Designing Sales Dashboard of Europe Sales of Company

Introduction

Using data effectively has become a top priority for companies year after year in order to avoid competition and see opportunities.(Azevedo, A. and fri. 2021) This project focuses on improving sales performance and what kind of improvements can be made by using data analysis within an organization using the collected data set. In this project, European sales data is used and there are some audiences that a person who can visualize data can work with. In this project, (https://www.kaggle.com/datasets/mustafabayar/europe-sales-records) dataset is used. These studies focus on what kind of improvements can be made in the organization in a better and more effective way. Some audience examples and ways to use visualizations are; sales teams can focus on topics such as which products are purchased the most, which customers make the most sales, the effects of shipping time on sales, or what kind of sales are made in which regions. marketing teams aim to develop some marketing strategies that aim to increase specific or general sales performance, such as customer behavior or product segmentation by region. logistics teams work on how logistics performance is used in which regions, how products can be shipped faster, such as inventory and supply chain. Stakeholders usually want to see monthly and annual sales graphs. Product management teams examine product sales graphs. They focus on the most sold, profitable products and some of their features (transportation service, region) and do more data analysis to increase product performance. In this way, stakeholders can try to reduce logistics costs. This both increases the profitability of the company and reduces the sales price of the products.

Sales KPIs are indicators that measure sales performance in terms of how well previously determined goals are achieved. KPIs are specifically designed to enable more efficient and narrow-scope research on collected data.(Kolychev, V.D. and Shebotinov, A.A., 2019) The KPIs to be applied on the dashboard are; sales conversion rate, return on investment (ROI) for marketing analysis, net profit margin, sales per customer, sales by product segment, daily/weekly/monthly sales by region. In addition, the study can be made more specific by creating some calculation fields. For example, if stakeholders want to investigate average sales per region, the analysis can be done by applying the following formula: Average sales

per region = SUM(Sales_Amount) / COUNT(Region) or stakeholders may want to investigate sales per customer because it is very useful in observing customer behavior.

The aim here is to visualize the organization with appropriate data and make observations and inferences focused on sales and performance increase. Focus is placed on separate areas for each department and strategic decisions are made based on separate data. Making future decisions that will facilitate the functioning of the organization and increase sales performance are among the expectations.

Problem Identification

Problems and calculations of data should be evaluated according to the targets and priorities of the stakeholders. Since each stakeholder will focus on different areas of the dataset, different targets will be used. For instance, when performing customer segmentation, customer behaviors should be investigated. In this research, the products purchased by customers, the categories of products, the number of orders in exact area/region and sales figures are taken into consideration to analyze. Furthermore, the region where the customers live is also among the data to be considered. According to the subject of sales forecasting, inferences are made according to the future by considering previous sales. Here, questions such as which category these sales come from the most, what kind of changes occur and in which time periods are questions that should be considered in sales forecasting. Of course, another contribution of future sales forecasting is its role in inventory analysis and making decisions for the future. On the other hand, inventory management is one of the major parts of company organization. The important elements of inventory management are sales in the regions and shipping times. After analysis, future sales will be forecasted, products will be grouped and accordingly, the inventory in each region contains sufficient products. In this way, ordered products are delivered on time, and shipping costs are optimized. In addition, inventory planning, which is made by considering future sales forecasts in warehouses will increase profitability.

Visualizations related to profitability and sales growth, where stakeholders are taken into consideration are important; sales graphs, new customer acquisition rates, trends, etc. These can be visualized with real-time graphs. Future predictions can be applied by applying data analysis techniques and using visualization programs such as Tableau or PowerBI. In

this step, questions such as how sales can be increased by applying certain algorithms and techniques, how inventory levels can be optimized or how sales can be increased according to seasonal products or how product marketing strategies can be made to which customers by performing customer segmentation are revealed by performing this data analysis. Analyzing and segmenting customers play an important role both in understanding customers better and in increasing sales. It is also taken into consideration when making marketing strategies. If the columns of the desired problems are not available from the received data, it is effective in defining KPIs with the desired formulas and getting appropriate answers to the questions thanks to customizable panels.

Visualization programs such as Tableau and Power BI allow stakeholders to better observe the data and gain insight into problems and make improvements. There is a process for transforming data into an insightful presentation. First, it is determined which data column is related to which other columns in the table and the data is combined with the database. Then, the process begins with data cleaning. In this process, repetitive data is removed, non-existent data should be filled and the data becomes suitable for analysis. In this process, columns that are not needed to be seen are removed. If needed, data types can also be changed. For example, order shipment data is converted to numerical format rather than text. This allows us to make calculations in a numerical sense. For example, if stakeholders want to research how much sales are sold per month, it is important to convert this data to numerical figures. If company wants to change the name at some points, aliasing is applied to the management. For example, in this dataset, ship mode has a total of 3 different versions; first class, second class and standard class. If stakeholders want to change this data to first, second and standard, the aliasing method can be applied. Calculation fields are used when making transformations to display the data as it wants. These calculations are data that we do not have in our column but have a formula that will be useful for us when making visualizations. It helps to find solutions and make visualizations when calculating profitability or problems such as how many sales there are from different customers. Another indicator that allows us to observe the data better, apart from calculation fields, is filters. The next step is normalizing and aggregating the data. Here, the data can be transformed into other desired groupings. For example, if the data is divided into categories, sub-categories can be revealed. Or the timeline can be changed to annual, monthly or even weekly. This allows visualization of changes in different timelines. Another step in this process is normalization. Here, for example, if there are two different datasets but the sales figures are

in different units, normalization is done and all numbers are compressed to the range of 0 and 1. In this way, a more efficient analysis environment can be provided.

Solution Finding

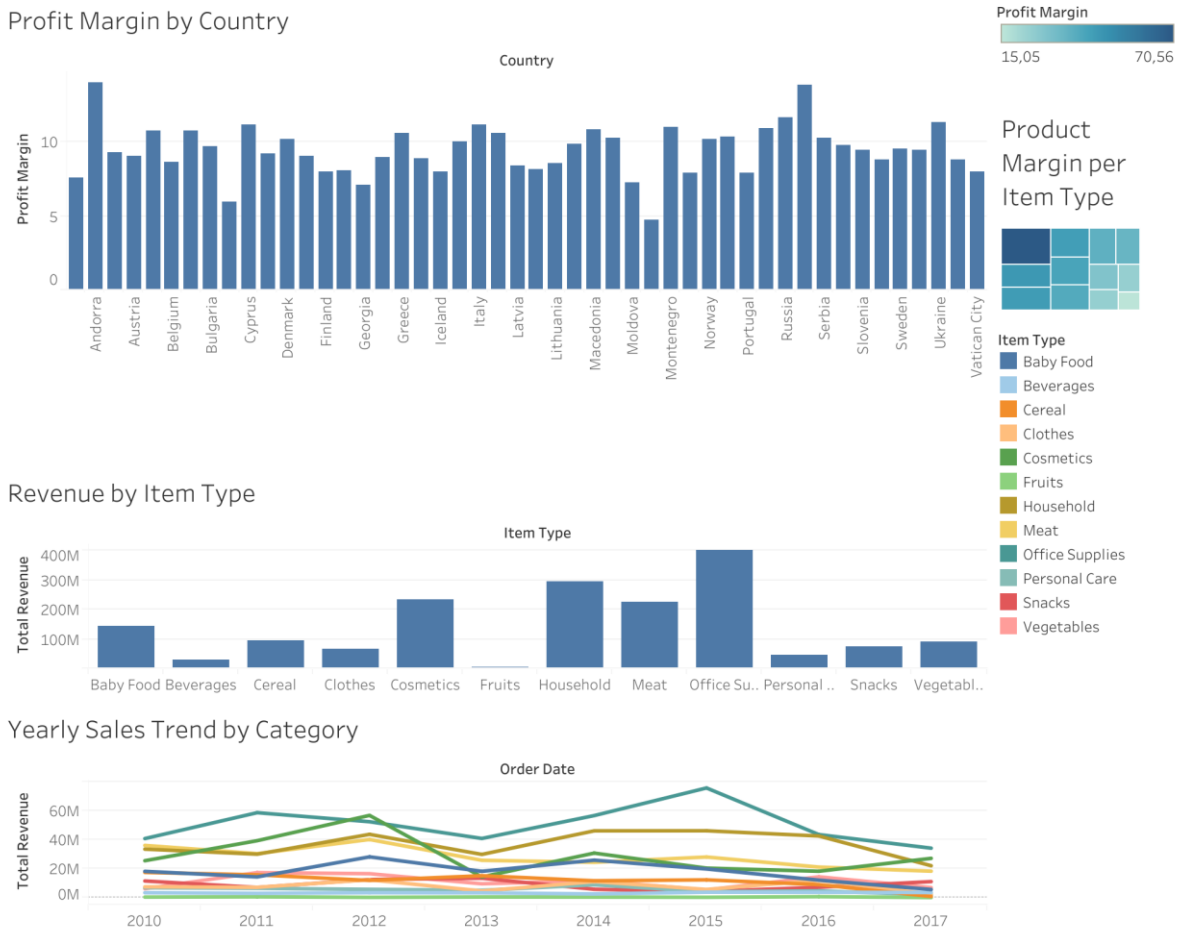
After Industry 4.0, the demand for business intelligence and data analysis-based technologies is increasing day by day. BI tools are used quite frequently today for taking old data, current analysis and future predictions. The table below shows the most used BI tools of the famous Gartner company in 2024. Here, Power BI, the software created by Microsoft, took first place, and Tableau desktop, created by Tableau software, came second. Both can be used in this project. Because they both have many common features. For example, they offer many different graphic options for modeling, calculation fields and KPIs can be created for more target-oriented analysis. Data analysis can be performed by connecting from many sources. However, Tableau is used in this project because it is more user-friendly and the visualization section has a more customizable structure.

These programs have several capabilities to obtain new inferences and information from the available data. These are data transformation, data modeling, exploration and visualization features. Data transformation allows cleaning and reshaping the available data.

Thanks to data exploration, new calculation fields, filters and parameters can be created from the data and new data can be revealed. Thanks to these new KPIs created, analysis can be further improved. In addition, these BI tools offer many data visualization opportunities. After the available data is arranged as desired, graphs and charts can be created with the data visualization feature to observe what the data can show more clearly and quickly.

Dashboard Design:

Tableau is a tool that makes it easy to analyze large data sets and gain meaningful insights with its user-friendly interface and powerful data visualization capabilities.(Purich, J. and fri. ,2023) When using this tool, charts and dashboards are created from the available data. These charts visualize the data.When designing a dashboard, both the titles in the tables available and the calculation fields created are used. Here are some of the KPIs that can occur and their advantages and disadvantages. First, sales by region can be visualized in a bar chart. This visualization is also effective in inventory optimization. Another applicable chart can be revenue per customer. This allows us to observe how much sales each customer makes. In fact, if stakeholders want to expand this chart, possible marketing strategies can be applied for each customer in the future by looking at which product groups they purchase. It can also seen the chart on the timeline by restricting this chart as weekly or monthly. Another visualizable chart is profit margin per product. Since the profit margin table does not exist alone, it can be designed using calculation fields in the dataset. In this way, how much each product earns can be visualized. But of course, there is a margin of error since there is no discount value here. Showing this chart on a heatmap map allows better observation. Another applicable technique is to estimate trend lines using a line chart. This chart allows observing future sales or customer behavior. This technique is used for changes in quarters. However, since sales of seasonal products are also included here, it can be misleading. Seasonal products can be filtered for improvement.



The first graph shows how much product is sold in which countries. This is clearly shown and sales strategies can be developed depending on the region. The limitations in this graph can make it difficult for the data reader if there are many countries. This graph can be misleading because it shows total sales, not how much profit is made. The revenue by item type graph shows how much sales each product category has made. Based on this graph, it is useful for determining the sales potential of each category, how annual or monthly trends change, or for performing inventory analysis. However, since this graph does not show the profit margin, it does not show how much profit has been made. For this, the profit margin calculation field can be used. When the total sales and profit graphs are considered, it is analyzed whether it is more appropriate to implement a marketing strategy for which product categories. The revenue by item type graph shows the sales graph according to product categories. Profit margins are not shown in this graph, but it can be viewed on a monthly and

annual basis for inventory analysis. In addition, distributions by country can be shown. In this way, inventory analysis can be done correctly. If the categories are sorted from largest to smallest, they can be understood more easily. Another graph is the category-based annual sales graph. In this graph, it is understood in which period sales peaked over time. In this way, seasonal product categories are distinguished. If there are too many product categories, this can make it difficult to read the graph.

Discussion

In real business life, tools like BI are extremely vital. They are useful for gaining opportunities in a competitive environment, taking new paths or sensing opportunities. BI tools are extremely effective in helping business users make vital business decisions such as reducing costs and increasing revenues. (Orlovskyi, D. and Kopp, A., 2020) Tableau, one of the BI tools, was used in this project. After the resulting graphics, thinking about questions such as what other improvements can be made with these graphics also affects the future performance of the company or organization. .Finally, if the results are to be evaluated, it is observed that more profit is made from sales made in countries such as Andorra and Russia. Considering this data, it can be aimed to increase sales by making marketing strategies in these countries. Focusing on the countries that bring the most profit has a positive effect on the general performance of the company. As far as can be observed in the second graph, the fruits category is almost not selling. The reasons for this can be investigated and targets can be made to increase performance. In the other graph, it is observed that the baby food category products are sold with a very high profitability. There is no doubt that the studies aimed at increasing sales in this category will increase the performance of the organization in a very positive way.

References

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