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A Case Study- Visual Analysis of Sales Records Using TABLEAU

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Abstract: *In this decade the new ecosystem of needs skills and tools for self-service analysis is developed for various business domains. So the need of maintaining the data records and performing data analysis tasks on it for further decisions to improvise business process operations. There is a need to gather various sales records that make it easy to measure monthly sales performance by product segment and by product category. The data gathered is stored with the help of an excel sheet which is a fast and reliable source to maintain sales records. BI analysts can use a wide variety of business intelligence BI tools such one is Tableau which gives them more flexibility in representing the results. Here as sales records are vast information to be stored and it needs to be formatted in some order. Tableau a visual analysis tool helps to measure sales targets from the whole dataset easily and gives the results in the form of desktop view very fast. These visual views can be used further to achieve the best sales targets in the future.*

Keywords: Visual Analysis, Tableau, Sales data, Business users, Self-Service Analytics

I. INTRODUCTION

The Tableau is a new technology, can be used for sophisticated analysis in any business domain. Data Scientists and Business analyst can get answers fast and unanticipated insight through Machine Learning, Statistical analysis, natural language support and smart data preparation inbuilt inside tableau Business Intelligence tool. Sales data in excel format is uploaded in tableau for further visual analysis in this research study [8],[9].

II. LITERATURE REVIEW

Literature review is conducted in two consecutive phases on the visual analytics research area. Initially, Bibliometric analysis is conducted on the broad topic area to identify the spread of the research region [7]. Based on the results captured from web of science tool [10], a detailed literature review conducted to find the research gap and significance of a new method in the area of visual analytics.

2.1 Bibliometric Analysis

Tool used is web of science, keywords provided is visual analytics , for all subject areas , period considered is from 2017 to 2020. This search provided me with 304 articles which was analyzed by the tools provided by Web of Science. The result of the analysis and the interpretation is as given below:

Bibliometric analysis on the broad area of study provided an overall outlook on the area of literatures. As technology advances the relative importance of the visual analytics also increases. It emphasizes the importance of study in the area of visual analytics. Even though the researchers in the area are not uncommon, we could find a reasonable scope for a new method. Detailed literature review is conducted their after on articles and inferences have been derived from search with keyword visual analytics AND tableau tool.

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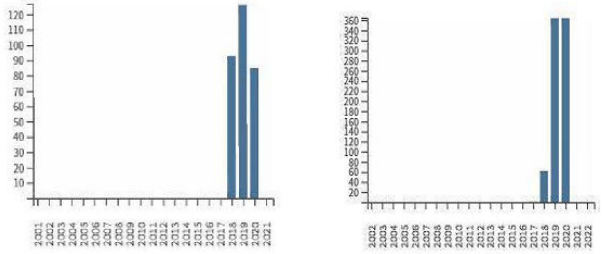
Figure 2.1: Bibliometric Analysis by Web of Science (Result1 –Citation report)



(A) Total Publications by Year (B) Sum of Times Cited by Year

Figure 2.2: Bibliometric Analysis by Web of Science (Result 2–Citation per year)

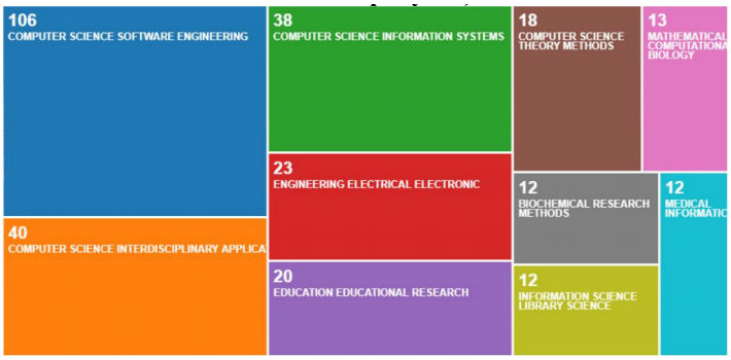
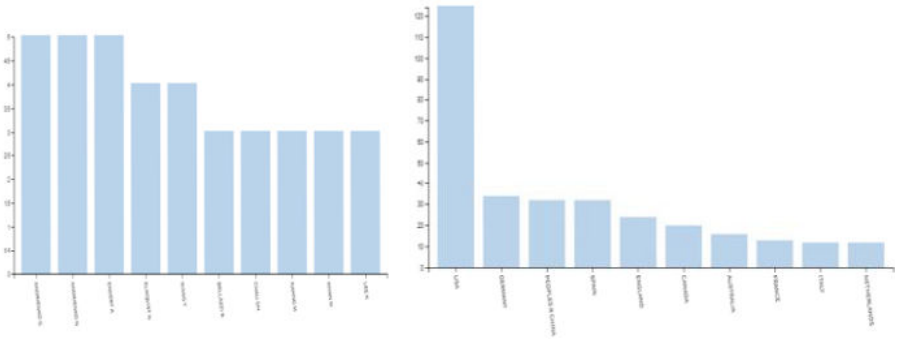


Figure 2.3: Bibliometric Analysis by Web of Science (Result3 –Documents by Web of Science Categories)



(A) Documents by Authors (B) Documents by countries

Figure 2.4: Bibliometric Analysis by Web of Science (Result4 – Documents By)

2.2 Visual Analytics Based on Tableau Tool

M. Kristi et al. (2014) presented Many Eyes and Tableau Public online visual analytics systems used for data analysis and sharing. Further authors also discussed usage patterns of existing database for shaping the DB design and

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implementation of new ones[2]. This way visual analytics tools can be used effectively to improve performance of regularly used techniques in Computer science and applications domain areas like database design and Big data. Nair et al. (2016), exhibits the effectiveness of visualization in extracting and presenting the vital facts from large database using different visualization tools like Tableau and D3.js and comparative analysis of two tools. Author has also discussed how Big Data problem can provide unnoticed solutions through visual means in the human-interaction friendly format using such tools[3]. Author also compared visual analytics tool with traditional graphics and charting tools and shown how older methods fail to draw the big picture from Big Data that consist of millions of records.

D.Shih et al. (2011) [4] has worked on new technique called as Paired analysis. This new approach in which a Visual Analytics tool experts works side-by-side with a domain expert. The Role of domain expert is to ask questions for which collected data from VA tool might address. Then the tool expert creates visualizations to help in finding patterns that might answer these questions. The author also concluded main advantage of Visual analytics tool that the short lag time between the hypothesis generation and rapid visual display of Data. Author has used biological datasets to demonstrate the utility and flexibility of Visual Analysis approach during this study.

A. Stirling et al. (2020), integrated visual analytics tool with electronic health record system which helps to get better insight, understanding into clinical care and management. Further organizing visual analytics tools into themes allowed informatics team to more efficiently provide visual products to clinical collaborators [6]. As discussed above work of health care domain can be performed better using visual analytics tool. It will result in faster decision making and end customer will be benefited in terms of time.

Goh et al. (2020) [1] worked with Tableau, a visual analytics tool for detecting potential accounting fraud using Benford's Law's first-digit test. These are few more domain areas like financial security and research, where one can utilize visual analytics tool to be faster and quicker in decision making. Smith et al. (2019) developed a dynamic visualization of data from a systematic review using Tableau tool which is then used to investigate potential benefits of a dynamic report. Committees received positive feedback for its potential benefit in future guideline development For this report received a runner-up award during the design challenge at the 2018 workshop on Visual Analytics in Health Care [5]. Researchers have done work in various domain areas like database management, Big Data, Health Care, Security and research using Visual Analytics tool seems very promising future with good performance in predicting specific targets or decision making.

III. Analysis Task (Experiment and Results)

I. Saving dataset in excel format in tableau [8],[9].
II. Creating a bullet chart for Category , Segment as dimensions and Sales as measures
III. Blending data by bringing Sales Target as measures
IV. Applying color code to charts to identify Categories and Segments those are above and below the target.
V. To identify trends and outliers adding year of sales to the View
VI. Adding filter for year so one can check data for one, more than one or all years data
VII. Finally create dashboard with this view and publish it.

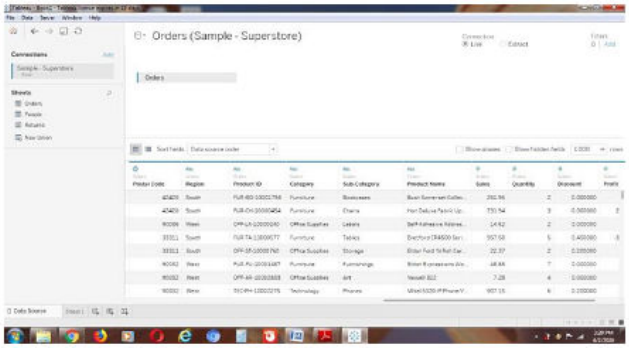

Figure 3.1: Use the Saved Sample in Tableau (Excel sample data as Superstore dataset)

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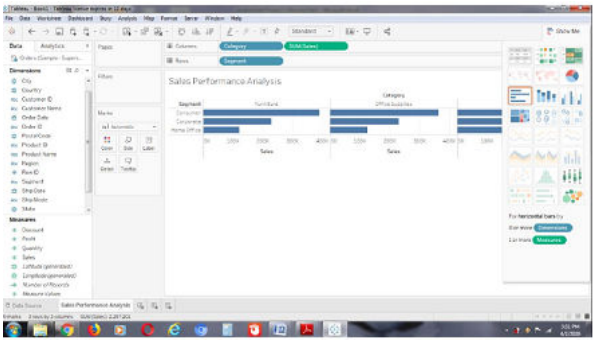

Figure 3.2: Created a bullet chart with Category and Segment dimensions and Sales measures.

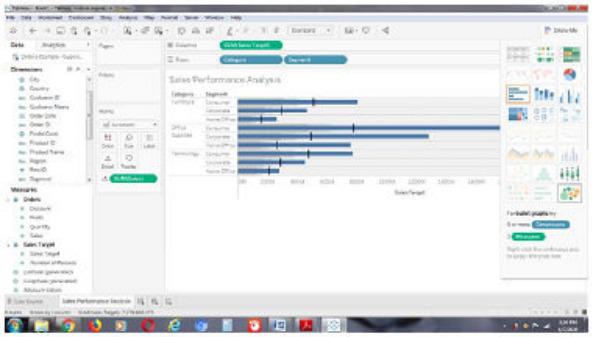

Figure 3.3: Blended the data - Sales Target data set to bring in the Sales Target measure.

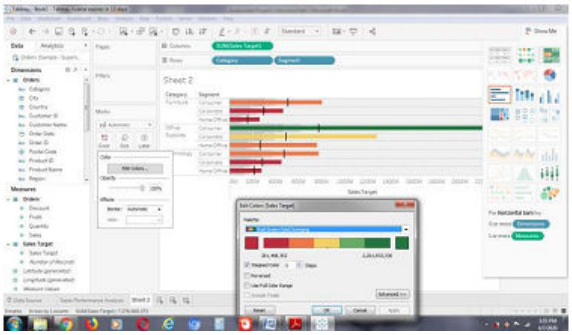

Figure 3.4: Applied Color code- the chart to identify Categories and Segments that are above or below target.

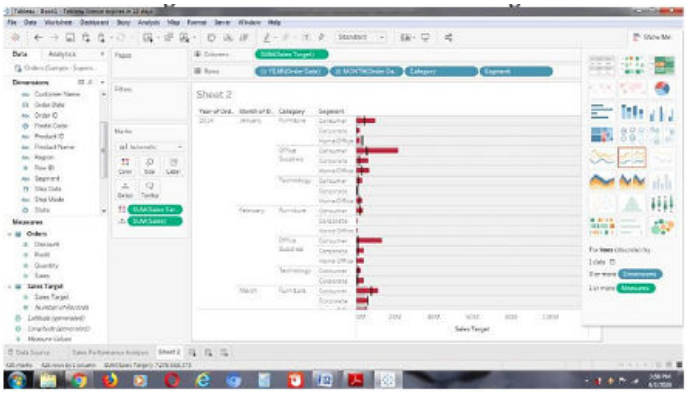

Figure 3.5: Added the year of sales to the view to identify trends and outliers.

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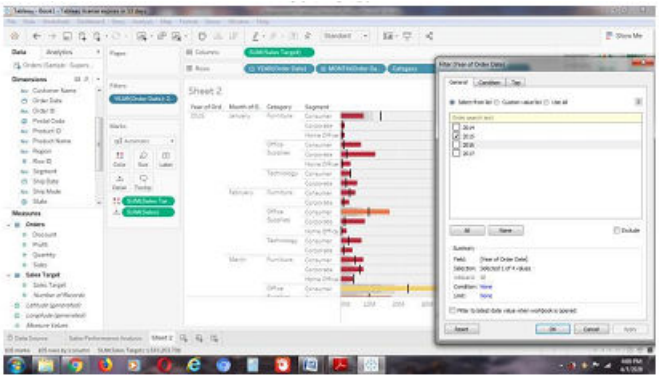

Figure 3.6: Added a filter so that the user can select one, more than one, or all years.

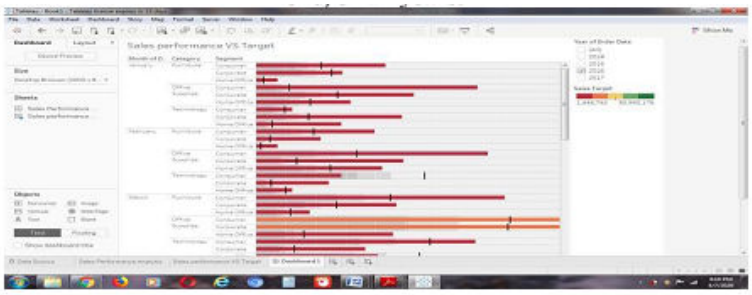

Figure 3.7: Created a dashboard

IV. Future Work

Analysis and prediction to specific situation with respect to sales order data can be thought and which may help to minimize the analysis efforts on complex data in future for Business organizations.

V. Conclusion

This paper emphasize on visual data analysis on sales order records data set. The paper address the usage of modern analytical tool Tableau on sales order Data set which focus on common requirements of any business record. The instances are highlighted below with the sample snapshots shown in Figure 3.1 to 3.7. Figure 3.1 shows the saved dataset with required attributes in tableau, Figure 3.2 to 3.7 shows various visual analysis task that have been done with Tableau. It is found that Tableau is effective in-terms of processing huge data sets when compared to traditional data analysis tools with respect to time and Visual results.

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