**IT-7113 Data Visualization**

**Lab 4**

**Harshita Agarwal**

**Part 2- Recreation of Dashboard from Superstore Data**

**Link used-** <https://www.youtube.com/watch?v=0BJnlfzb8Mo&ab_channel=BrandonGriffin%2CPhD>

**Mockup of Profitability Dashboard:**

A map of the united states

AI-generated content may be incorrect.

**Objective:** This dashboard is designed to track profitability and sales trends across different states of the US under different customer segments and product categories.

**Interactivity:** Users can filter data based on region, order date and profit ratio.

**Actions:** Users can select state on the map and the data in the dashboard will automatically adjust based on the state selected.

**Explanation of Mockup:**

1. **KPI Selection**

The KPIs at the top are the big numbers which provide a summary of business performance.

Best practices: I have displayed relevant KPIs only to avoid clutter and provide quick scan of essential financial metrics.

1. **Chart Type Choices**
2. Profit Ratio by Geography-

* This is depicted in the form of heat map.
* It helps visualize geographic profitability trends effectively.
* It helps easy identification of high and low performing states.
* Color gradient helps in better differentiation of profit ratios among states.

Best practices: Use of diverging color scales from orange to blue helps to highlight profitability differences among states.

1. Monthly Sales by Segment-

* This is depicted in the form of stacked area chart.
* Area chart helps to effectively show trends over time and helps in better comparison among segments than line charts.
* It demonstrates sales distribution across different customer segments.

Best practices: I used same colors across charts for familiarity.

1. Monthly Sales by Category-

* This is depicted in the form of stacked area chart.
* Area chart helps to effectively show trends over time and helps in better comparison among segments than line charts.
* It demonstrates sales distribution across different product categories- furniture, office supplies and technology.

Best practices: I used the same chart styles for all categories for better interpretation and comparison.

1. **Dashboard Layout**

* The dashboard is structured in a top-down hierarchy with KPI summary at the top, Profitability map in the middle, and detailed breakdown in segments and categories at the bottom.
* Filters are present on the right, and it provides deeper analysis.
* The dashboard focusses on clear actionable insights and avoids complexity.
* Consistent colors and chart types makes it easier to compare different segments and categories.

Best practices: I have followed F-pattern layout which follows natural reading patterns.

**Screenshot of the Dashboard:** Executive Overview of Profitability across different states of the US

A screenshot of a computer

AI-generated content may be incorrect.

**Objective:** This dashboard is designed to track profitability and sales trends across different states of the US under different customer segments and product categories.

**Key Metrics used:**

|  |  |
| --- | --- |
| **Metric** | **Purpose** |
| Sales | To assess overall business sales volume |
| Profit | To assess financial success |
| Profit Ratio | To compare efficiency across different states |
| Profit per Order | To evaluate profit earned per transaction |
| Sales per Customer | Indicates customer value |
| Average Discount | To measure effect of discount on product margin |
| Quantity Sold | To understand customer demand trends |

**Explanation of screenshot:**

* KPIs at the top helps quickly assess profitability and business performance.
* Heat map highlights profit ratio by state. Blue states indicate a positive profit ratio, while orange states indicate negative profit ratio.
* When a particular state is selected from the map then all other data in the dashboard adjust accordingly.
* Hover effect is added to the states in the map, showing profit ratios of all the cities of that particular state.
* The stacked area chart at the bottom visualizes monthly sales trends for different customer segments and product categories over the period of 2021 to 2025.
* The color coding in the area chart represents profitability, orange shows profitable sales while blue shows unprofitable sales.

**Link to Tableau Public:** <https://public.tableau.com/app/profile/harshita.agarwal6987/viz/lab4_17425942609580/ExecutiveOverview?publish=yes>

**Screenshot of the browser:**

**A screenshot of a computer screen

AI-generated content may be incorrect.**

**Part 3- Dashboard Critique**

1. **Design issues & suggestions for the dashboard in part 2**
2. **Overcrowded Layout**

Issues:

* The dashboard contains lots of KPI and filters making it overwhelming.
* The elements are not evenly spaced and not grouped properly, thus brings confusion.

Improvements:

* Elements can be aligned using a structured grid layout to provide a clear visual hierarchy.
* There are 2 charts with similar trends it can be simplified to give a clearer view.

1. **Inefficient Color Usage**

Issues:

* The blue and orange color in the area chart indicates sales profitability. There is no clear legend to explain it.
* The profit ratio color scale is inconsistent with the area chart. as orange color in the profitability map indicates negative profit ratio but in area chart its contradicting, causing confusion.

Improvements:

* The color scheme for profitability should be consistent across all charts.
* Clear legend has to be used indicating blue as “unprofitable” and orange as “profitable.”

1. **Lack of Context for KPIs**

Issues:

* The users cannot determine whether the numbers are improving or worsening, after looking at the KPI section.
* No YOY or MOM comparisons to show performance within periods.

Improvements:

* Green and red trend indicators can be used to highlight increase or decrease in growth.
* KPIs can include business performance indicators such as goal% achieved to provide a good summary to the executives.

1. **Filter placement & usability**

Issues:

* Filters are placed in a floating way rather being grouped logically making it difficult to adjust them.
* The date range is unclear and does not properly filter by year, quarter or month.

Improvements:

* Filters can be structured in a collapsible panel.
* Labeling of date filter can be done to specify “Select Date Range (Year/Month/ Quarter)

1. **Absence of data insights**

Issues:

* The dashboard presents data but does not highlight key insights. It has been left for users to interpret manually which is time-consuming.

Improvements:

* Dashboard should tell a story and clearly highlight key trends with headings such as, “Highest Profit in 2022” etc.

**Part 3- Dashboard Critique**

1. **Review of Superstore dashboard made by Priya Pradham**

**Screenshot of dashboard:**

A screenshot of a computer

AI-generated content may be incorrect.

**Link to the dashboard:** <https://www.tableau.com/blog/most-favorited-data-visualizations-tableau-public>

**Three things that I liked about this dashboard:**

Overall, the dashboard has clarity and has been organized very well making it highly effective for data-driven decision making.

1. **Clean and consistent design**

* The dashboard has a minimalistic and professional design with soft colors and structured alignment.
* It has visually appealing and easy-to-read layout due to use of consistent color and spacing.

1. **Logically grouped layout with proper benchmarking**

* The KPIs placed at the top provide an instant overview of business performance. It also has trend indicators which clearly shows whether numbers are increasing or decreasing.
* The elements of the dashboard are grouped logically into different sections such as Sales by state, sales by segment etc.
* All the charts presented in dashboards have clear indication of their benchmarks. This helps to analyze the performance and provides intuitive decision making.

1. **Interactive and user-friendly features**

* The date filter at the top helps users to easily adjust time range.
* The tabs on the top-right including Sales, Profit and Orders enable users to focus on specific metrics without cluttering the dashboard.
* Icons for exporting data and social media integration on the left panel enhances usability.

**Review of Superstore dashboard made by Pradeep Kumar G**

**Screenshot of dashboard:**

A screenshot of a computer

AI-generated content may be incorrect.

**Link to the dashboard:** <https://www.tableau.com/blog/most-favorited-data-visualizations-tableau-public>

**Three things that I liked about this dashboard:**

This is the most amazing dashboard I have seen yet. It is extremely intuitive, with user-friendly design, insightful data representation, and strong interactivity features.

1. **Clean and professional design**

* The dashboard has clean and modern look with good spacing. It enhances readability and prevents data overcrowding.
* It has clear hierarchy, making it easy to navigate.

1. **Comprehensive & well-structured data representation**

* The data presents sales performance across multiple dimensions, such as region, category, sub-category, and segment thus providing a holistic business view.
* The graphs are arranged in a hierarchical manner starting from broad categories such as regions and state and then drilling down to sub-categories and manufacturers making it easier to follow insights.

1. **Interactive and usability features**

* Filters such as year selections allow users to analyze data over different period of time.
* The hover-over tooltip provides additional insights without cluttering the view.

**Part 3- Dashboard Critique**

1. **Comparison of 2 additional Superstore dashboards**

**Screenshot of dashboard made by Tamas Szabo**

**A screenshot of a computer

AI-generated content may be incorrect.**

**Link to the dashboard-** [**https://public.tableau.com/app/profile/tamasszabo/viz/SuperStoreDashboard\_16850322961960/SuperStore**](https://public.tableau.com/app/profile/tamasszabo/viz/SuperStoreDashboard_16850322961960/SuperStore)

**Screenshot of dashboard made by Richard Irinyemi**

**A screenshot of a computer

AI-generated content may be incorrect.**

**Link to the dashboard-** [**https://public.tableau.com/app/profile/richard.irinyemi/viz/SuperstoreDashboard\_16786567037340/SuperstoreDashboard**](https://public.tableau.com/app/profile/richard.irinyemi/viz/SuperstoreDashboard_16786567037340/SuperstoreDashboard)

**Comparison Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** |  | **Tamas Szabo** | **Richard Irinyemi** |
| Design & layout | Pros | The dashboard utilizes a clean and minimal design, focusing on key metrics avoiding clutter. | Dashboard has well-organized layout, and elements are grouped logically to separate content areas. |
| Cons | It lacks hierarchical structure, without proper flow of information. |  |
| Functionality & interactivity | Pros | The dashboard provides interactive filters that allows users to customize views. Hover effect tooltips provides additional information without clutter. | The dashboard provides dynamic filtering options, allowing greater data analysis. |
| Cons | Lacks drill down capabilities for in-depth analysis. | Lacks capabilities such filtering through clickable charts for in-depth analysis. |
| Data presentation & clarity | Pros | Data labels are clear and legible, providing quick understanding. | Presents data in a detailed manner including KPIs, thus representing data from various aspects. |

**Part 3- Dashboard Critique**

1. **Best dashboard among the four**

The dashboard made by **Pradeep Kumar G** was the best among all the four.

**Screenshot of the dashboard:**

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AI-generated content may be incorrect.

**Link to the dashboard:** <https://www.tableau.com/blog/most-favorited-data-visualizations-tableau-public>

**Reasons for being the best:**

* The dashboard uses minimal colors ensuring legibility to the users.
* This dashboard is more structured and has better visual hierarchy than Richard Irinyemi’s dashboard. The layout follows a logical top-down approach, starting with overall business performance and then drilling down to regions, states, category etc.
* Filters are very intuitive and provides well-integrated user-friendly interactivity. While Tamas Szabo’s dashboard as it has interactivity challenges that requires users to explore which is time-taking.
* The dashboard focusses on only necessary components with right amount of white spaces.

**Part 4 – Own Superstore Dashboard**

1. **Mockup of dashboard and its justification**

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Goal: The goal is to provide a comprehensive overview of the company’s sales performance in different time periods, enabling stakeholders to assess revenue trends and drill down to product category performance to make data-driven decisions.

**Objectives and KPI selections:**

|  |  |
| --- | --- |
| **Objective** | **Key metric** |
| Monitor overall sales performance to evaluate business growth | * Total Sales * Total Profit * Total Quantity Sold |
| Analyze regional performance and identify growth opportunities | * Sales by US geography * Revenue by region |
| Analyze product categories to identify potential underperforming sub-categories | * Revenue by product sub-category |
| Sales trend and growth over time | * Monthly sales trend * YOY Sales growth * Min/Max Sales |

Interactivity: Stakeholders can drill down using filters based on year, customer segment and profit categories.

**Chart type choices:**

1. KPI over time

* This will be used for displaying sales, profit and quantity trends throughout the months for the selected year using line chart.
* KPIs will be represented as big numbers.
* It will help identify seasonal patterns and growth trends.

1. Sales by geography

* This is depicted in the form of heat map.
* It helps visualize geographic sales trends effectively.
* It helps easy identification of high and low performing states.
* Color gradient helps in better differentiation of sales performance among states.

1. Sales by region

* This is represented in the form of horizontal bar graphs.
* It will help to quickly compare sales across East, West, Central and South regions.

1. Sales by product sub-category

* This is represented in the form of horizontal bar graphs.
* It will help to rank top-selling product category through revenue.

**Dashboard layout and UI considerations:**

1. Important KPIs are positioned at the top of the dashboard for immediate visibility.
2. Interactive filters will allow users to customize the view dynamically for deeper analysis.
3. The elements are logically arranged in the grid to prevent clutter.
4. Red and green color coding in KPI trends will indicate area of minimum and maximum performance.
5. Consistent colors and chart types makes it easier to compare different segments and categories.

**Principles and best practices applied:**

1. Clarity and simplicity- Limited use of colors and concise labeling ensures easy understanding.
2. To-down visual hierarchy- Starting with KPI, followed by geographical and categorical breakdown ensures a structured flow and better readability.
3. Interactivity for deeper analysis- Use of filters helps users to drill down deeper into specific segments and categories.
4. F-pattern layout which follows natural reading patterns.

**Part 4 – Own Superstore Dashboard**

1. **Screenshot of Tableau dashboard with the explanation**

Name of the dashboard- Retail Sales Dashboard

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AI-generated content may be incorrect.

**Explanation of screenshot:**

* The dashboard provides overall business performance using key metrics such as sales, profit and quantity sold.
* The big number KPIs are shown along with their performance trend using line charts. YOY growth or decline can also be seen.
* The KPI line charts represents Current Year and Previous Year performance in dark and light green color respectively. The maximum and minimum performance are also presented in the form of green and red dots respectively.
* The heat map of Sales by geography represents sales distribution across different US states. Darker and larger circles highlight higher sales volume, making it easy to identify top-performing and underperforming states.
* Sales by region is presented in the form of horizontal bar chart and the values are represented in a descending order. With the highest performing region in dark green color present at the top.
* Sales by product sub-categories also highlight top-selling and poor-performing products. The highest performing product is present at the top.
* The dashboard has interactive features, where user can analyze performance across different years by using Selected year filter. The dashboard name is also made interactive as it updates itself dynamically as the year is chosen.

**Link to Tableau Public:** <https://public.tableau.com/app/profile/harshita.agarwal6987/viz/Lab4_Part4/RetailSalesDashboard#1>

**Screenshot of the browser:**

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