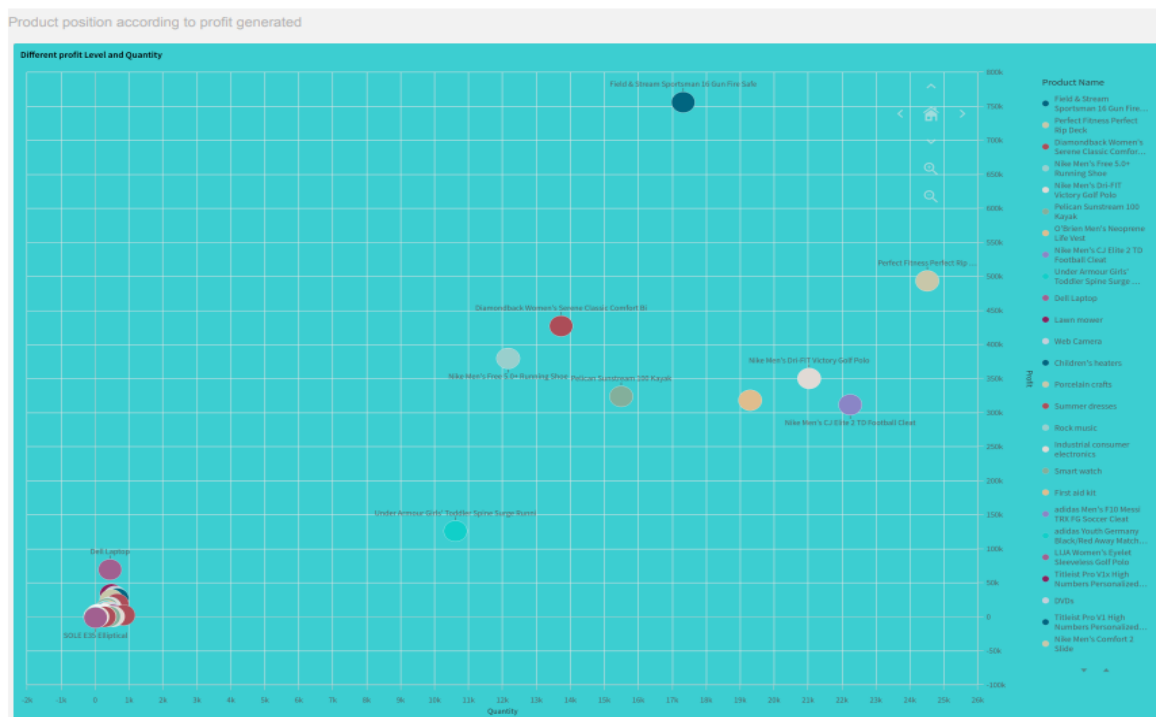
8. Most of the profitable city in different segment

9. order deliver countries
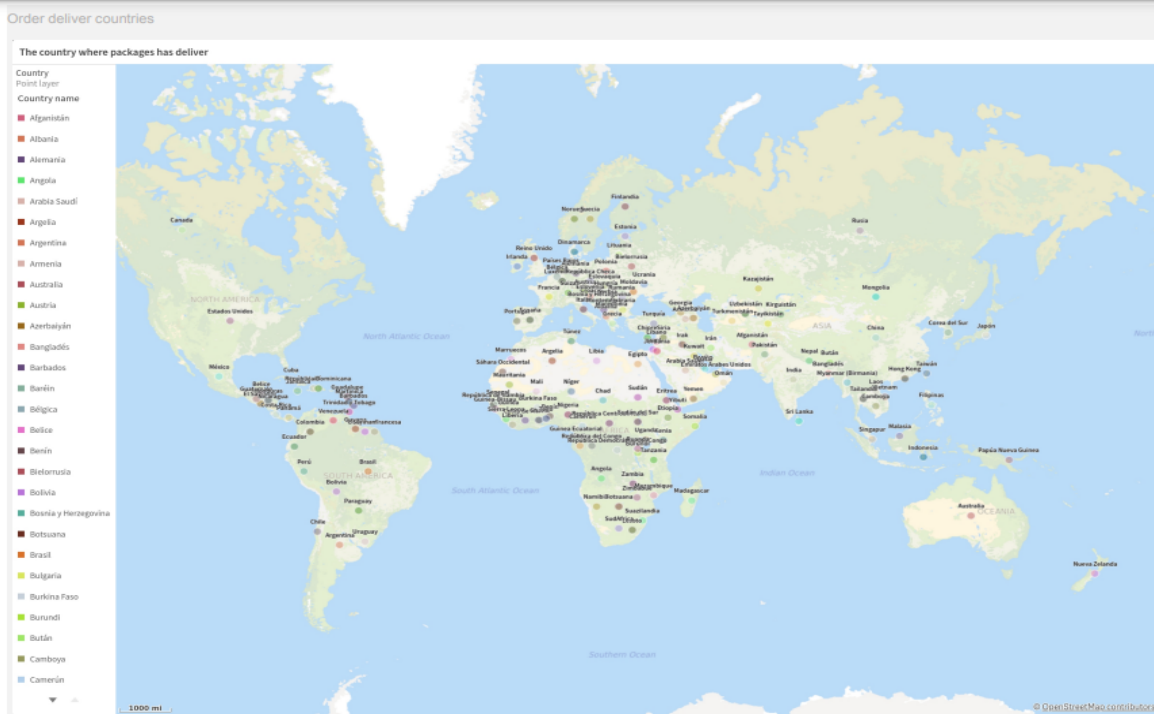
10. Product Analysis
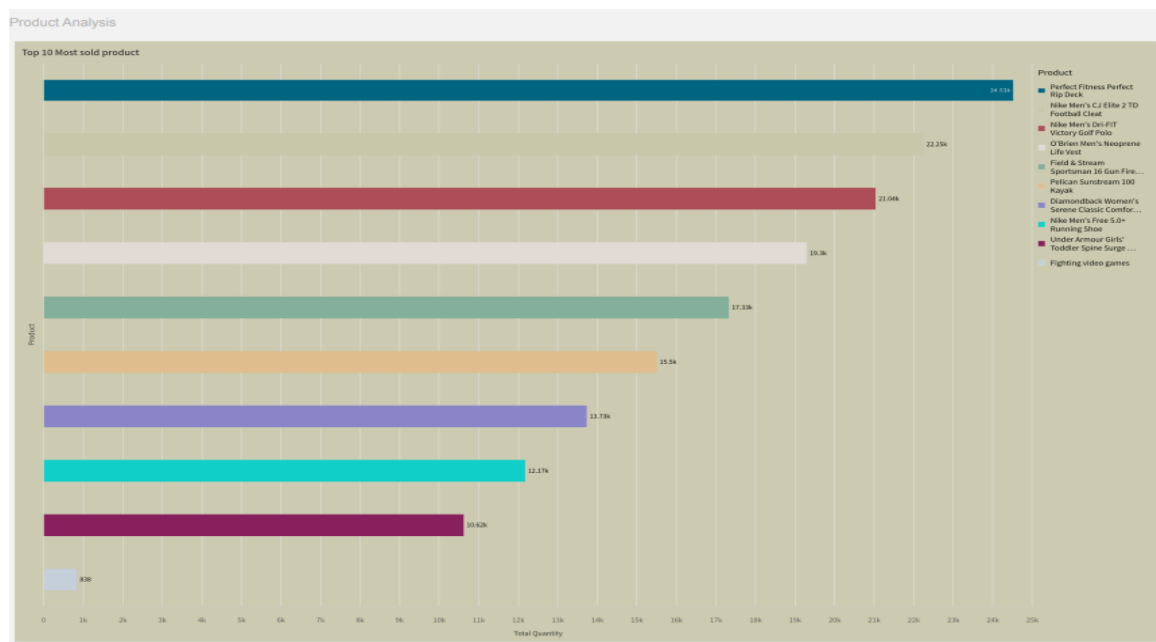
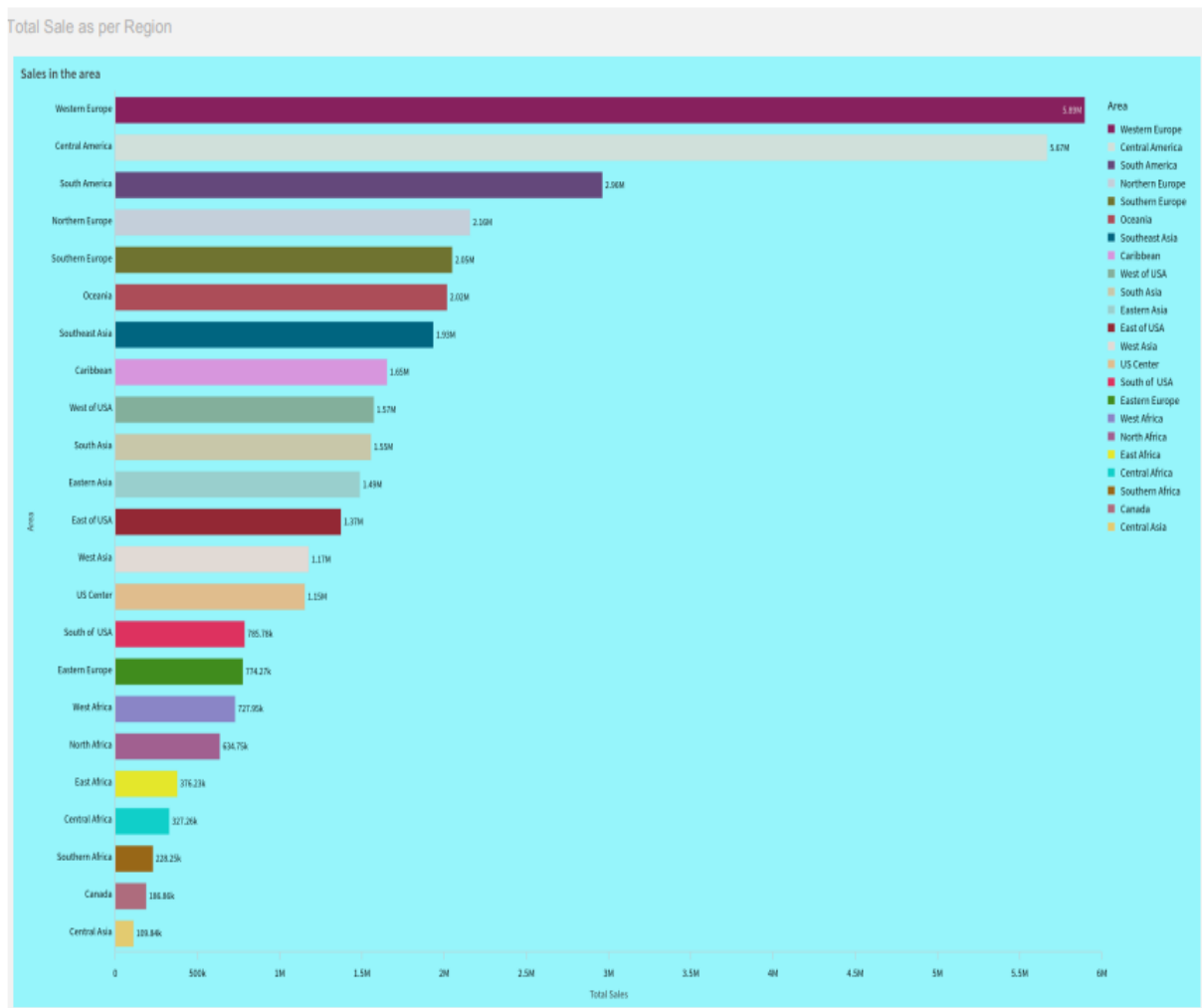## 11. Product Position according to the profit generated

12. Shipment of product quantity
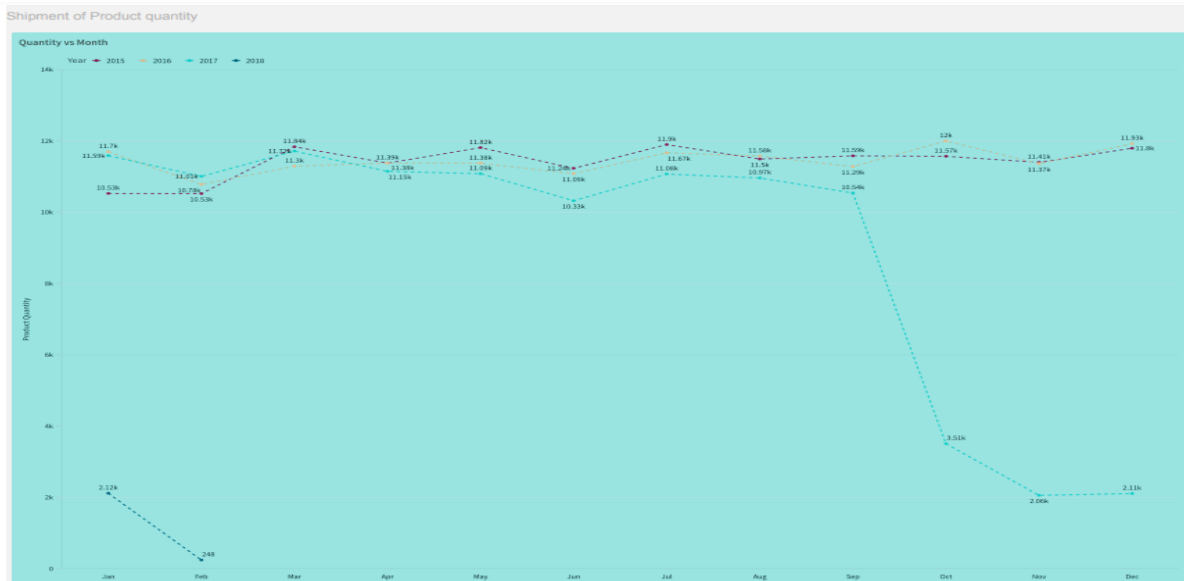

13. Status of orders

14. Total Sale as per region

Visulisation Pdf Link:-
https://drive.google.com/file/d/1oiie6WKuH98B2b0EqVTw4DZPResYkW8p/view?usp=
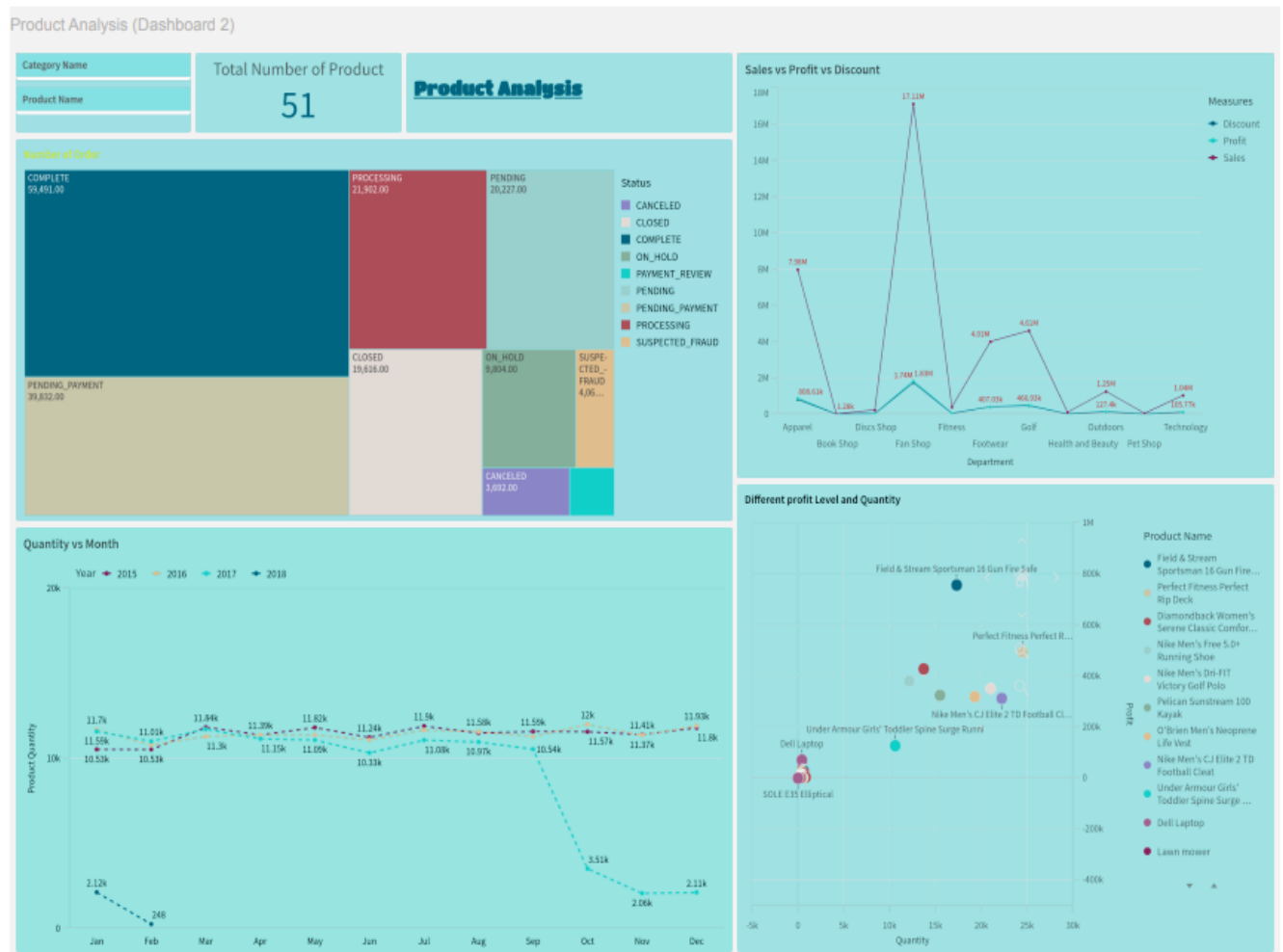**drive_link**

Responsive and Design of Dashboard

A dashboard is a visual interface that displays key metrics and data points in a consolidated, easy-to-understand format. It typically includes charts, graphs, and tables that provide real-time insights into business performance, helping users monitor and analyze data at a glance. Dashboards are customizable and interactive, allowing users to drill down into specific details, filter data, and track progress toward goals. They are commonly used in business intelligence, project management, and data analytics to facilitate informed decision-making.

1. Dashboard 1 Market Analysis..
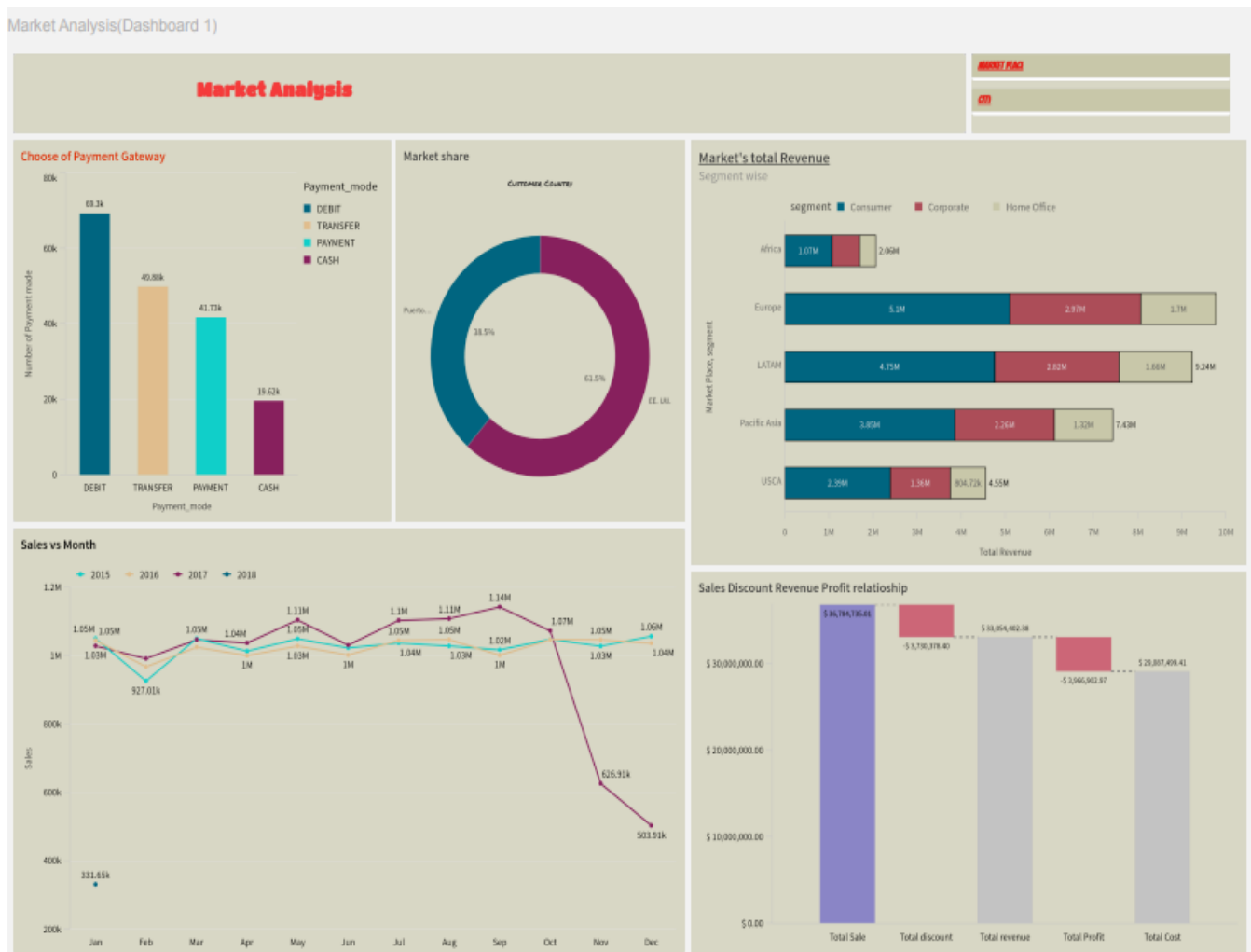
2. Dashboard 2 Product Analysis..

Dashboard Pdf Link:-

https://drive.google.com/file/d/13VNDVVxukP6RXzUaPThpLudJgB-kxeF0/view?usp=drive_link

Design of Story

Designing a story in data analysis involves structuring your insights into a compelling narrative that guides the audience through the data. Start with a clear objective, defining the problem or question you aim to address. Introduce the data and methodology, highlighting key findings with visualizations that emphasize patterns, trends, and correlations. Use storytelling techniques to connect insights to real-world implications, making the data relatable and actionable. Conclude with recommendations or predictions, reinforcing the main message. The story should be logical, engaging, and focused, ensuring that complex information is communicated effectively and persuasively.

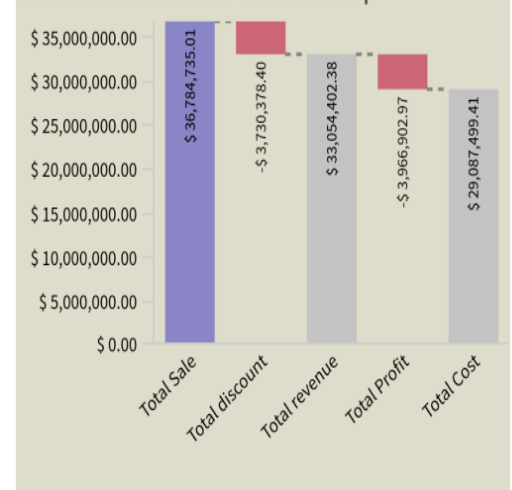1. Storytelling 1

Market Analysis of Pacific Asia

Click Here to see the Market Analysis of Pacific Asia

Choose of Payment Gateway
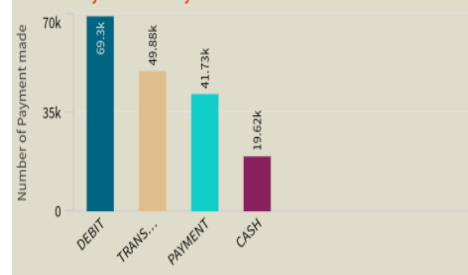
The Number of Payment made by different Payment mode in different region and city at the time of order

The Amount of sales happened in last years according to the months of per year. And the sales that recorded in different region and cities

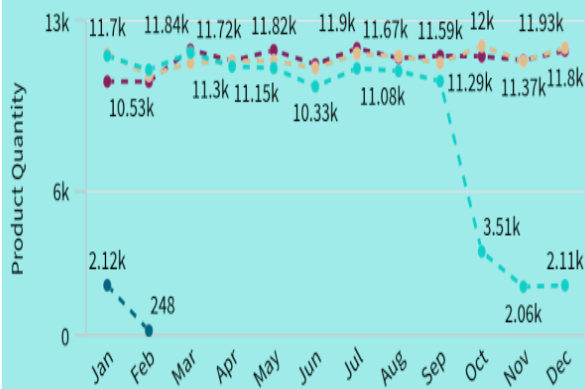**Sales Discount Revenue Profit relatioship**

Providing the Sales per discount and revenue and the profit generated in the specific region.

Sales vs Month

2.Storytelling 2

Quantity vs Month

Quantity of product deliver over period of year.

Different profit Level and Quantity

Quantity of different product and total profit to firm

Number of Order

COMPLETE	PROCESSING	PENDING
59,491.00	21,902.00	20,227.00
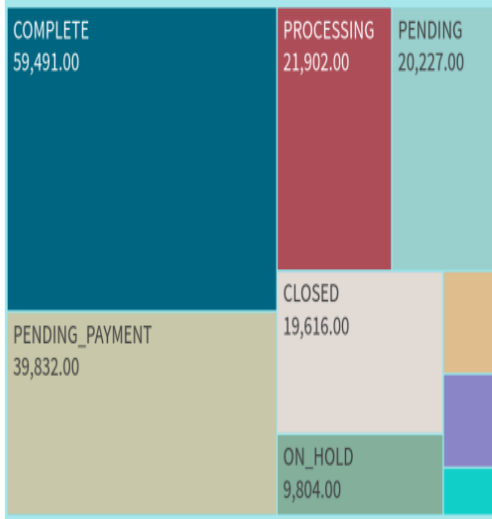
Status of product and categories.

CLOSED 19,616.00

PENDING_PAYMENT 39,832.00

ON_HOLD 9,804.00

Over all Profit discount and sales of different product.

Sales vs Profit vs Discount
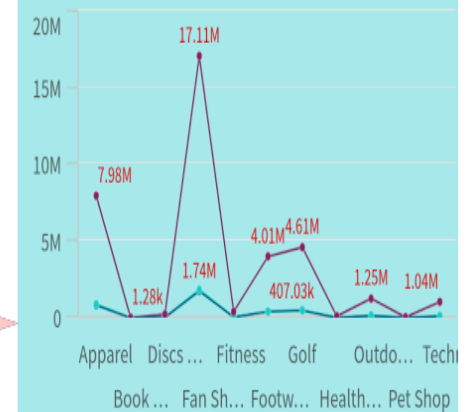
Storytelling Pdf Link:-
https://drive.google.com/file/d/1mDRuaK47ZMCLNzqc8ePeM4qRKOjD3RD2/view?usp=drive_link

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Performance Testing

No of Visualizations/ Graphs

1. Customer market share
2. Department sales and profit
3. Differrent Payment gateway
4. Financial Chart
5. Finance Year Wise
6. Least 10 cities which use different mode of payment
7. Market Analysis
8. Most of the profitable city in different segment
9. order deliver countries
10. Product Analysis
11. Product Position according to the profit generated
12. Shipment of product quantity
13. Status of orders
14. Total Sale as per region.

Amount of Data Loaded

The amount of data which are used to perform the analysis task and creating visualisation.

Q Search	Late_delivery_risk	Product Code
Actual_Shipping days	Latitude	Product Name
Category Id	Longitude	Product Price
Category Name	Order Customer Id	Product's Category Id
🌐 Customer City	📅 order Date & time ▶	Profit?loss
Customer Country	Order Id	Revenue
Customer Fname	Order Item Profit Ratio	RFID Cardprod id
Customer Id	Order Status	Sales
Customer Lname	Order_item_Quantity	Segment
🌐 Customer State	Payment_mode	Shipping Mode
Customer Street	Percentage of discount	Shop's Location
Customer Zipcode		
📅 Date & Time of sh... ▶		