Retail Store Analysis

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Abstract

This article provides the brief introduction to the retail store analysis in the USA. The primary aim of this article is to focus on District Managers Monthly sales report and District Sales report of USA chain Using Microsoft Power BI.

1. Introduction

Retail sales are expected to grow around 4 percent in 2018 as merchants continue the momentum of a strong holiday season and benefit from tax cuts, as per the report of National Retail Federation. Retailers reported 3.53 trillion dollars in sales last year, according to preliminary estimates from the U.S. Census Bureau. Hence Visualization report is necessary to monitor the performance of each chain so that low performing chain can be targeted and help them to improve. Retail Store dataset aims to find the trend of shopping done by the customer concerning chain and the department in which more items are sold, District Manager performance of sales from each chain concerning current and previous year. I will be using Microsoft Power BI for analysing and visualising Retail Store dataset.

2. Methodology

The methodology of data Visualization requires multiple steps such as a source of the dataset, data processing, understanding the data and its relationship, analytical task.

2.1. Source of dataset

The Retail Store Dataset was downloaded from Kaggle website.The Dataset consists of several features which state some general information about the retail store in USA, such as District details(like manager name, district name), Store details(like store name, number, postal code, size of the store, store open year, store target), Sales details(like total variance of last year and current year, total sales of last year and current year, average unit price of previous and current year), Item details(like item category, buyer), Time details(like fiscal year, fiscal month, date).

2.2. Data Processing

On analysing the dataset, I found that dataset was not containing any missing value in it. But I noticed that this dataset includes five tables that are District, Store, Sales, Time and Item tables. Hence I started to analyse and understand the data and its relationship with other table data.

2.3. Analytical Task

- Identifying the total sales in a year by a district
  This will help the company to analyse the total sales of all district for each month in the USA concerning District manager.Because of this visualisation company can attend and support the manager with low performing to boost the sales for next year.

- Identifying the total sales in a year by a store
  This will help the company to analyse the total sales for a year of each store of a District in the USA.Because of this visualisation manager can attend and help the store manager with low sales to boost the sales for next year.

- Comparing the total sales of the current year with the previous year
  This will help the company to analyse the total sales of all district for current year concerning to last year. Because of this visualisation store manager can set a goal of high sales for next year.

- Identifying the total sales in a year by category of an item
  This will help the company to analyse the total sales of an item for a year for each store. Because of this visualisation store manager can order huge volume of an item with high sales rate and attend and help in improving the marketing of an item with low sales rate.

- Identifying the total sales in a year by an Allan Guinot
  This will help the company to analyse the total sales for a year by Allan Guinot. Because of this visualisation company can understand the performance and sales of stores which is managed by Allan Guinot and which will also help the company to decide the hike in the salary of a manager concerning his

performance.

3. Approach

Visualization of the Retail store dataset is done using Microsoft Power BI tools. Power BI is a suite of business analytics tools to analyse data and share insights. The initial step is to import the retail store dataset to Power BI and then to establish the relationship between five table data that is District table is related to Store table with DistrictID (one to many relationships), and Store table is related to Sales table with LocationID (one to many relationships), and Sales table is related to Time table with ReportingPeriodID (many to one relationship), and Sales table is related to Item table with ItemID (many to one relationship).

Visualization is performed in four different dashboards with multiple visualisation graphs in each panel. Name of the first dashboard is Overview which provided visualisation information on the overview of Store, Total sales by the District manager and Fiscal Month and geolocation map of each district.

Name of the second dashboard is District Monthly sales which provide visualisation information on the Total sales by store by all District manager, and they can be filtered using checklist box next to graph to visualises the total sales of the store for each district manager. Next chart contains the information of total sales of an item category in a year along with the comparison chart of total sales for the current and last year for all District in the USA and can filter for an individual district manager.

Name of the third dashboard is District Sales Report of Allan Guinot which provide similar visualisation information as the second dashboard but only for district manager Allan Guinot.

3.0.0.1. Color

Color is one of the Visual Encoding. For this dataset, an element of each variable is represented by the different color by manually assigning different shades of color from the tool for the total sales for different district manager. So that person who views the visualisation graph can easily understand data.

3.0.0.2. Size or Length

Size or Length is also one of the Visual Encoding. For this dataset, map graph is visualised where a person can zoom in and out of the map to see the store and their location. And in another chart, length of the bar chart indicated the values of the total sales for different district manager of the year.

3.0.0.3. Brightness

Brightness is also one of the Visual Encoding. For this dataset, when the user clicks on any particular data, i.e. selection of single district manager from a list of all district manager, the visualisation of selected manager is highlighted with high intensity.

3.0.0.4. Motion

Motion is also one of the Visual Encoding. For this dataset, when the user moves the cursor on comparison graph of total sales for the current and last year, the tooltip is popped with filtered data, because of the continuous data in dataset user can move the cursor from starting of the year to the end.

3.0.0.5. Filter

One of the significant implementations of this dataset is filtering; a user can filter the data for a graph for the total sale for a year by District, where the user can select and check the sales values of each District manager from the chart.

4. Visualization Graphs

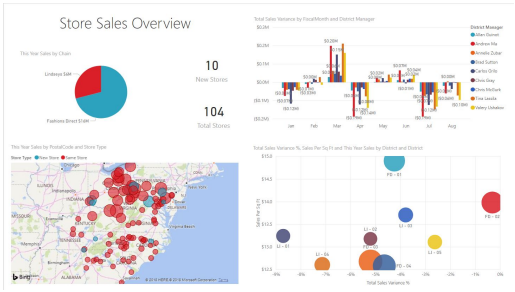

Figure 1: *Store Sales Overview*

Figure 2: *District Sales Report for Allan Guinot*

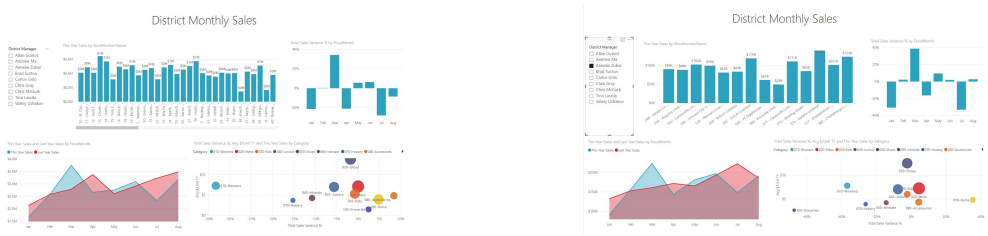

Figure 3: *District Monthly Sales*

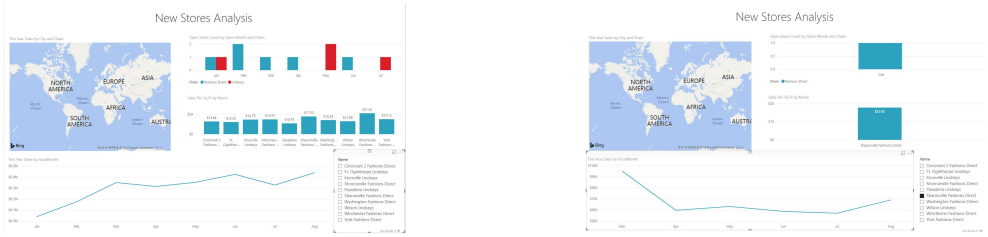

Figure 4: *New Stores Analysis*

5. Conclusions

The Visualization graph of retail store dataset will provide insight knowledge of data to the user who can't understand the data. Visualization is one of the best and easy ways for a human to understand. From the above visualisation, we can infer that total sale for the year by the district which has multiple stores in each region which is also managed by an Allan Guinot has a better sales for current year than Last year. By viewing data user could not have understood whether Allan Guinot sales was better or not, but when the same user sees the visualised chart of same data he can easily decide or understand that Allan Guinot performed well in sales compared to last year.

6. Reference

https://www.forbes.com/sites/melissaanders/2018/02/08/retail-industry-poised-for-more-sales-growth-in-2018/#785d9ff44fa7
https://powerbi.microsoft.com/en-us/what-is-power-bi/
https://www.kaggle.com/