



postnord

PostNord Data Analysis

DECEMBER 11

Postnord

Abstract

The topic of the project is to find the insights and predictions of a logistic company name PostNord. In this project, we used different type of vizualizations to give insights and improve customer satisfaction, improve the delivery process system. For the vizualizations and forecasting, we used Tableau Desktop and for data preparation, we used Tableau Prep Builder. In this dataset, there is 3 year data of a logistic company, which give us different type of insights of the PostNord company. Using the data, we were able to find many insights such as most frequent geographical place where delivery is received, future service prediction of this logistic company.

Introduction

A logistics company is a business that focuses on the management and movement of goods and materials from one location to another. These companies are responsible for coordinating the transportation, storage, and distribution of goods and providing other related services such as customs clearance and order fulfillment. Logistics companies may operate on a global scale, handling the movement of goods between countries, or they may focus on a specific region or industry. The goal of a logistics company is to ensure that goods are delivered to the right place, at the right time, and most cost-effectively and efficiently possible.

Data visualization is a powerful way that is used to improve the performance of a logistics company in several ways:

1. Visualizing data on shipping routes and traffic conditions can help logistics companies identify bottlenecks and other inefficiencies, allowing them to optimize their routes and reduce fuel consumption.
2. Visualizing data on inventory levels and sales trends can help logistics companies identify potential stockouts or overstocking, allowing them to adjust their inventory management strategies in real time.
3. Visualizing customer behavior and preferences data can help logistics companies identify trends and patterns, allowing them to tailor their marketing and sales efforts to specific customer segments.

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4. Visualizing data on factors such as weather conditions and vehicle maintenance can help logistics companies identify potential risks and take proactive steps to mitigate them, reducing the likelihood of delays or accidents.
 5. Visualizing data on key performance indicators (KPIs) such as on-time delivery rates and customer satisfaction can help logistics companies monitor their performance and identify areas for improvement.

In our data set, we are provided with geographic locations, price paid, customer details. Using that have done our analysis in this project.

In this project we have described in a certain way :

- Conceptual Framework
- Related Work
- Methodology
- Analysis
- Conclusion
- Reference

Analysis

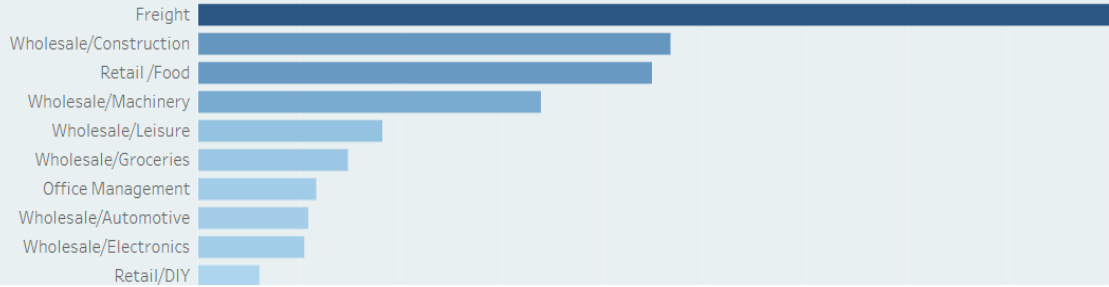
Industry Category Contribution to Paid Price

Our Top 5 Industries by business

- Freight
- Wholesale/construction
- Retail/food
- Wholesale/Machinery
- Wholesales/groceries

Industry Category Contribution in Paid Price

Industry Category Details



Our bottom 5 Industries by business

- wholesales/other wholesales
- Fisheries/Agriculture and Forestry
- wholesales/clothing and footwear wholesale
- wholesales/Recreational goods
- wholesales/sports and leisure

Industry Category Contribution in Paid Price

Industry Category Details

Wholesale/Other Wholesale
Fisheries, Agriculture and Forestry
Wholesale/Clothing and footwear W..
Wholesale/Recreational Goods
Wholesale/Sports & Leisure
Retail/Home Furnishings
Wholesale/Home Equipment

Base Price vs Product

Pallet (L) contribute most almost 700 Million total base price

Then Groupage(G) contribute about 600 Million total base price

InNight(I) and Road Freight (R) contribute very fewer

Sub categories in product

- From all the Products except Road Freight, wholesale did major contribution in the base price.
- Then followed by Transport and Retail



Price Paid vs Product

- Pallet (L) contribute the most almost 350 Million total price paid
- Then Groupage(G) contribute about 230 Million total price paid
- InNight(I) and Road Freight (R) contribute very fewer

Sub categories in the product (similar to base price)

- From all the Products except Road Freight, wholesale did major contribution in the price paid.
- Then followed by Transport and Retail

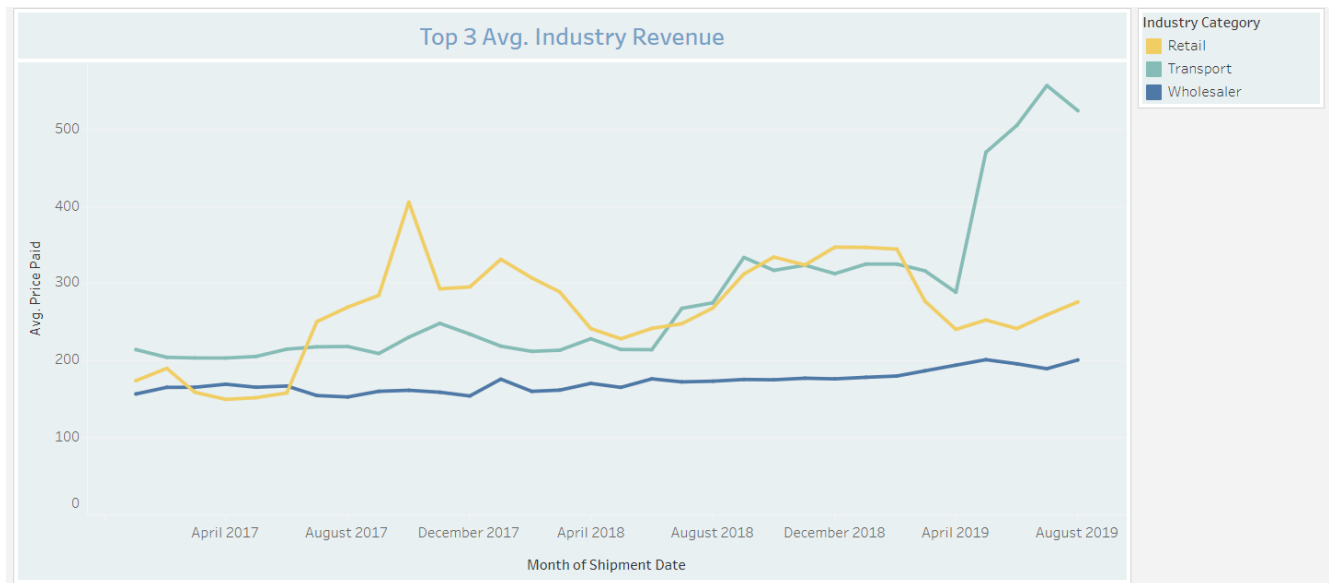


Top 3 Avg. Industry Revenue

- We can see the Transport industry is growing
- In 2019 transport industry take sudden growth
- Retail industry is fluctuating
- Despite the fact that wholesale is done a major contribution to our revenue but its growth is almost flat

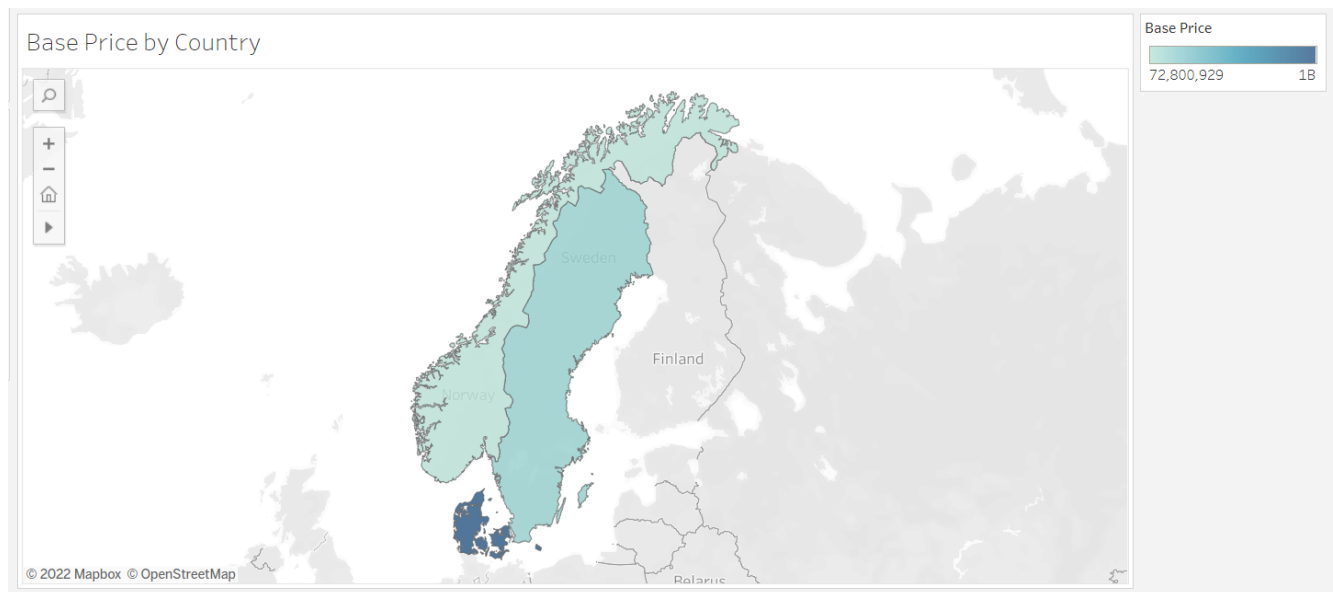
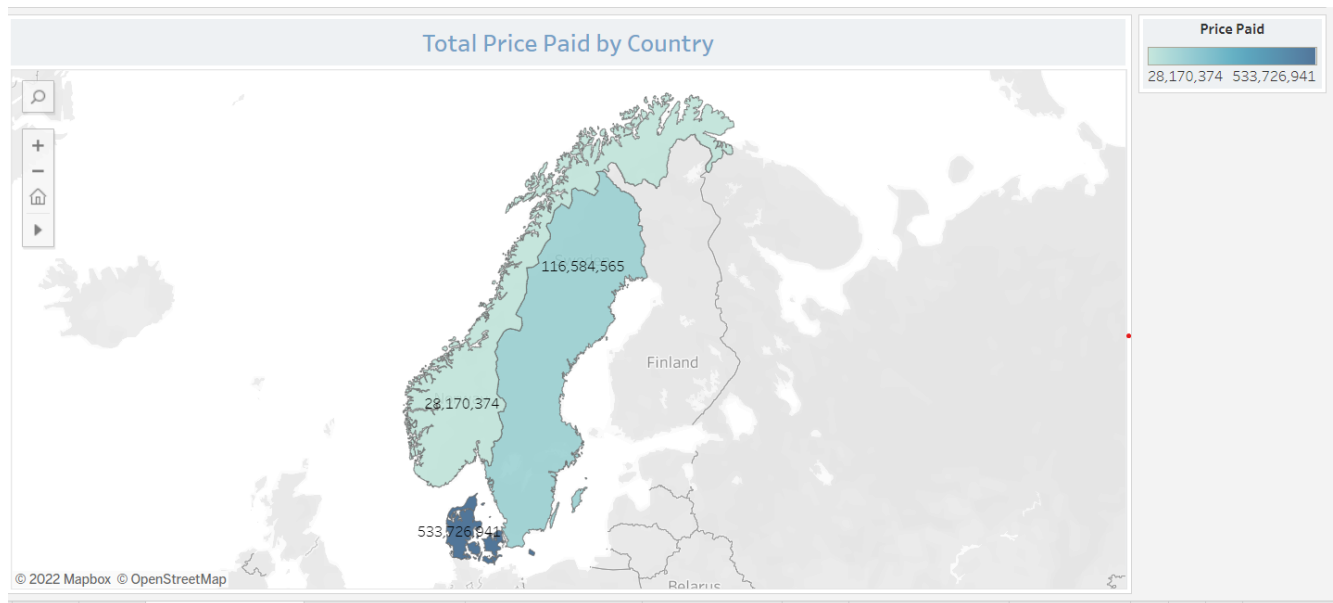
Suggestion:

- We need to find out why wholesale industry revenue is not growing
- We to make the right decision to make maintain growth in Transport industry



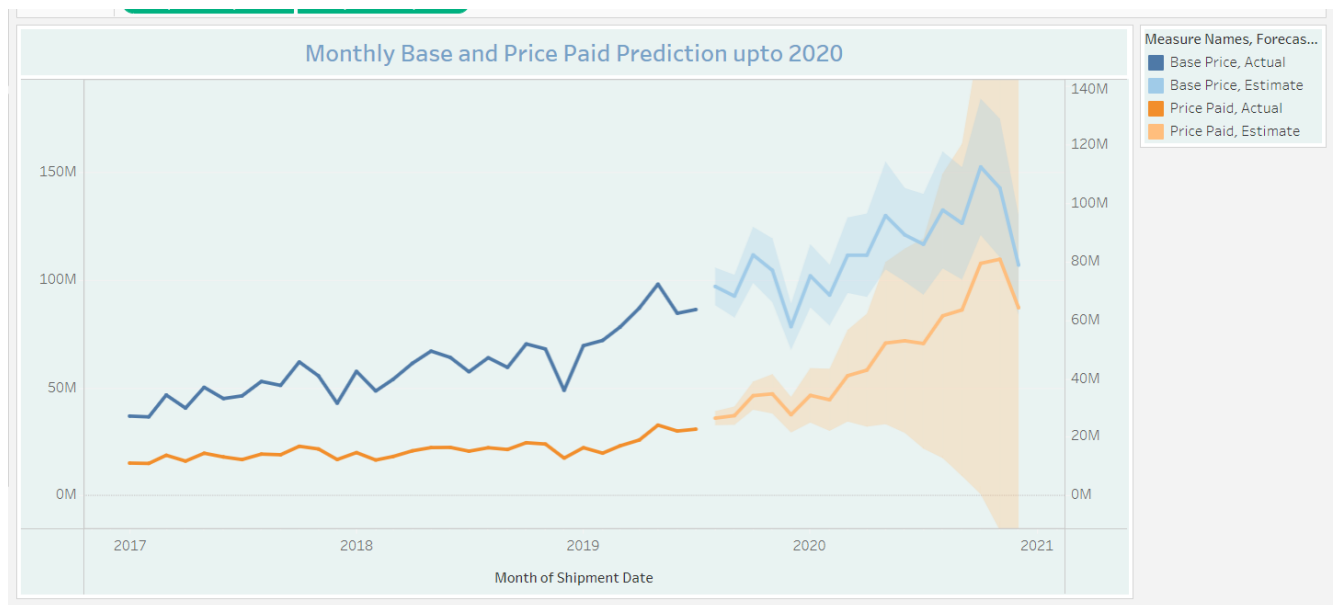
Total Price Paid and base price by Country

- Our most of the business comes from Denmark(DK)
- Followed by Sweden and Norway



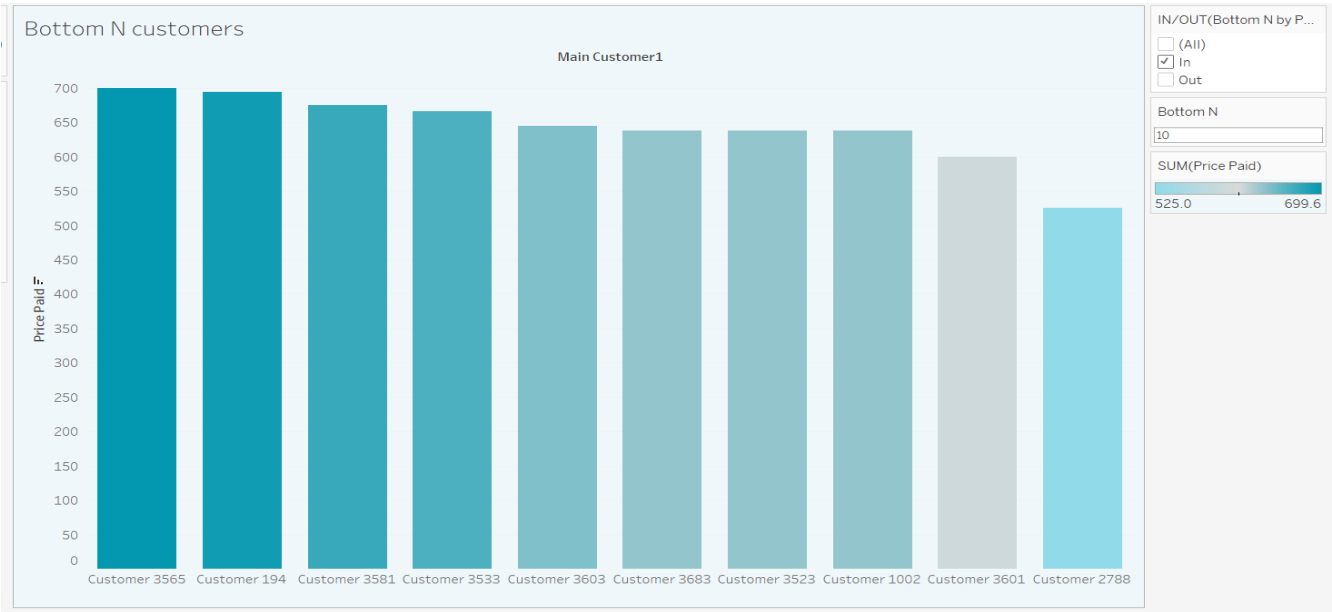
Monthly Base and Price Paid Prediction up to 2020

- Base Price and Paid Price prediction from June 2019
- Confidential interval is 90%
- We forecast sales up to 31st December 2020
- Here we can see both are increasing trend in the forecast.



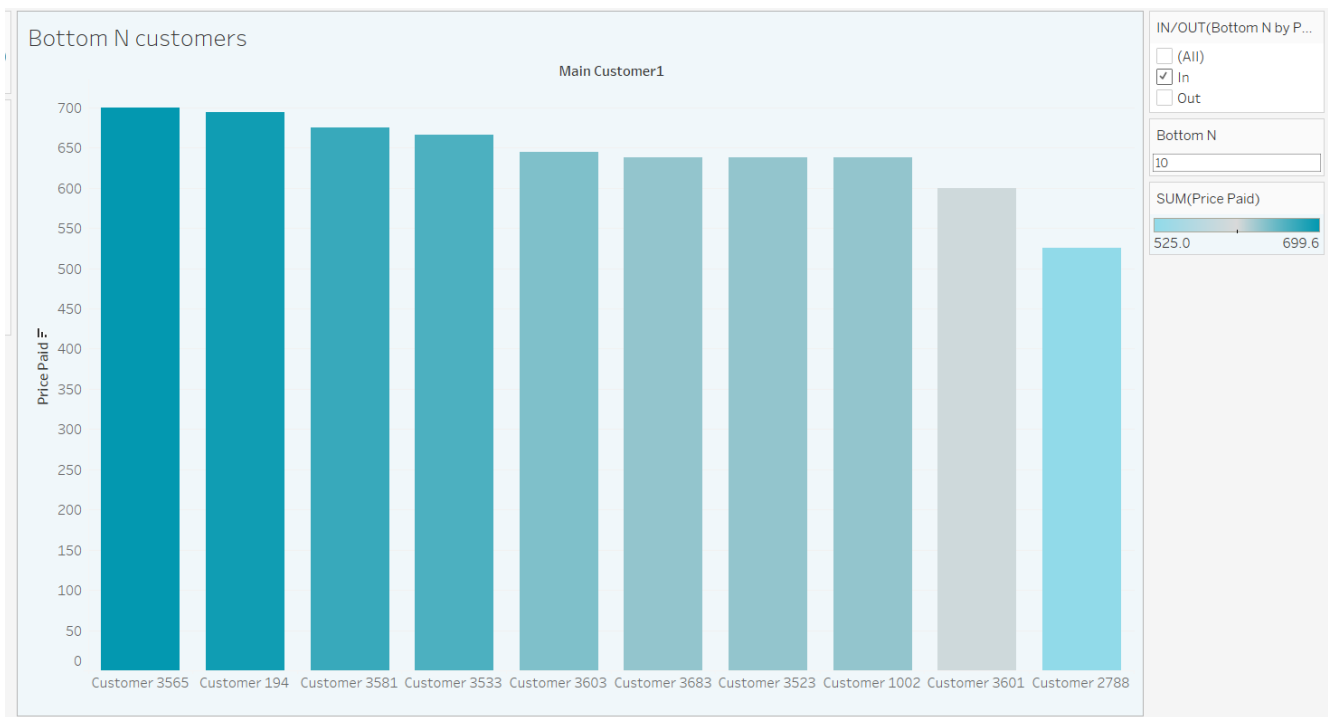
Top 10 customers

- Customer 2497 is the biggest customer
- Our second customer is almost one-third of our customer



Bottom 10 customers

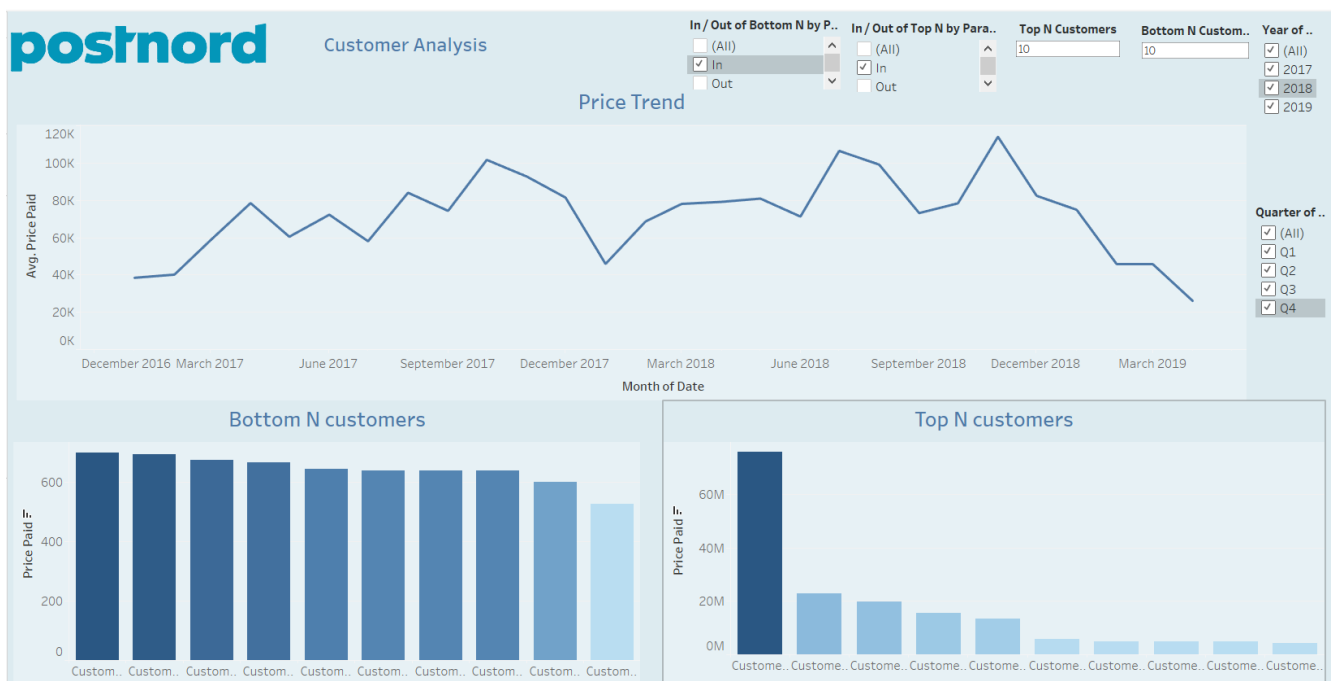
- Customer 2788 is our smallest customer by the Price paid



Dashboard - 1: EasyForward Dashboard Working

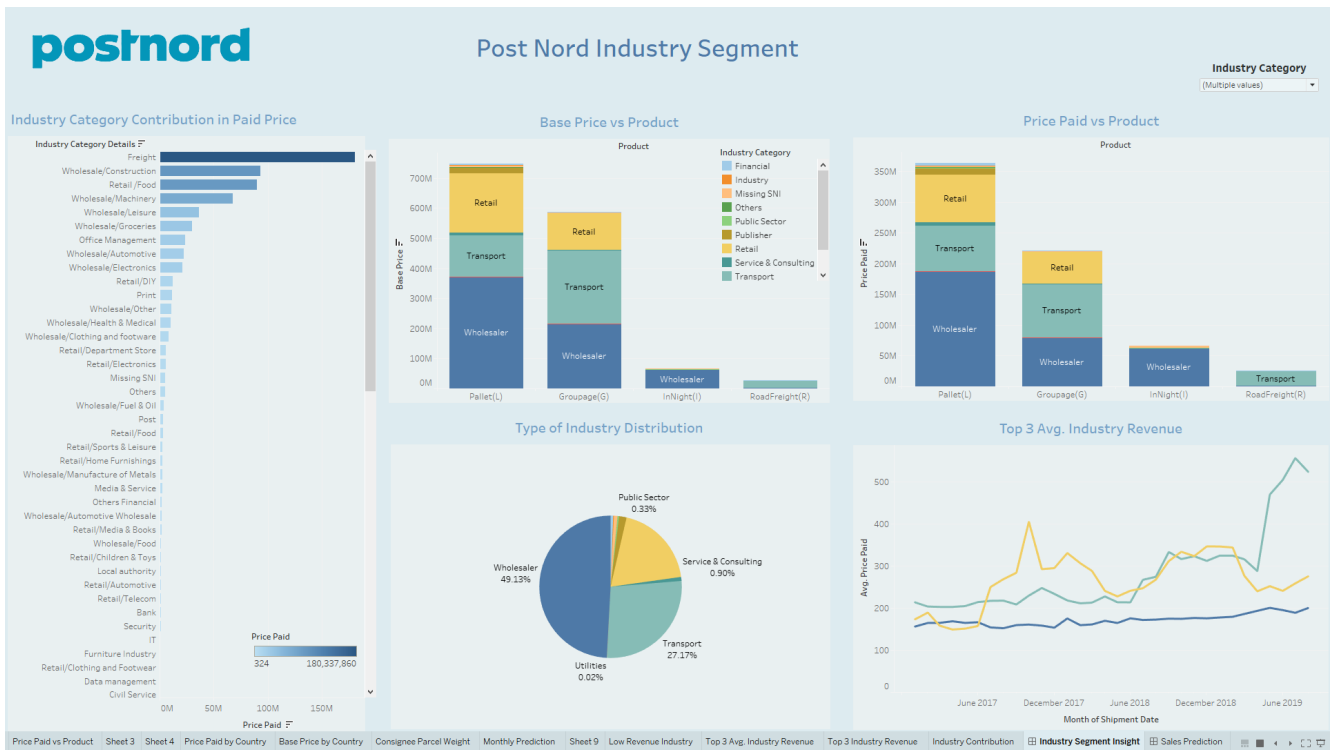
There are in Total 6 filters which I use in the Dashboard let's look at what they do

- Year of Date filter in the top right corner. It shows the yearly trend of the average price paid. By checking the box beside years, we can price the trend corresponding to that year
- Quarter of Date filter on the right side. show the quarterly trend of avg Price paid.
- Bottom N customer and Top N customer filter shows a bottom and top customers. We can type any number on that box the filter will modify the graphs of the Bottom N customer and the Top N customer according to number. Here we looking at the top and bottom 10 customers
- In/out filter will modify the Bottom N customer and Top N customer graphs according to the typed number. For example, if check In the box it will show only the bottom/Top customers according to the typed number in the Bottom N customer/Top N customer. And if click out it will show all except the bottom/top. If we click on all it will show all customers

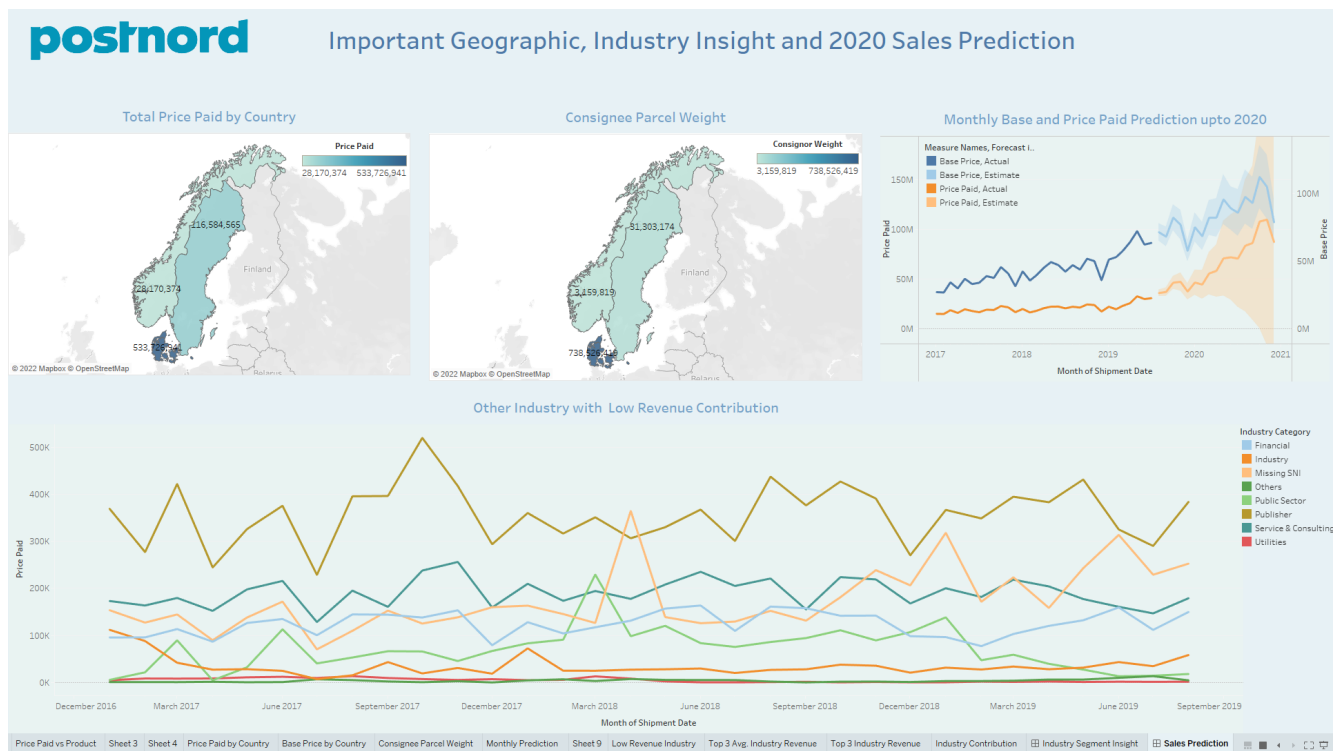


DashBoard - 2 : Industry Segment Dashboard Working

There is a single filter that is use in this dashboard to select the relevant industry to analyse insights by the end user.



DashBoard - 3 : Geographic Insight with 2020 Year Forecasting Working



Conclusion:

- **Freight is our biggest Industry almost 2 times more than the second biggest wholesales/construction industry we have to more focus it generate more profit from it.**
- **wholesales/other wholesales, Fisheries/Agriculture and Forestry, clothing and footwear wholesale, recreational goods wholesales/sports and leisure from these industries we are not able to do sales we to find a valid reason for that**
- **Pallet and Groupage are our major product. other two generate very fewer sales compared to pallets and groupage. we have figured out ways to make more sales from them**
- **Denmark is our biggest market but Sweden has more population than Denmark.**
- **We can explore more sales in Norway and Sweden. we have to target this to markets**

Conceptual Framework

A conceptual framework is a visual representation of the key concepts or ideas that underlie a research project or study. In a tableau project, a conceptual framework can help to organize and present data in a way that is clear, logical, and easy to understand. It can also provide a structure for analyzing and interpreting the data, and for drawing conclusions and making recommendations based on the findings.

In general, a conceptual framework for a tableau project should include the following elements:

1. The main research question or hypothesis being tested. This should be clearly stated at the top of the framework and should serve as the starting point for all subsequent analysis and interpretation of the data.
2. The key variables or factors that will be studied. These should be represented as boxes or rectangles in the framework and should be labeled with descriptive

names that clearly indicate their meaning and relevance to the research question.

3. The relationships or connections between the key variables. These should be represented as arrows or lines connecting the boxes or rectangles in the framework and should indicate the direction and nature of the relationship (e.g. positive, negative, direct, indirect, etc).
4. Any additional data sources or information that will be used to support the analysis and interpretation of the data. This can include background information, previous research, or other relevant data that can help to provide context and support for the findings.

Overall, the goal of a conceptual framework in a tableau project is to provide a clear and organized structure for presenting and analyzing data, and for drawing conclusions and making recommendations based on the findings. By providing a clear and logical framework for understanding the data, a conceptual framework can help to improve the quality and relevance of the analysis and can provide a valuable tool for making informed decisions and taking action based on the research findings.

Related Work

There are many different approaches to analyzing a dataset for a logistics company.

Some standard methods include using statistical analysis to identify trends and patterns in the data, using machine learning algorithms to make predictions about future events, and using data visualization techniques to create charts and graphs that help to understand the data more quickly.

Additionally, consider conducting surveys or interviews with customers or other stakeholders in the company to gather more information and feedback about the logistics process.

As part of the Tableau project for a logistics company, it would be useful to review the existing literature and research on logistics and supply chain management. This can help provide context and insights for the project and can also identify potential gaps or areas for further investigation.

Some potential sources to consider for this review of related work include

- Industry publications and reports, such as those from the Council of Supply Chain Management Professionals (CSCMP) or the Logistics Management Institute (LMI).
- Academic journals and conference proceedings in the fields of logistics, supply chain management, and operations research.
- Books and other works on logistics and supply chain management written by experts in the field.
- Previous research and case studies on logistics and supply chain management, particularly those that focus on the use of data and visualization tools like Tableau.

In conducting this review of related work, it may be useful to focus on specific areas or aspects of the project, such as the use of data and analytics, the role of technology and automation in logistics, or the challenges and opportunities facing the logistics industry. This can help to identify relevant sources and provide a more focused and relevant review.

Methodology

Dataset Description

A data set description for a logistic company like PostNord would likely provide information on the various types of data that are collected and tracked by the company. This could include information on the types of shipments that the company handles (such as packages, letters, or pallets), the locations where shipments originate and are delivered, and any relevant details about the sender and recipient of the shipment. Additionally, the data set may include information on the routes taken by the

company's vehicles, the amount of time it takes for shipments to be delivered, and any other relevant details that can help to understand and improve the company's logistics operations.

In this there were 4 types of delivery system:

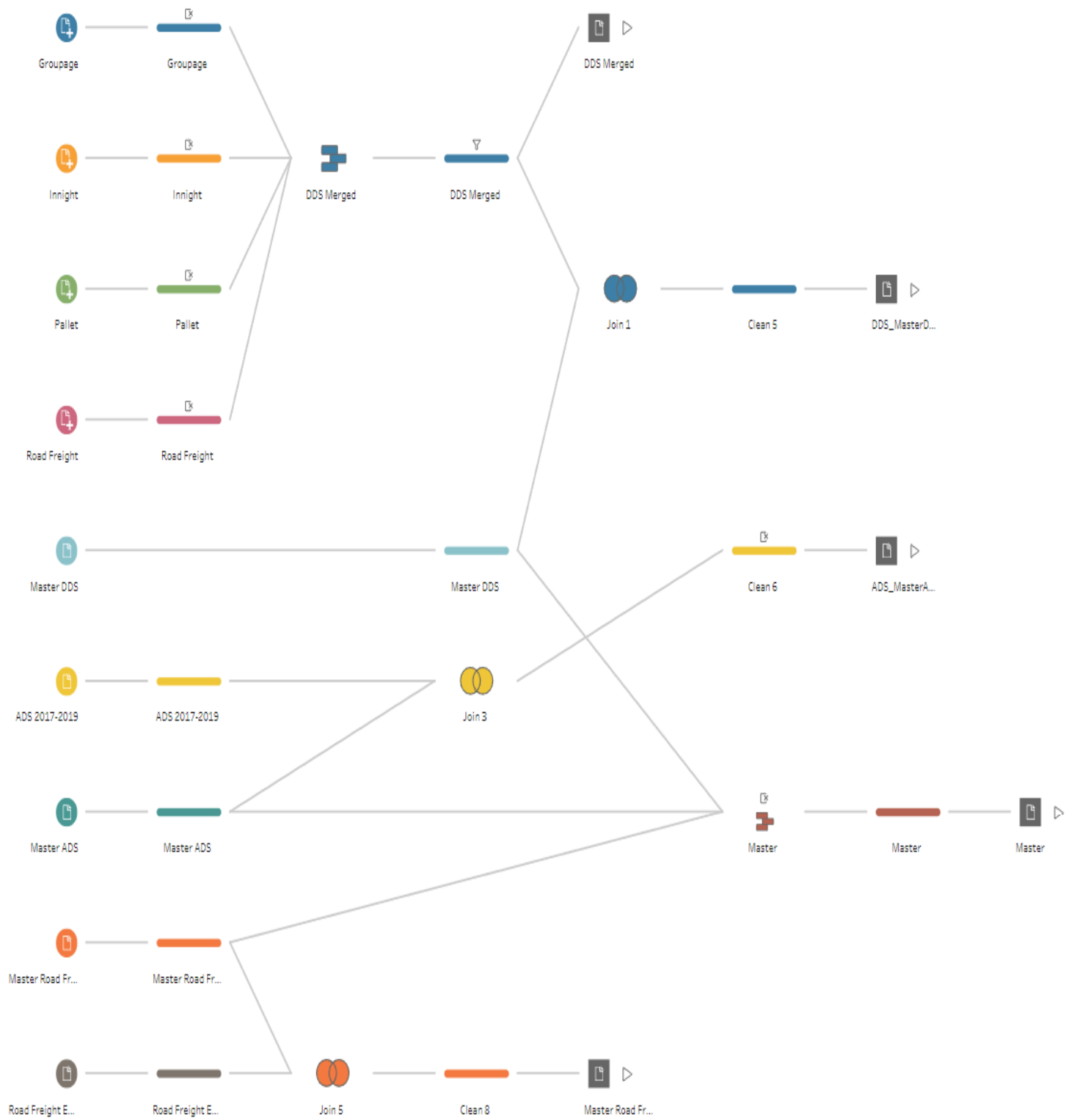
- Road Freight(R)
- Group Age(G) and Pallet(L)
- InNight(I)
- Courier and Express Worldwide(C)

Data Preperation

A dataset was given by our mentor, it contains the POSTNORD's data of April 2017 to August 2019. We basically used Tableau prep builder, which provides a modern approach to data preparation, making it easier and faster to combine, shape, and clean data for analysis within Tableau.

In the data preparation, we performed some data merging, joining and cleaning. For example, we horizontally merged the DDS file data which contains data dumps of different types of services of POSTNORD, such as Road Freight(R), Innight(I) etc. Which gave us a combined data, which we used to Join with another excel file from Master Data file. We also removed some columns and changed some column names to clean and make the data more understandable. Most of the insights came from the

Here is the flow chart of the Tableau Prep Builder that we performed for data transformation.



Data Analysis Process

After the data preparation, we performed Tableau desktop software to use the prepared visualizations to give insight and understand the data from that we give the analysis and recommendations from the data. We also performed forecasting in the time-series data for the future prediction of 2020 year. Basically, we tried to do the logistic company analysis on the basis of their industry segment, on the paid price, base price as well as geographic insight and on the different products of the PostNord's company.

In advanced analytics, we have done predictive analysis. Predictive analytics is used to make predictions about future trends or events and answers the question, "What might happen in the future?"

By analyzing historical data in tandem with industry trends, you can make informed predictions about what the future could hold for your company.

For instance, knowing that video game console sales have spiked in October, November, and early December every year for the past decade provides you with ample data to predict that the same trend will occur next year. Backed by upward trends in the video game industry as a whole, this is a reasonable prediction to make.

Making predictions for the future can help your organization formulate strategies based on likely scenarios.

In our project, we have done prediction of year 2020 trend by the use of Tableau Forecast feature. Forecasting in Tableau uses a technique known as exponential smoothing. Forecast algorithms try to find a regular pattern in measures that can be continued into the future.

Data Set Limitation

In this PostNord's dataset, there are few limitations such as, missing values, some of the columns in the dataset have similar types of name, written in different ways. For example in a country feature some row contains "DENMARK", some contains "denMArk", some contains "DenMArk". Which indicates the same country. Therefore, the rows are changed or manipulated to show the country name in a unified way. Other than that we can delete some unnecessary columns. In some files, such as in Easy Forward file, the data is not fully completed, which means in some file there is no 2017, 2018 data, only continued 2019 data since from that time they started to record that data from 2019.

Conclusion

References

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1. Tableau Visualization Reference Materials
<https://www.tableau.com/resources/reference-materials>
 2. Information Visualization: Perception for Design/Author - Colin Ware
 3. Storytelling with Data: A Data Visualization Guide for Business Professionals - Cole Nussbaumer Knaflic

References
