Enabling Dashboard Actions on Sub Totals and Grand Totals in Tableau
A White Paper

Ayesha Umaima
Data Engineer- Business Intelligence

Abstract:- Creating cross tabs with drill down capabilities to a detailed information is a very common and practical requirement by clients these days since doing so substantially aids in completing the root cause analysis. Although Tableau provides rich features to achieve the same, there are few limitations when it comes to applying dashboard actions over the Sub totals and Grand totals.

Read this whitepaper to learn these precise actions you can take within your dashboards to make them more informative, compelling, and effective. This Paper will help you achieve the drill down capability on Grand and Subtotals through a cool workaround that involves creating calculated fields, duplicating sheets, combining them in the dashboard and subsequently applying dashboard filter actions which displays a detailed list when a summary table total value is clicked without having to leave the dashboard.

I. INTRODUCTION

A dashboard action is an interactive element on a Tableau dashboard that is driven from the worksheets within that dashboard. They often have unique behaviour when the source or destination is a dashboard. Since a Dashboard has multiple view, these actions have a broad impact. Imagine you have a dashboard that contains three views about profitability: a map, a bar chart, and a table of customer names.

You can use a filter action to make one of the views in your dashboard, such as the map, the controlling view for the filter action. When your users select a region in the map, the data in the other views is filtered so that it relates to just that region.

Users interact with your visualizations by selecting marks, or hovering, or clicking a menu, and the actions you set up can respond with navigation and changes in the view.

Here's how you use the different types of actions:
- Filter: Filter data in a different view using data from one view to aid in analysis.
- Highlight: Marks of interest can be highlighted by colouring certain marks while dimming the others.
- Go to URL: Create links to other websites, files, or Tableau worksheets as external resources.
- Go to Sheet: Navigate to other worksheets, dashboards, or stories more easily.
- Change parameter: Allow users to alter parameter values by interacting with marks on a visualisation directly.
- Change Set Values: Allow users to alter values in a set by interacting with marks on a visualisation directly.
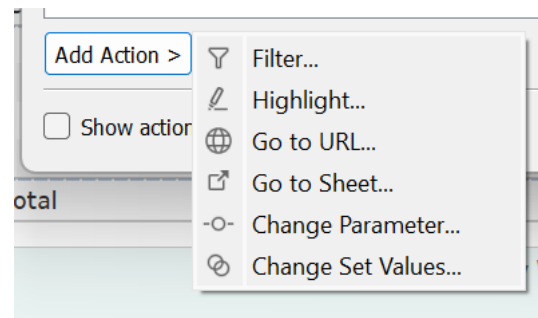

Fig 1: Dashboard Actions

II. PROBLEM STATEMENT

In the practical world, apart from the KPI's and visual charts almost every client requires an interactive summary table that gives the outline of their data and at the same time provide drill through capability that displays detailed business data when clicked up on.

These summary tables are mostly cross tabs created using 1 or more dimensions or measure. They group variables together and enable analyst to understand the correlation between the different variables. For example, if the data has different products segregated into categories and subcategories then the cross tabs can be enabled with the row/column subtotal for each category and a grand total for all categories.

Although Tableau provides use as filter option to drill from any cell in the cross tab to a detailed sheet, they do not filter the target worksheet from Grand Totals and Sub totals. In other words, when a Grand Total value is clicked (or hovered over) on a view in which a dashboard action filter is set up, the target worksheets are not filtered according to the total value.

Fig 2: Problem Statement- Subtotal and Grand totals cannot be drilled down.

When a menu filter is used, the hyperlink will still show up when the cursor is over a Grand Total but clicking the link will not work as intended to filter the display.

To address a very common Use cases that require filter action capability on several row, column subtotals and grand totals is a major challenge in Tableau and requires a workaround to achieve the same.

III.   PROPOSED SOLUTION

One solution to the problem is to duplicate the sheets and stich them together on a dashboard and apply the filter actions separately on each sheet. This method will not use the apply grand total and subtotal from the analysis menu but instead attain the same in a separate single sheet.

We will need some calculated fields to create a common column between the summary and the detailed

table that will help to filter on the clicked value. This way we can achieve the desired text table with the ability to filter another view on the dashboard.

IV.   APPROACH

To attain the above solution, we shall use the sample superstore data source provided by Tableau. The agenda is to create category wise sales summary. The cross tab should provide sub totals in each category Furniture, Office Supplies and Technology and a grand total for all.

Expectation is to filter and display a detailed table at the bottom of the dashboard when a specific value in the cross tab is clicked. When the value is unchecked, the detailed table should disappear from the dashboard. All the category sub totals, and grand totals should be clickable and provide a detailed list below.

Fig 3: Expected Results

❖ *Steps to follow:*
A. *Bringing in the data*
B. *Creating visualization for Category wise sales*
C. *Duplicating sheets for each category- main, detailed, subtotal, and subtotal detailed sheets.*
D. *Creating Calculated field to filter on required category fields.*
E. *Combining everything in a dashboard- Hide column names on sheets, titles and padding etc.*
F. *Dashboard Filter actions – Use exclude on clear option, auto generated actions, different actions for different drill down.*

A. *Bringing in the data:*

Open tableau and connect to the sample superstore data. This is the data source provided by Tableau in excel format and can be browsed in our own device under my tableau repository folder. The file has 3 tabs Orders, people and returns, to make it simple we shall not use any joins and relationships to bring in other tabs and stick to our problem statement. For this use case, bring in the order table in the logical layer of the data source interface.

Check the Extract radio button for a better performance and since the data is already clean use of the interpreter can be skipped.
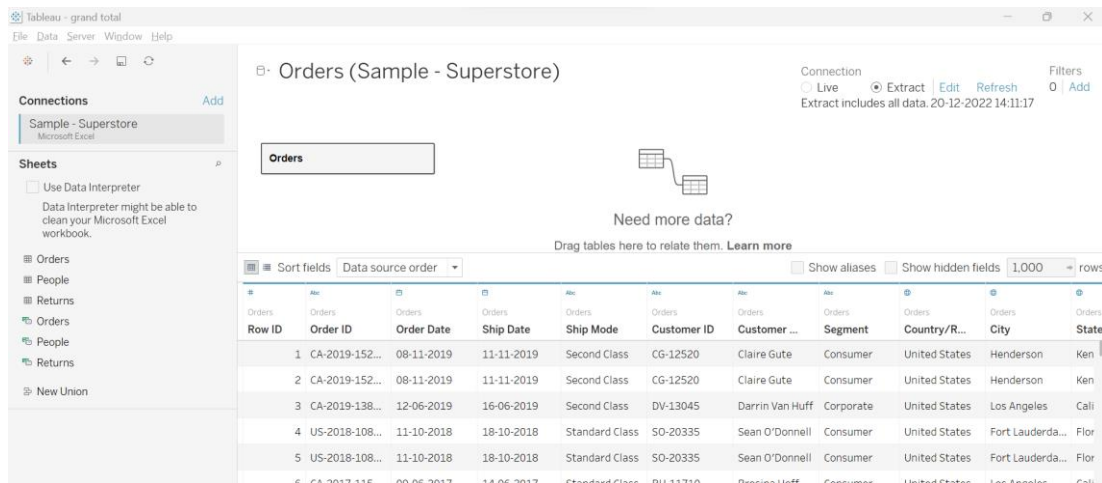

Fig 4: Bringing in the Data

B. *Creating visualization for Category wise sales:*

A cross tab can easily be achieved for all three categories in just few click in a single sheet. Just drag and drop the Category, subcategory on the rows and Sales on the text. Now navigate to the analysis menu and select Totals. This will give the entire text tab in a single view; however, this will not meet our purpose of achieving a drill through due to the limitation on totals.

To create a main cross tab sheet, simply drop the Category and Subcategory on rows and filter on category required, in the below image furniture was filtered. Likewise, 4 table should be created for other 2 categories office supplies and Technology each.

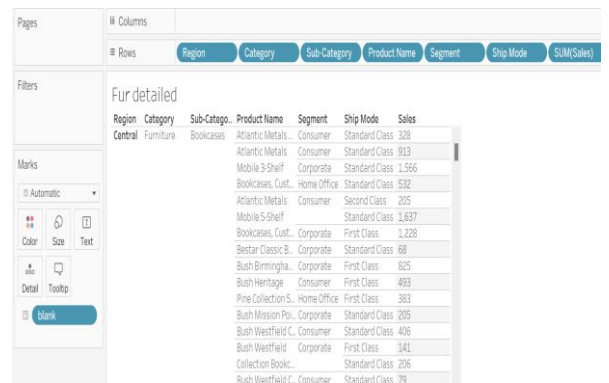Below images signify 4 tables for furniture category. Same should imply to office supply and Technology.

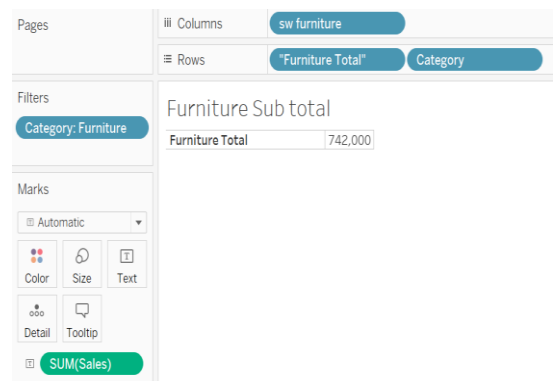Fig 6: Detailed sheet Cross tab for furniture Category

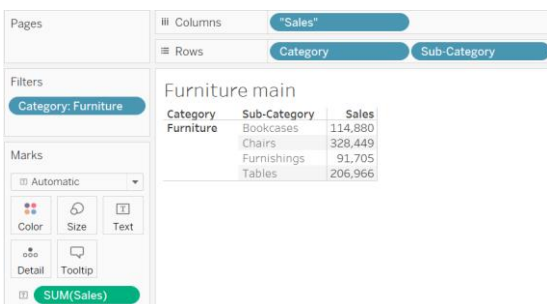Fig 7: Furniture Sub totals Cross tab

Fig 5: Main sheet Cross tab for furniture Category

Fig 8: Detailed Sheet Cross tab for Furniture Sub total

C. Duplicating Sheets:

Once we have created the required sheets for furniture category, we can duplicate the same for other two categories with some minor changes in filters and no changes in detailed sheet. Therefore, for a workaround we will create 4 separate sheets per category and 2 sheets for a grand total summary and detailed.

- *Main Sheet*: For the category say furniture we shall create a Main sheet that displays the furniture sales summary only without totals. Add category on filter shelf to filter only furniture data.
- *Subtotal Sheet*: A sheet with only the total of furniture sales. Add category on filter shelf to filter only furniture data.
- *Detailed sheet*: A sheet with all required columns like Category, subcategory, Region, product name, segment, ship mode etc. that will be displayed when the main sheet is clicked.
- *Sub total detailed sheet*: A sheet with all required columns like Category, subcategory, Region, product name, segment, ship mode etc. that will be displayed when the sub total sheet is clicked.
- *Grand Total sheet*: A sheet that will only display the grand total of all categories. Simply drop sales on text and a "Grand Total" pill on rows.
- *Grand Total Detailed Sheet:* A sheet with all required columns like Category, subcategory, Region, product

name, segment, ship mode etc. that will be displayed when the Grand total sheet is clicked.

D. Creating Calculated field to filter on required category fields

We need 4 calculated fields in this scenario, 3 per category sub totals and 1 for the grand total.
a. Create a new calculated field for each category with the given formula. This will create a Boolean field. [Category] = "Furniture". Place them on subtotal sheets.
b. For grand total create a text calculated field with simple text "Grand Total and place on columns.
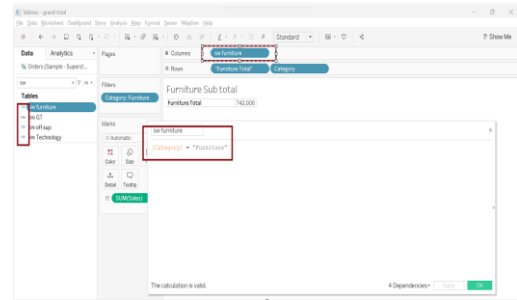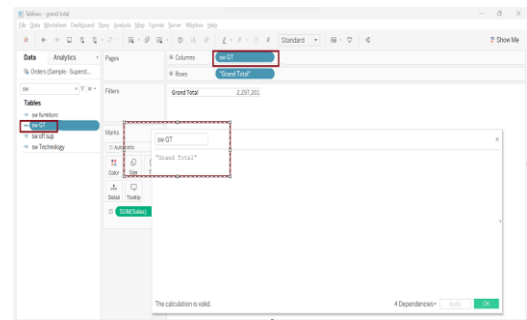

Fig 9 Sub total Calculated field

Fig 10 Grand Total Calculated field.

At the end of 4th step, you should have 14 sheets 12 for 3 categories and 2 for grand total. The following sheets should be present in your workbook. See image for reference.
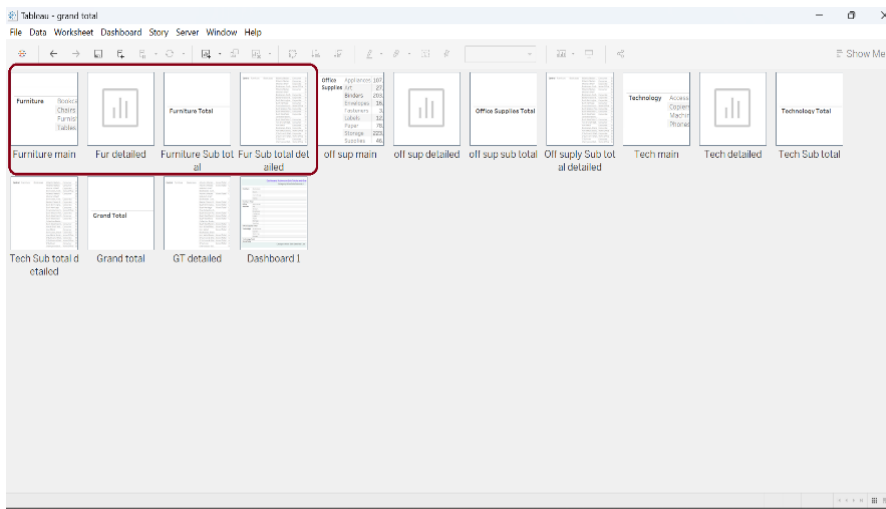

Fig 11: Sheets after duplicating

E. *Combining everything in a dashboard-*
Hide column names on sheets, titles and padding etc. Place all required sheets and objects on dashboard and implement formatting to make it look seamless.
➢ Open a new dashboard with Default size, choose a titled layout for the placement of objects

➢ Place a text box and provide Dashboard title and a subtitle and format it accordingly.
➢ In a vertical container, place all the first sheet for furniture summary and below it places the sub total sheet in a way that aligns with the summary table.
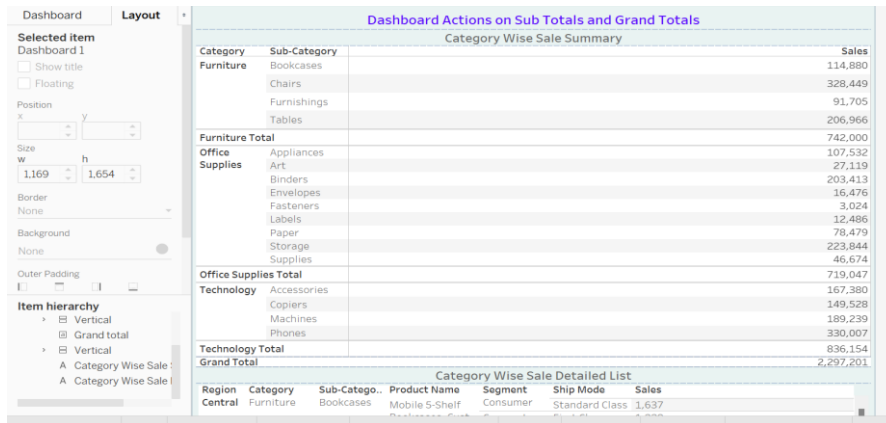➢ Similarly place the Office supply and technology category sheets and place sub totals beneath them.

Fig 12 Combining sheets in dashboard

➢ Now place the grand total sheet below all the sheets.
➢ Hide titles for all sheets.
➢ Adjust alignment for all sheets so they look together
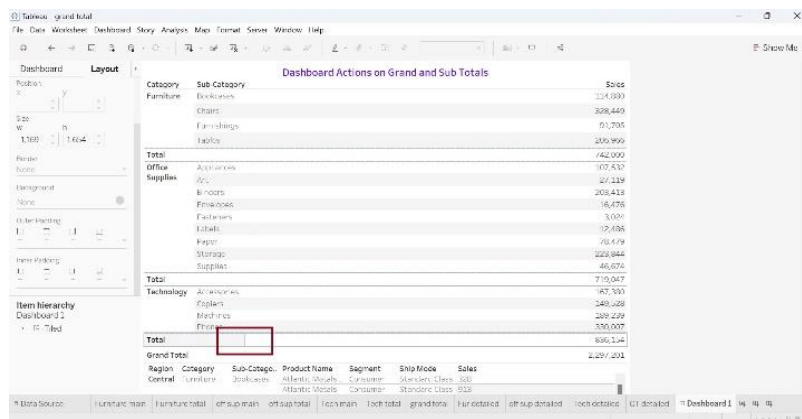

Fig 13: Adjust Alignments

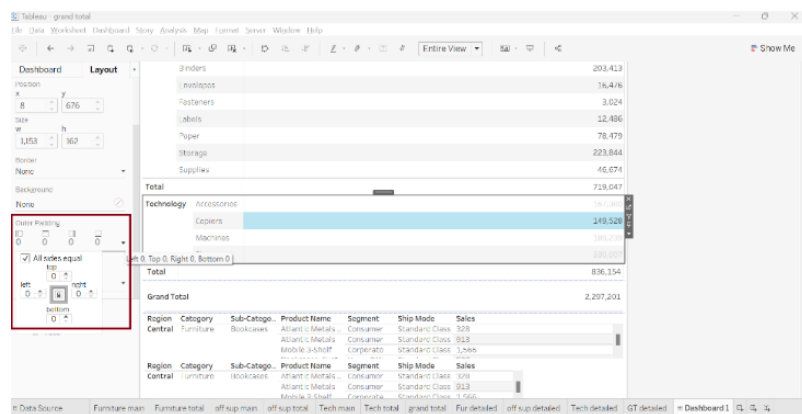➢ Outer Pad for each sheet to 0 from all corners to have a seamless view.

Fig 14: Apply Outer Padding

➢ Place a vertical container below for a detailed tab and place all detailed only sheets for all categories and grand totals.
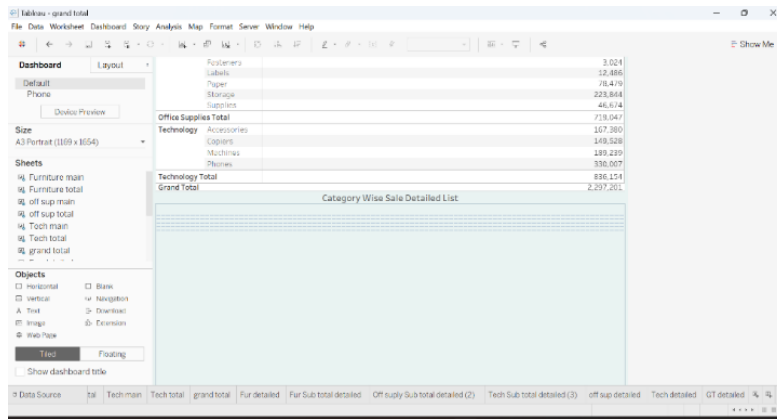

Fig 15: Vertical Container

F. *Apply Dashboard Actions to enable drill through capability*. To apply filter on the furniture summary table, go to dashboard> Actions> and apply filter action. Here choose the summary sheet as the source sheet and the target sheet the detailed sheet. But to filter on the right value, choose subcategory as the selected field. This will give you the exact value as that of the summary and the detailed one. Remember to put the calculated field on the column shelve in summary sheet of subtotal and grand total sheets.
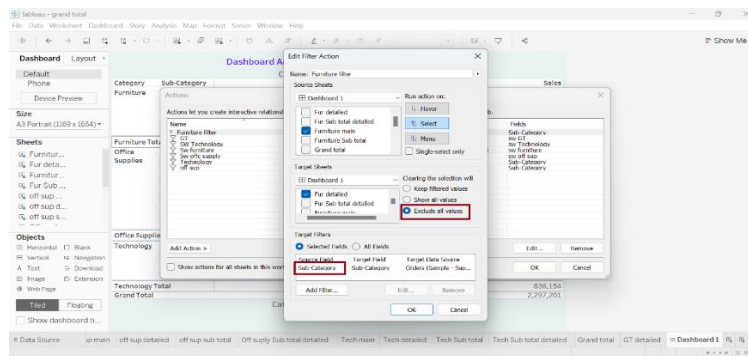

Fig 16: Dashboard Actions

To verify the value in summary matched to the one in detailed, click on any value and see the same value being reflected on the left bottom corner of the tableau screen. This ensure the result is as intended.

Apply the Actions filters in the similar way for the other two summary sheets, sub total and grand totals sheet. However, the sub total and grand totals will have sheet being displayed only when the Boolean value of the calculated field we created is true.
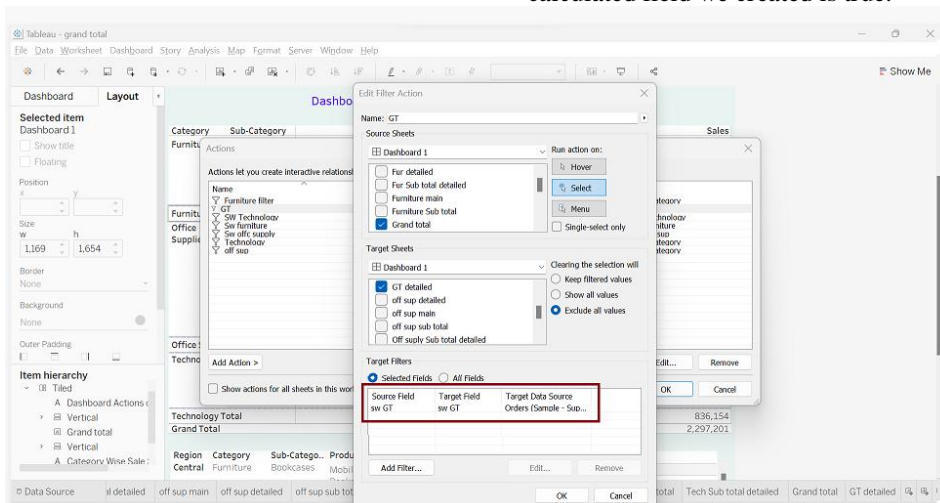

Fig 17: Dashboard Actions for Grand totals

➤ *Use Exclude all values option:*
  "Exclude all Values" is a very cool feature that hides sheets when unchecked. It comes very handy when we are dealing with several sheets on the dashboard. To attain the desired result, check this option in all filter actions applies here.

Applying Action filters will generate an automated action filter on the detailed sheets filter shelves like shown in figure.
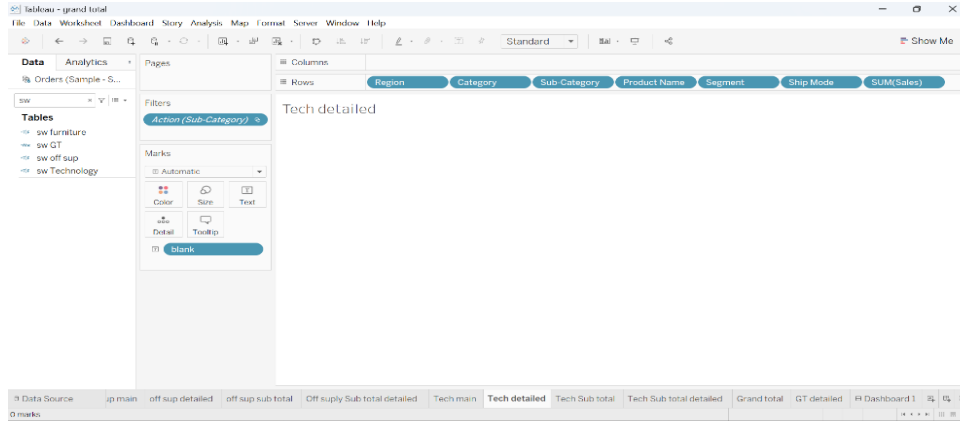

Fig 18: Actions Generated

V. RESULTS

Once all the actions filters are applied, a click on any value in sub total will yield the detailed list equivalent to the above summary table value. Like shown in the picture
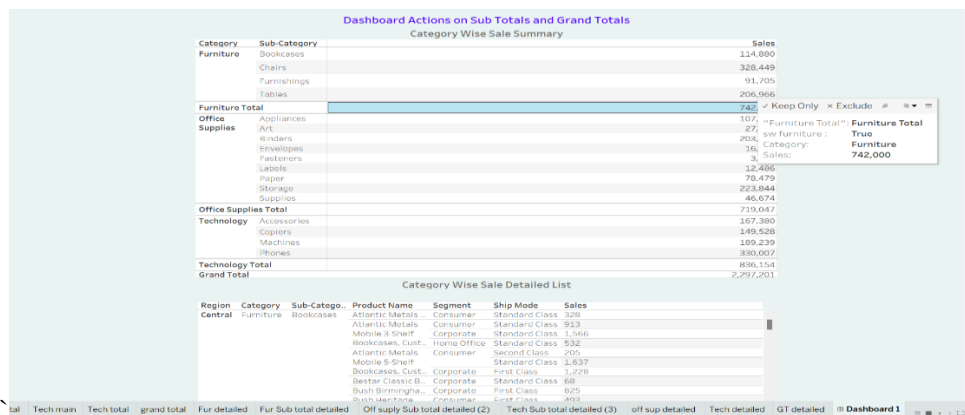

Fig 19: Final Dashboard

➤ *Verify Results :*
  To verify if the actions are placed correctly, click on the grand total in this case the value is 2297201 in the summary table. Verify this value with detailed list below by highligting the detailed sheet and check the value in left bottom corner this case its 2297201. See image below.
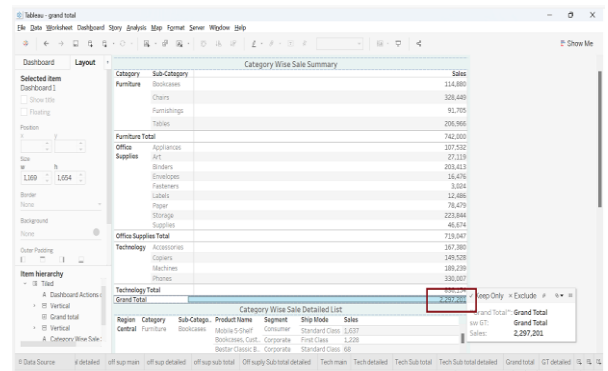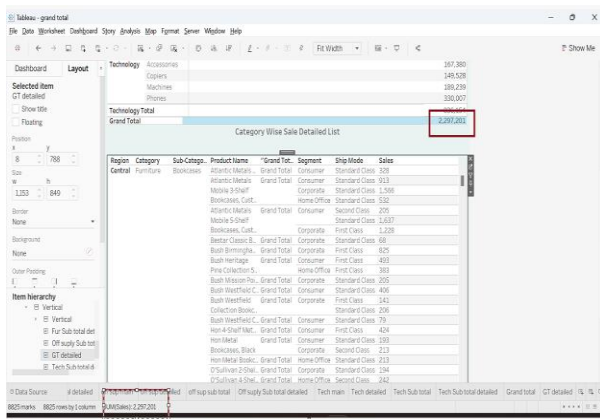

Fig 20: Summary table Grant total Value

Fig 21: Detailed Table Grand Total Value

VI. CONCLUSION

It would be quite beneficial, in my opinion, if action filters could be used on the grand totals. In production, we have several reports that require drilling through in order to work on the totals as well. The only option we have is to use calculated fields and perform the actions in a different worksheet with the totals, which significantly increases the number of worksheets. Any small modification becomes a large chore when both column and row totals are included in multiple dashboards.

Keep in mind that Tableau is constantly updating and introducing new features. For the most recent ways to enhance performance or ways to build new and fascinating ways to explore and understand your data, look to the ever creative and supportive Tableau community.

REFERENCES

[1.] https://www.tableau.com/resources/reference-materials
[2.] https://www.tableau.com/support/help
[3.] https://www.tableau.com/learn/training/20224
[4.] https://community.tableau.com/s/

ABOUT THE AUTHOR

Ayesha Umaima |Data Engineer Business Intelligence

A Master of Technology in Computer Science Engineering and with overall 11 yrs. of experience, Ayesha is on her journey of finding meaningful insights in data. Throughout her career, driven by a thirst for knowledge she has worn many hats: Business Analyst, Tableau Developer, Agile Advocate, Cloud Computing Enthusiast, and a Data Engineer. Her projects are mostly centred around Data Science and Machine Learning. Apart from instigating positive changes for clients, she has great affinity to reading and writing books. She enjoys travelling and is particularly fond of Snow Mountains.