Global Sales Data Analytics

LITERATURE SURVEY

ABSTRACT

In the meantime, sales of the businesses are rising more and more. Companies want to trace their sales and their advancement. The entire data must be found and stored within the database. They have to see their company's expansion. The company wants to understand where they stand in comparison to different companies. Since this data can be in huge amounts, estimating the sales prediction is nearly difficult. Soon these terms, the physical estimation may become time consuming. Considering this problem, we've proposed the analysis and visualization of the data. Visualization is the graphical depiction of data with the help of graphs, tabulations, charts by which we could realize company sales. Using data visualization, we could form an opinion on a company's sales and sales by different salespeople. So, we've used a web application to integrate both the data analyzed as well as present that data to the end user with a simple user interface.

I. INTRODUCTION

Nowadays, many companies have started to exist and a few of them have grown to top positions. Some companies have very large amounts of data while some small companies have fewer amounts of data. This paper aims to research the company's growth in terms of the sales of the company's products. The first aim of the paper is to make a web application that analyzes a company's sales data of varied products. The main focus here is to read and analyze data to produce insights and the company's overall sales. Retail stores sell products and gain profit from it. There can be a network of stores of a company located at different geographical locations, the company would find it difficult to understand the customer needs and market potentials at these various locations. In this work, we will be using the sales data of a company to understand the factors affecting the sales, for example, the unemployment rate, popularity of product, and holidays in the different stores located at different locations, so that the resources can be managed wisely to maximize sales and earn maximum profit. These analytics will help companies to understand market conditions of the various factors affecting sales. For example Diwali holidays would induce a spike in sales and companies can better prepare for those time intervals. Thus, customer demands can be observed easily based on the above factors. When the data is properly stored, managed and analyzed, the owners will start to see patterns, insights and the big picture of the company, and accordingly the required suitable actions can be taken. This will also help to optimize the company's operations and also help in maximizing sales and profit. Additionally, this data can be used to forecast future sales of a company in the coming time so that the retailers can have a clear understanding about the company's future. This analysis is going to be effective if we use graphs and charts. This process is named Visualization. Manual Visualization of knowledge may be a time taking process. There is already some software that performs this task, but there are many disadvantages. Software like Jupyter Notebook can't be used on mobile phones whereas websites are often accessed using mobiles.

II. PROBLEM FORMULATION

Every company would want a way through which they can get an idea of the sale of different products in the company, and at the same time they could get analytics and visualization of sales by different salesperson in the organization and also get analysis of whether the total profit matches with the number of salesperson in the company. There are some existing softwares, that helps businesses track and manage customer interactions and sales of the company. In almost all of these softwares major problems were that the learning curve was high, they were paid and required skilled employees to use them.

III. LITERATURE REVIEW

Analysis of sales data of a company or retailer has been becoming a widely discussed topic. The sales data can consist of many records, and filtering of sales data to find meaningful intuitions are common techniques in sales analysis. Tools like dashboards help managers and owners in visualizing aggregated data. Some tools usually show the items that are sold by different sales' points. To understand data by visualization was used as early as 1137. In all fields, there has been vast Development in visualization techniques. Examining information and data visualization help to visualize and express ideas in architecture. With the coming of computer simulation visualization pertinence has been faster. Visualization of data is used to present design data with the aid of drawings and diagrams and data is usually conceptual or special, we require scientific visualization techniques like charts and graphs, etc. Visualization should have the power to present multidimensional data and it must be synergistic and permit efficacious communication. Some researchers focus on the tools used for data analysis. They highly focus on how easy it is to use the dashboard, create connections and store data in databases and ease of sharing information . Dashboards are being widely used to visualize the sale amount by the salesperson on a bar graph with different colours. Sales by salespersons and sales of products are also visualized on the same application. The way the human brain processes information, presenting insights in charts or graphs to ascertain significant amounts of complex data is more accessible than relying on spreadsheets or reports. Analytics offer a user with an intuitive, detailed and simpler way of conveying critical concepts universally – and it's possible to experiment with different scenarios by making tiny adjustments. Recent studies discovered that the use of visualizations in data analytics could shorten business meetings by 24%. Moreover, a business intelligence strategy with visualization capabilities boasts an ROI of $13.01 back on every dollar spent. Therefore, the analysis and visualization of data is critical to the sustained success of a business and to help the business yield the foremost possible value from this tried and tested means of analyzing and presenting vital information.

IV. PROPOSED MODEL

In existing systems, there is a need to install softwares to analyze and visualize the sales data, users need to shift between different applications and it takes more time to visualize the data. Since, these softwares cannot be used from a mobile phone, there is a need for a computer desktop and installing these software which in turn requires space. To overcome the above disadvantages, we are proposing

this paper. The main aim of our research paper is to design and develop a web application which can help companies and retailers to analyze and visualize enterprise sales data in the form of graphs. Since we are developing a web application for this purpose, we do not need any storage space as once deployed the application can be used by any device with an internet connection. Using websites, we can see our output quickly. In this application, there is no need to install any software since everything can be accessible on a device with internet connection. There is no need to shift between applications. It is a faster process as we can analyze in less time. The primary aim of our paper is to develop a web application using which a company or a retailer can analyze and visualize the sales data and also compare daily sales by different salesperson.

V. METHODOLOGY

Data Science

Data science is becoming a very essential part of the industry in the present time, considering the vast amount of data that is produced. Data science has become one of the most heated topics in the industry these days. The popularity of data science has grown over the years tremendously, and a lot of companies have started practicing data science techniques in order to grow their business and increase customer satisfaction. Data science is a branch of computer science and mathematics that deals with large volumes of data using various modern tools and techniques to find hidden patterns, derive meaningful information, and make decisions that can be helpful in a business. Data science uses statistical concepts, algebra, and probability theory to create complex machine learning algorithms that help in building models that can be used to predict future outcomes based on previous experiences. The data used for building models and analysis can be from multiple sources and present in various formats.

Data Analytics

Data analytics is a process using which we can examine data sets so as to seek out trends and draw conclusions about the knowledge they contain. Increasingly data analytics is employed with the help of specialised systems and software. Various data analytics technologies, tools and techniques are widely utilized in commercial industries to enable organizations to form more informed business decisions. It's also employed by scientists and researchers to verify or disprove scientific models, theories, and hypotheses. We have used data analytics in our application to get intuition of sales data of products sold over a period of time and check the performance of each salesperson in the company on a daily basis. The application also helps the owner to get the visualization of product sales in form of charts and graphs, and sales comparison of each salesperson. The end user can even filter the visualization based on date and time of sales, for example, he can see the graph for sales of products in a particular month of a particular year. End user would be able to see various aspects of the sale, for example, the number of total sales, maximum profit from a sale, minimum profit from a sale, mean profit from all sales, median of all sales etc. Through the use of data analytics initiatives businesses can increase their revenues, improve the efficiency, optimize marketing campaigns and customer service efforts. It also helps businesses to quickly see the emerging market trends and gain a competitive edge over rivals.

Data Visualization

Data visualization is the presentation of data in the form of an infographic, chart, diagram, picture, and so on. It is also used as a reporting tool, and helps to present an appealing visual overview of complicated data. Data visualization unveils patterns, trends, outliers, and correlations in your data. Data visualization also helps businesses and developers easily understand the meaning of data to drive business decisions. Since the application is a full stack data science application and a combination of data analytics and data visualization, we have used various data visualization techniques like histogram, bar plot, line graphs, etc in the application. The end user can see sales of products in form bar graph, see the profit earned in the form of bar plot and line graph on a daily basis. Users can also apply filters and see the visualizations of the data between two dates. Data visualization is broadly classified into different types such as Scatter Plots, Pie Charts, Histogram, Bar Graphs, Line Graphs, Heat Map. In the application Bar graphs, Line Plot, Histograms have been used. The tools used to create data visualizations in the application are Pandas, Matplotlib, Seaborn.

VI. CONCLUSION

With the re-emergence in demand in this day and age for methods that can convey large amounts of data in a simple and understandable manner, data visualization keeps proving its status as one of the top techniques that helps people in understanding and categorizing their data by summarizing and presenting it in a simple and manageable way. So to analyze enterprise data in a simple and understandable manner a web application is developed. It is an online tool to visualize enterprise sales data. It can be used to compare sales of different salespersons and can be used to know the growth of the company by visualizing sales data of products and sales by different salespersons. Since we are plotting a bar graph for salespersons sales, we can see how a salesperson is competing with other salespersons. Here it takes data of product sales as input and depicts a graph in a short amount of time as manual prediction of huge data is complex. Moreover, manual prediction can result in huge errors, data mismatch, and data can even be missed.

VII. REFERENCES

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PRESENTED BY :

➢ **VISHAL SRIVASTVA (TL)**

➢ **MOHAMMED YOUSUF AB (TM)**

➢ **NAZIM ALI M (TM)**

➢**MOHAMMED HASHEEM N (TM)**