Tech Saksham

Case Study Report

Data Analytics with Power BI

“Inventory and sales analysis of

Departmental store”

“Bishop Ambrose College”

NM ID	NAME
A9A4EB697D2980BBB3D41A DB0686CA20	Leyander samuel.F

R UMAMAHESHWARI

Trainer Name

R UMAMAHESHWARI

Master Trainer

ABSTRACT

In the digital age, data has become an invaluable asset for businesses, particularly in the banking sector. The proposed project, “Inventory and sales analysis of departmental store” aims to leverage PowerBI, a leading business intelligence tool, to analyze and visualize real time customer data. This project will enable departmental store to gain deep insights into customer behavior, preferences, and trends, thereby facilitating data-driven decision-making and enhancing customer satisfaction. The real-time analysis will allow departmental store to respond promptly to changes in customer behavior or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to meet customer needs. The project will also contribute to the broader goal of digital transformation in the departmental stores, promoting efficiency, innovation, and customer-centricity

INDEX

Sr. No.	Table of Contents	Page No.
1	Chapter 1: Introduction	4
2	Chapter 2: Services and Tools Required	6
3	Chapter 3: Project Architecture	7
4	Chapter 4: Modeling and Result	9
5	Conclusion	16
6	Future Scope	17
7	References	18
8	Links	19

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

In today's competitive departmental store, understanding customer behavior and preferences is crucial for customer retention and revenue generation. However, departmental store often face challenges in analyzing customer data due to the sheer volume and velocity of data generated.Traditional data analysis methods are time-consuming and often fail to provide real-time insights. This lack of real-time analysis can lead to missed opportunities for customer engagement, cross-selling, and up-selling, impacting the departmental store revenue generation and customer satisfaction. Furthermore, the complexity and diversity of customer data, which includes transaction history, customer feedback, and demographic data, pose additional challenges for data analysis.

1.2 Proposed Solution

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize realtime customer data. The dashboard will integrate data from various sources such as buying history, customer feedback, and demographic data. It will provide a comprehensive view of customer behavior, preferences, and trends, enabling departmental store to make informed decisions. The dashboard will be interactive, user-friendly, and customizable, allowing departmental store to tailor it to their specific needs. The real-time analysis capability of the dashboard will enable departmental store to respond promptly to changes in customer behavior or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to meet customer needs

© Edunet Foundation. All rights reserved

1.3 Feature

- **Real-Time Analysis**: The dashboard will provide real-time analysis of customer data.
- **Customer Segmentation**: It will segment customers based on various parameters like age,
- name, buying behavior, etc.
- **Trend Analysis**: The dashboard will identify and display trends in customer behavior.
- **Predictive Analysis**: It will use historical data to predict future customer behavior.

1.4 Advantages

- **Data-Driven Decisions**: departmental store can make informed decisions based on real-time

data analysis.

- **Improved Customer Engagement**: Understanding customer behavior and trends can help

banks engage with their customers more effectively.

- **Increased Revenue**: By identifying opportunities for cross-selling and up-selling, departmental

store can increase their revenue.

© Edunet Foundation. All rights reserved

1.5 Scope

The scope of this project extends to all departmental store that aim to leverage data for decision-making and customer engagement. The project can be further extended to incorporate more data sources and advanced analytics techniques, such as machine learning and artificial intelligence, to provide more sophisticated insights into customer behavior. The project also has the potential to be adapted for other sectors, such as retail, healthcare, and telecommunications, where understanding customer behavior is crucial. Furthermore, the project contributes to the broader goal of online buying details in the departmental store, promoting efficiency, innovation, and customer-centricity.

© Edunet Foundation. All rights reserved

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

Data Collection and Storage Services: departmental store need to collect and store customer data in real-time. This could be achieved through services like Azure Data Factory, Azure Event Hubs, or AWS Kinesis for real-time data collection, and Azure SQL Database or AWS RDS for data storage.

- **Data Processing Services**: Services like Azure Stream Analytics or AWS Kinesis Data Analytics can be used to process the real-time data.
- **Machine Learning Services**: Azure Machine Learning or AWS SageMaker can be used to build predictive models based on historical data.

2.2 Tools and Software used

Tools:

- **PowerBI**: The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query**: This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

© Edunet Foundation. All rights reserved

Software Requirements:

- **PowerBI Desktop**: This is a Windows application that you can use to create reports and publish them to PowerBI.

- **PowerBI Service**: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

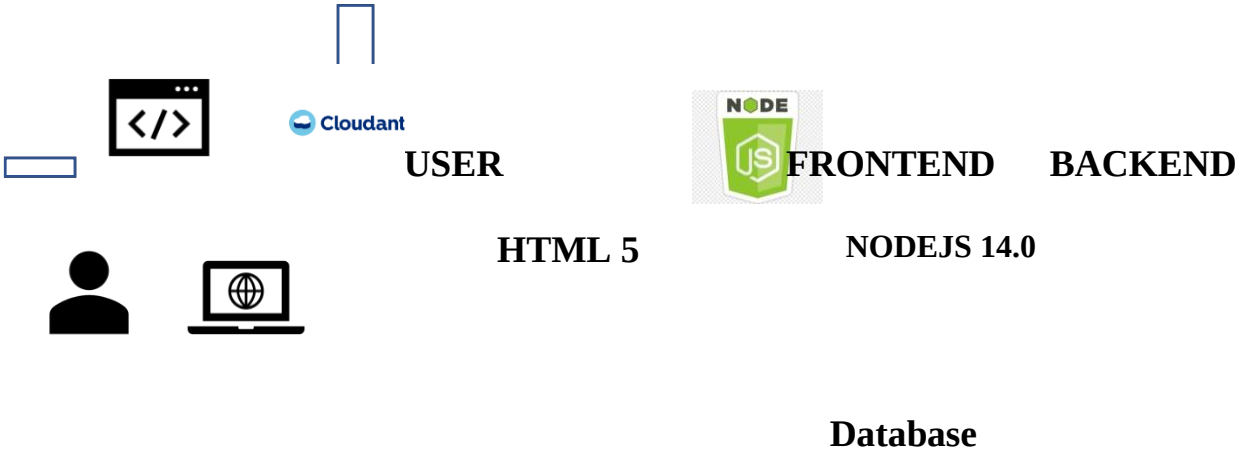
- **PowerBI Mobile**: This is a mobile application that you can use to access your reports and dashboards on the go.

© Edunet Foundation. All rights reserved

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture



Here's a high-level architecture for the project:

1. **Data Collection**: Real-time customer data is collected from various sources like bank transactions, customer interactions, etc. This could be achieved using services like Azure Event Hubs or AWS Kinesis.
2. **Data Storage**: The collected data is stored in a database for processing. Azure SQL Database or AWS RDS can be used for this purpose.
3. **Data Processing**: The stored data is processed in real-time using services like Azure Stream Analytics or AWS Kinesis Data Analytics.
4. **Machine Learning**: Predictive models are built based on processed data using Azure Machine Learning or AWS SageMaker. These models can help in predicting customer behavior, detecting fraud, etc.
5. **Data Visualization**: The processed data and the results from the predictive models are visualized in real-time using PowerBI. PowerBI allows you to create interactive dashboards that can provide valuable insights into the data.
6. **Data Access**: The dashboards created in PowerBI can be accessed through PowerBI

© Edunet Foundation. All rights reserved

Desktop, PowerBI Service (online), and PowerBI Mobile.

© Edunet Foundation. All rights reserved

This architecture provides a comprehensive solution for real-time analysis of bank customers. However, it's important to note that the specific architecture may vary depending on the bank's existing infrastructure, specific requirements, and budget. It's also important to ensure that all tools and services comply with relevant data privacy and security regulations.

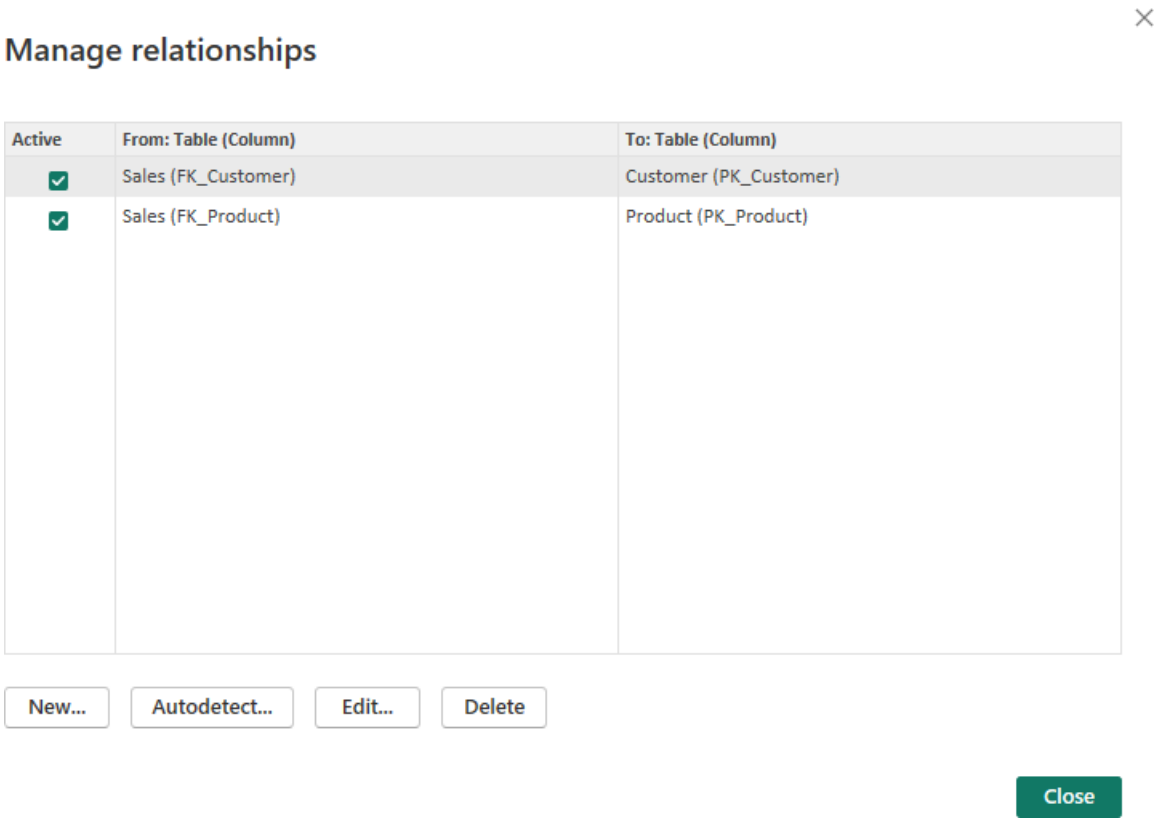
© Edunet Foundation. All rights reserved

CHAPTER 4

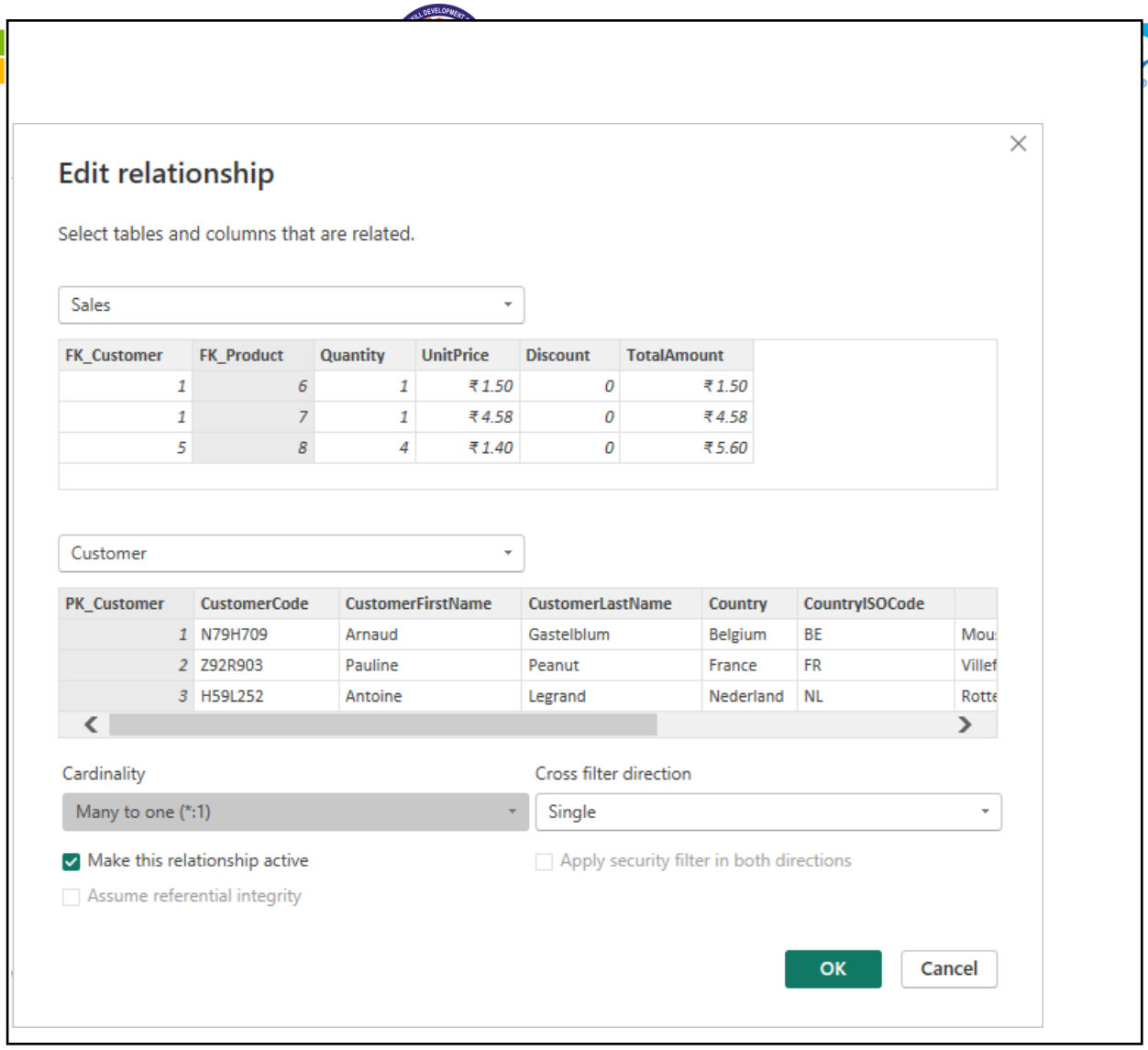
MODELING AND RESULT

Manage relationship

The “disp” file will be used as the main connector as it contains most key identifier (account id, client id and disp id) which can be use to relates the 8 data files together. The “district” file is use to link the client profile geographically with “sales id”



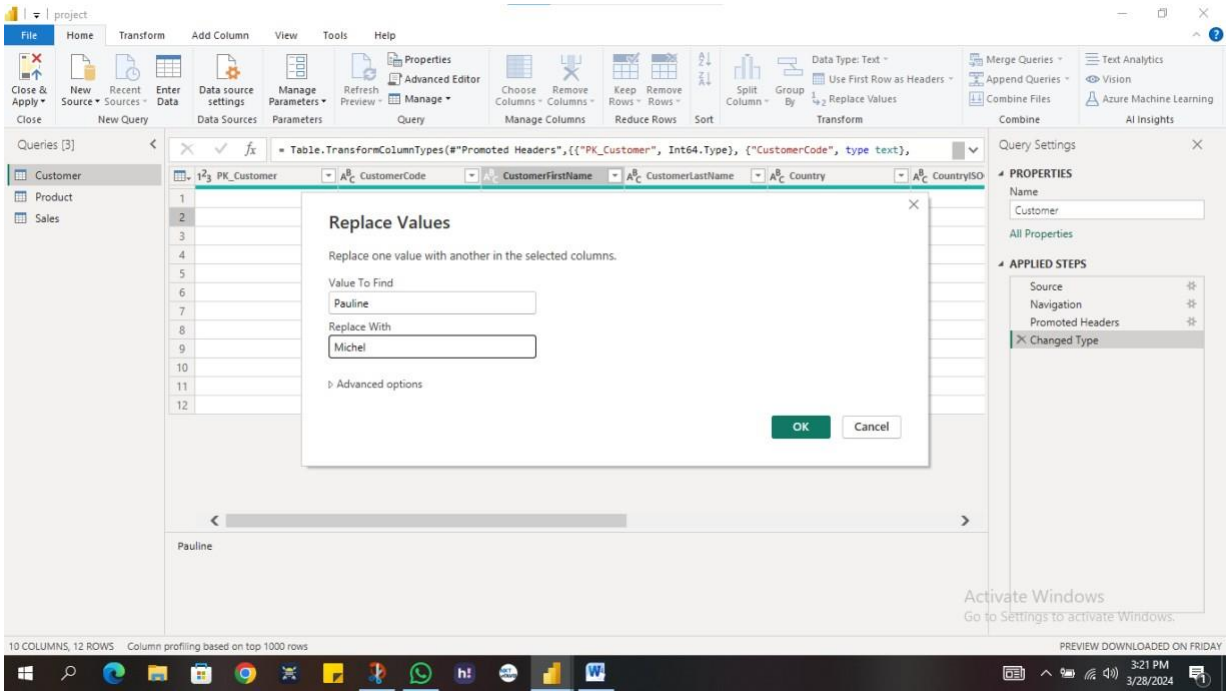
© Edunet Foundation. All rights reserved



© Edunet Foundation. All rights reserved

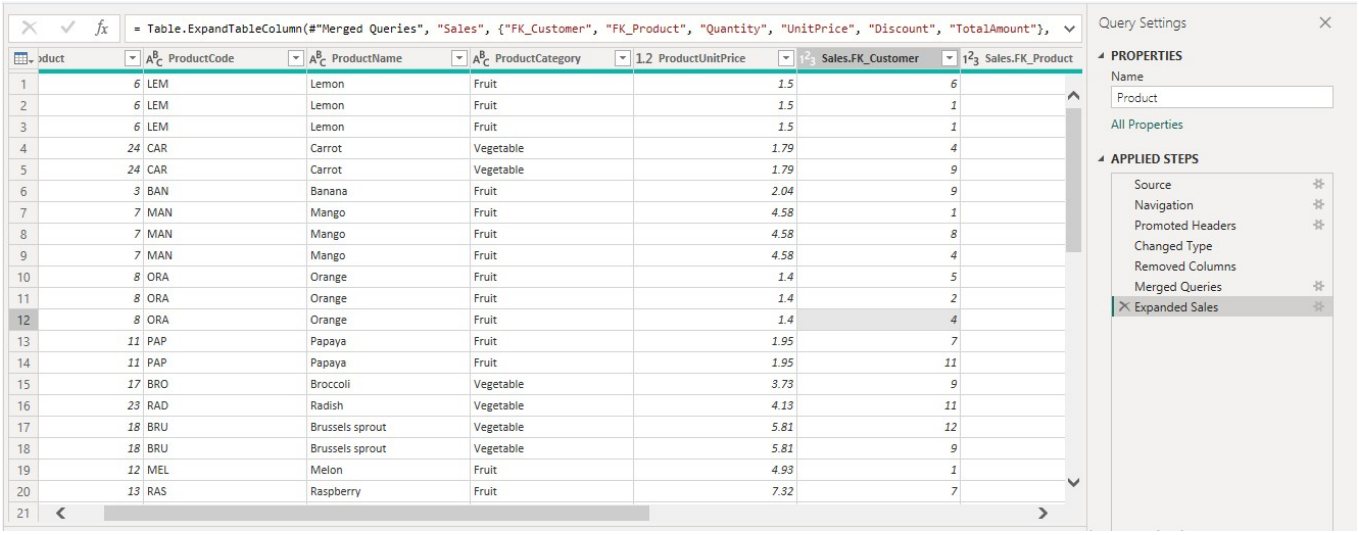
Replacing values

Set some fields to English for easy understanding, we replace values to English with the Power Query Editor.



© Edunet Foundation. All rights reserved

Then merge column by Region and direction. Refer to applied steps for details.



		ProductCode	ProductName	ProductCategory	ProductUnitPrice	Sales.FK_Customer	Sales.FK_Product
1	6	LEM	Lemon	Fruit	1.5	6	
2	6	LEM	Lemon	Fruit	1.5	1	
3	6	LEM	Lemon	Fruit	1.5	1	
4	24	CAR	Carrot	Vegetable	1.79	4	
5	24	CAR	Carrot	Vegetable	1.79	9	
6	3	BAN	Banana	Fruit	2.04	9	
7	7	MAN	Mango	Fruit	4.58	1	
8	7	MAN	Mango	Fruit	4.58	8	
9	7	MAN	Mango	Fruit	4.58	4	
10	8	ORA	Orange	Fruit	1.4	5	
11	8	ORA	Orange	Fruit	1.4	2	
12	8	ORA	Orange	Fruit	1.4	4	
13	11	PAP	Papaya	Fruit	1.95	7	
14	11	PAP	Papaya	Fruit	1.95	11	
15	17	BRO	Broccoli	Vegetable	3.73	9	
16	23	RAD	Radish	Vegetable	4.13	11	
17	18	BRU	Brussels sprout	Vegetable	5.81	12	
18	18	BRU	Brussels sprout	Vegetable	5.81	9	
19	12	MEL	Melon	Fruit	4.93	1	
20	13	RAS	Raspberry	Fruit	7.32	7	
21							

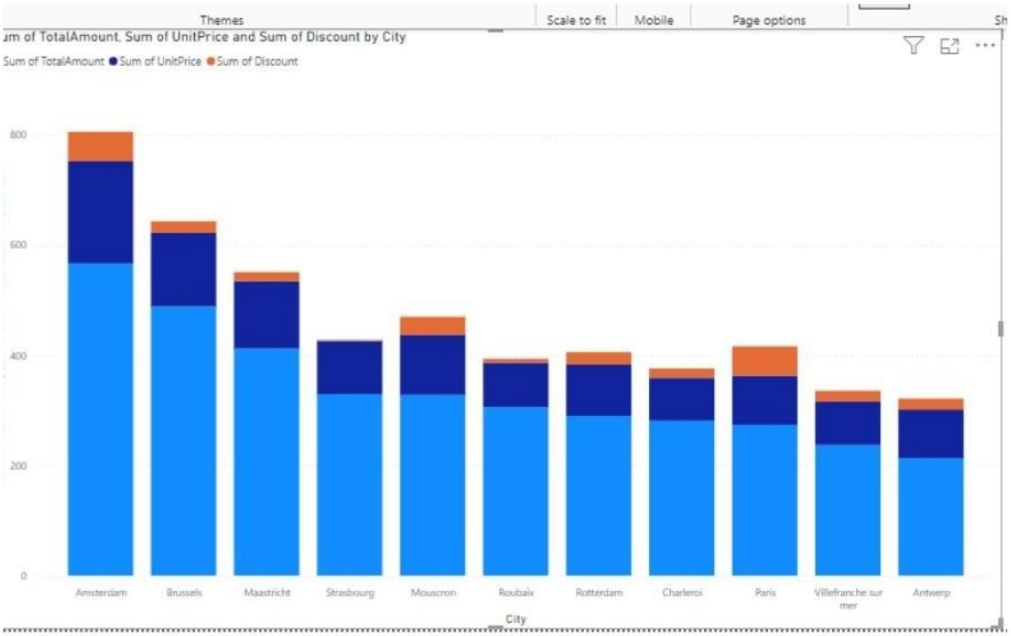
Grouping of age by ranges

As product is grouped by type of category which count the cateory.

© Edunet Foundation. All rights reserved

Dashboard

© Edunet Foundation. All rights reserved



© Edunet Foundation. All rights reserved

CONCLUSION

The project “Real-Time Analysis of departmental store Customers” using PowerBI has successfully demonstrated the potential of data analytics in the departmental store. The real time analysis of customer data has provided valuable insights into customer behavior, preferences, and trends, thereby facilitating informed decision-making. The interactive dashboards and reports have offered a comprehensive view of customer data, enabling the identification of patterns and correlations. This has not only improved the efficiency of data analysis but also enhanced the departmental store’s ability to provide personalized services to its customers. The project has also highlighted the importance of data visualization in making complex data more understandable and accessible. The use of PowerBI has made it possible to present data in a visually appealing and easy-to-understand format, thereby aiding in better decision-making.

© Edunet Foundation. All rights reserved

FUTURE SCOPE

The future scope of this project is vast. With the advent of advanced analytics and machine learning, PowerBI can be leveraged to predict future trends based on historical data. Integrating these predictive analytics into the project could enable the departmental store to anticipate customer needs and proactively offer solutions. Furthermore, PowerBI's capability to integrate with various data sources opens up the possibility of incorporating more diverse datasets for a more holistic view of customers. As data privacy and security become increasingly important, future iterations of this project should focus on implementing robust data governance strategies. This would ensure the secure handling of sensitive customer data while complying with data protection regulations. Additionally, the project could explore the integration of real-time data streams to provide even more timely and relevant insights. This could potentially transform the way banks interact with their customers, leading to improved customer satisfaction and loyalty.

© Edunet Foundation. All rights reserved

REFERENCES

https://medium.com/analytics-vidhya/analysis-of-department-customers-using-dashboard-in-power-bi-a366f2b3e563

© Edunet Foundation. All rights reserved

LINK

https://github.com/githubtraining/hellogitworld.git

© Edunet Foundation. All rights reserved