Sage Intelligence Reporting

Report Writing Best Practices April 2016

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12 04 2016

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1.0 Getting Started

The purpose of this document is to provide the best possible guidelines on effective report writing. These guidelines can be used to develop reports intended for deployment as opposed to developing a report that is customer specific.

Always bear in mind the following key words before, during and on completion of the development of a report:

- Automation
- Flexibility
- Performance
- Ease of use for future support/maintenance

1.1 Pre-Requisites

Prior to developing any report it is recommend that a comprehensive requirement document be completed in addition to the following:

- Completion of Connector, Report Manager and Excel on Steroids training.
- Adequate sample data.
- SQL knowledge is recommended for Connector usage.
- A sufficient Data Dictionary of the database being reported off.
- ODBC drivers are installed if required for the application in question.
- Examples of the desired output and layout required.

2.0 Connector

Note: "Graphical Joins", existing "SQL views" and "SQL Joins" are the preferred methods for creating containers and that wherever possible these should be used. Stored procedures and SQL query containers provide less flexibility for end users creating new or modifying existing reports off these containers.

2.1 Containers

When developing a container, the following criteria should be kept in mind:

- Type of join to be used (e.g. SQL join, graphical join etc.).
- SQL expressions should be used as often as possible as these have a faster run time as compared to Excel expressions and can also be used in aggregates.
- Name containers as per the report name or similar to. This is for ease of use in recognising the contents of the container.
- Include the appropriate ERP abbreviation and version number directly after the name of the container, e.g. A container for a Sage 300 SQL general ledger transaction report would be as shown below ("Name of container", S300 SQL, Version)

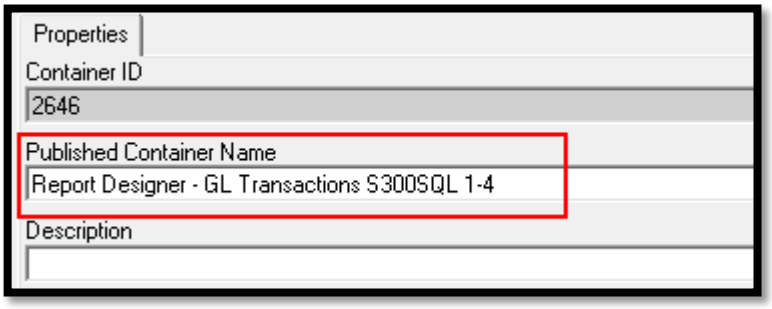

Figure 1: Integration container versioning

- Where possible use SQL expressions to create calculated fields as opposed to using Excel formulas at the front end within Excel.
- Provide meaningful descriptions on containers.
- Include expressions with meaningful names in the container that may be useful to the client for future use even if they are not required on the report in question.

2.2 Joins

- Use Graphical Joins unless you require specific clauses within the join, as this creates a visual entity relationship diagram.
- Views and Stored Procedures should only be used if designing a report from a database where such Views or Stored Procedures are standard within the database and not client specific. An exception would be if the need arises for an extremely complex report where the end result cannot be achieved in any other way.
- For performance it is best to use index fields. However, where joins are required on non-indexed fields it is recommended that the developer index the required fields.

2.3 Expressions

- Use data fields and SQL expressions as much as possible.
- Pass through variables are a powerful feature but can make containers more complex to use. Only use them when there is no better way to achieve the same result.
- Excel Formulas should be a last resort if the end result cannot be achieved through SQL expressions. Excel formulas have a negative effect on file size and performance.
- Provide meaningful names for expressions and data fields, as often database fields are presented in a cryptic manner.

2.4 LookUps:

- Ensure that lookups are working properly on all expressions in the container and not just the expressions intended to be used in the report as other users may create reports off the container.
- Where the functionality of the database allows for the use of the SQL distinct keyword, ensure that lookups display a distinct list of values.
- For containers that access large data sets it is recommended that the SQL lookup type for all expressions be changed to ”Direct from Container” or “SQL Statement Defined”. This will optimise lookups and minimise the load on the database server.
- Where necessary, set the lookup type to a Customised SQL Statement and customise the statement in order to achieve the preferred end result. The lookup of the expression does not always have to come from the table listed in the expression source; it can be set to obtain the value from a different table.

3.0 Report Manager

Note:

- Before creating any reports ensure all expressions in the container are added to a report which is then run out. This is done to ensure that all expressions are run out successfully.
- Do not use macros. Sage Intelligence does not support the distribution of Report Sets with Reports that have calls to macros within them. All macro calls will be removed from reports during Metadata Compilation; this is as a result of macros referencing specific ranges. Should a user customise or alter a report that uses macros then this could cause macros to fail. Macros make reports impossible to support without advanced VBA skills.

- The type of report being developed needs to be determined, e.g. a stand-alone report, union report etc.
- It is recommended to document the reasoning for the use of a specific method in the developing of a report for future reference e.g. Union Report used because X and Y table could not be joined in a container.
- Keep the number of reports per container to a minimum. It is recommended to duplicate a container if it is to be used for more than one report. This eliminates room for error when editing an expression. If numerous reports are using the same container and the same expression, changing the expression for the purpose of one report could result in a negative impact on the other reports.
- Assign a unique report code to each report:
    - Report codes are added to reports in the Report Manager on the Advanced properties screen of the report (i.e. select Show Advanced, then scroll down)
    - The report code should be made up as follows:
      The abbreviation of the application and application version, the database type, the system class followed by a number, then the report version e.g. for Sage 300 SQL General Ledger report the code would be similar to this: AE-SQL-GL01-2-0

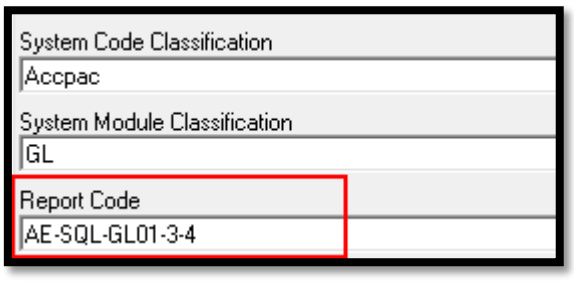

Figure 2: Integration report versioning

3.1 Parameters

- Rename parameter fields on the parameters properties screen where necessary to provide more meaningful options to the user at runtime. Set “Parameters on Second

Sheet" on. Having the parameter values within the workbook can be extremely useful in report headings.

- Where possible, insert system variables in the report parameter defaults e.g. @MONTHEND@ to eliminate possible errors at run time.

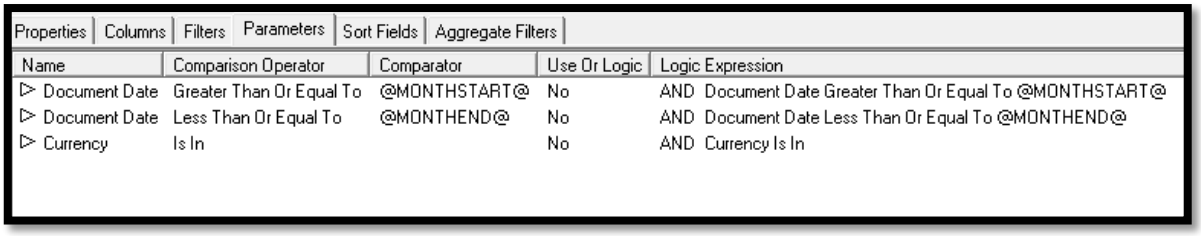

Figure 3: Report Parameter Defaults

- Set each parameter field's "Mandatory" tick box on

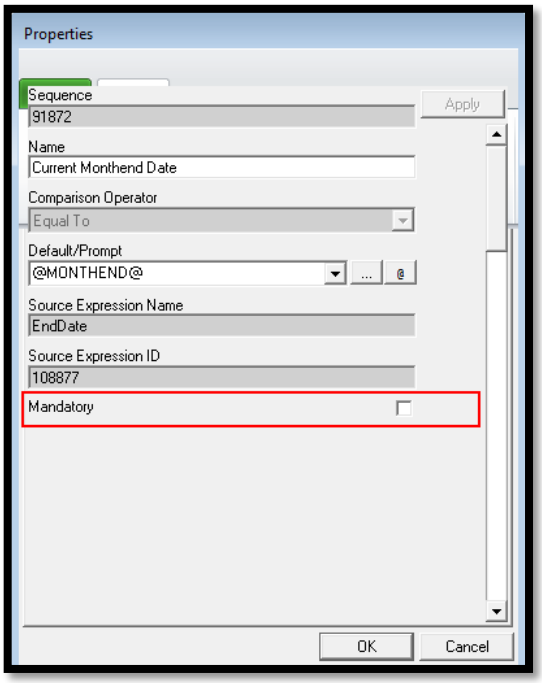

Figure 4: Selecting the mandatory parameter option

3.2 Union Reports

Note: Union sub reports run in Reverse Order (LIFO) within a union report.

- Place all parameters on the first union sub report which runs. Should filtering be required on subsequent sub reports, Pass Through Variables can be used to pass these values through to filter in the sub reports. This will eliminate parameter pop ups later in the run process.
- When adding a sub report to a union report, the reports are all set to run out on Sheet 1. The sub report run order can be amended by changing the "Output Sheet Number" on each union sub report.

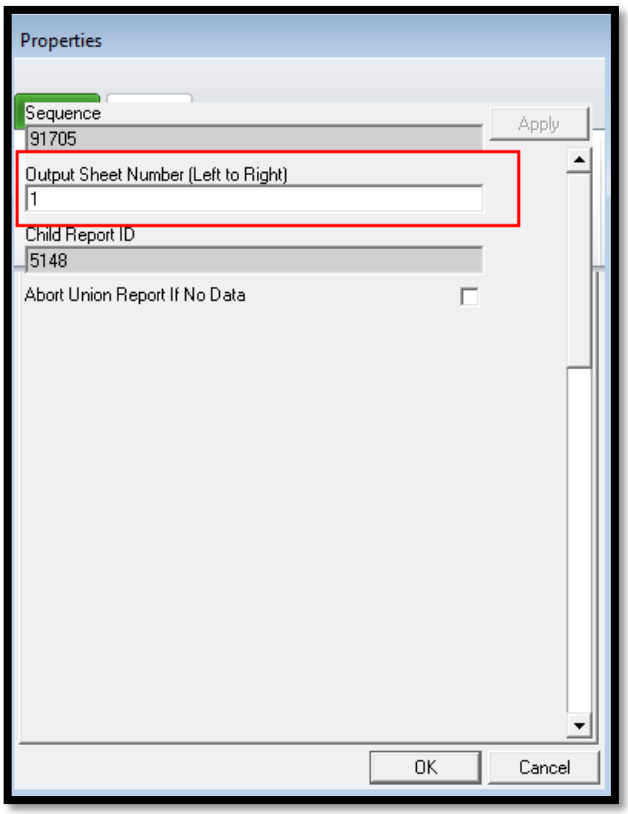

Figure 5: Setting the sub report run order

Always bear in mind that if the “Parameters on Second Sheet” has been selected, no sub reports should be assigned to sheet 2 of the report

- When running out the report as seen in the graphic below, the Dashboard sub report will be on sheet 1, the parameters on sheet 2, the Dashboard Financials Grp sub report on sheet 3, etc.

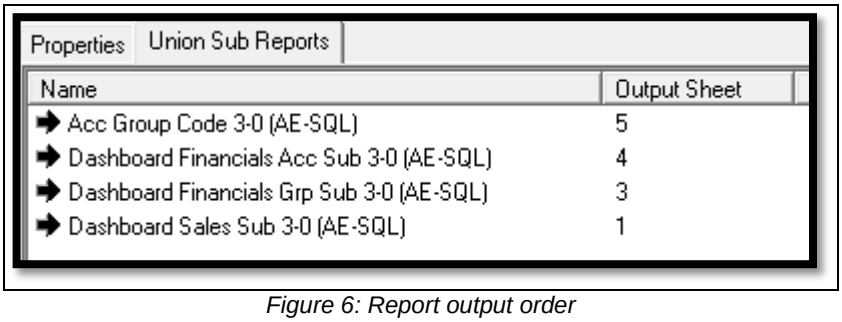

Figure 6: Report output order

3.3 Union Sub Reports

- Set “Report Hidden” on for all Sub reports, to eliminate confusion between the report and the sub reports making up that report. By doing this, the sub report will not appear on the menu, but still be accessible via the tools menu.

- Sub report properties have an option to “Abort Union Report if No Data”. This option should be checked on for any sub reports that must return data for a report output to make sense. Standard reports by default give a “No data” message when there is no data but since a union report pulls data from more than one report (e.g. a dashboard) you may still want to see the report even though some data is not there. There is however union reports that you would not want to run out if 1 or more of the sub reports don’t return data. An example would be a financial report that is a Union report. In these scenarios you should check this option for the sub reports. If there is no data for the sub report(s) then the report aborts.

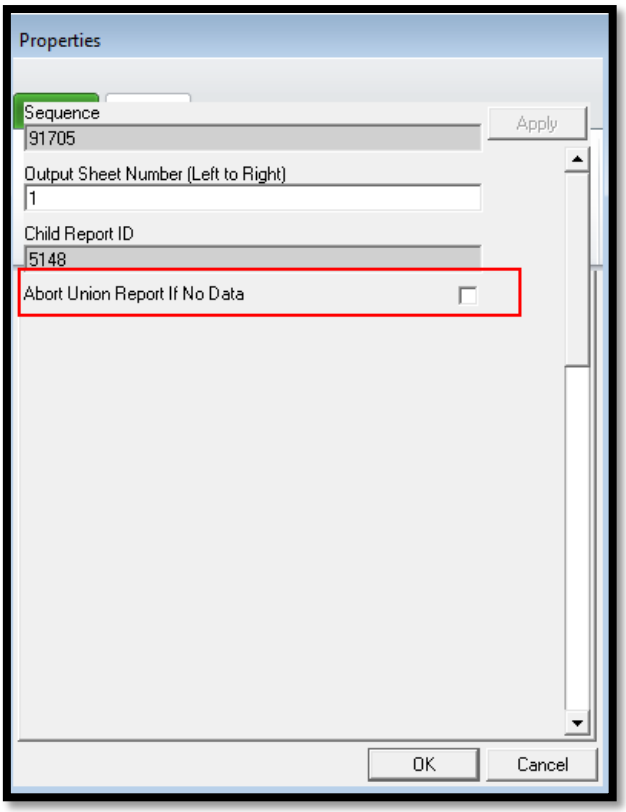

Figure 7: Abort Union Report option

- “Allow Report Viewer and External Access” needs to be selected on the relevant reports. This option must not be selected for drill-down and sub reports. This will ensure that the report is available through the SDK for use in application menus.

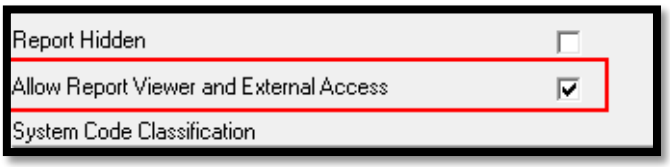

Figure 8: Allow Report Viewer and External Access

- It is recommended that all sub reports have the word “Sub” at the end of the report name to differentiate them from stand-alone reports that are intended to be run. Sub reports are not intended to be run as a stand-alone report.

4.0 Excel Template File

PLEASE NOTE: The following sections, especially regarding the Look and Feel are a guideline only for external users. There are however, other suggestions in these sections which could prove valuable when creating a report.

When developing a template, it is recommended to do so using the earliest possible version of Excel and to link the template back as an .xltx for a macro free Excel 2007+ report or .xltm for a macro enabled report. This will ensure that the template is compatible on all versions of Excel. Any Report Designer templates created need to be developed using Excel 2007and linked back as an .xltx file.

4.1 Pivot Tables

When using a PivotTable in the template file take the following into account:

- PivotTable Limitations – ensure that you do not display too many row fields that could cause the pivot table limitation to be reached. Use page fields where necessary to further summarise data.
- When pivoting data from a source data sheet where the data was rendered by Sage Intelligence, always use the named range *Sheetname!*RawData. This will ensure that the full range of data extracted is always available for use within the pivot table. When adding new columns to a report, these new columns of data will then automatically be included in the pivot table range.

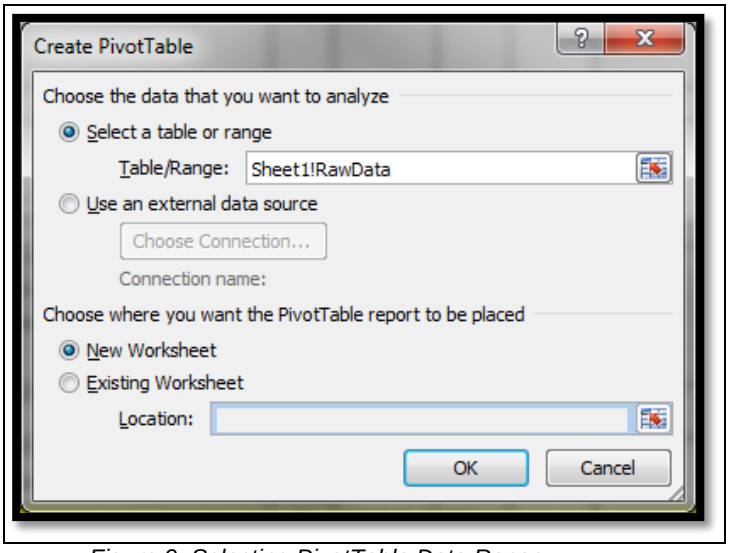

Figure 9: Selecting PivotTable Data Range

- Ensure “Allow multiple filters per field” has been selected to ensure that multiple slicers can be created off one pivot table.

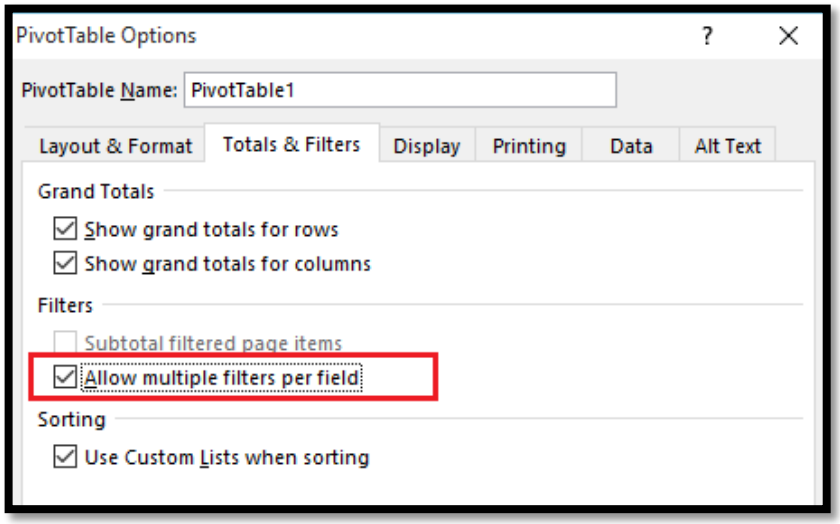

Figure 10: Number of items to retain per field

- Suggested PivotTable settings:
  - Set the following footers on each page:
    - At the bottom left, set the *date and time*
    - At the bottom right, set *page numbering*
  - Set print titles to have *row headings* repeated at the top of each page.
  - Set print titles to have *columns* repeated at the left of each page where necessary.
  - Preview the report and adjust the *scaling* where necessary, but to a minimum of 75%.
  - Reset *margins* where necessary.
- Formatting should be uniform on all reports to ensure the end product has a consistent feel.
- The pivot table style (under the *Design menu tab*) used in all pivot tables is the second grey style found under the Medium section)

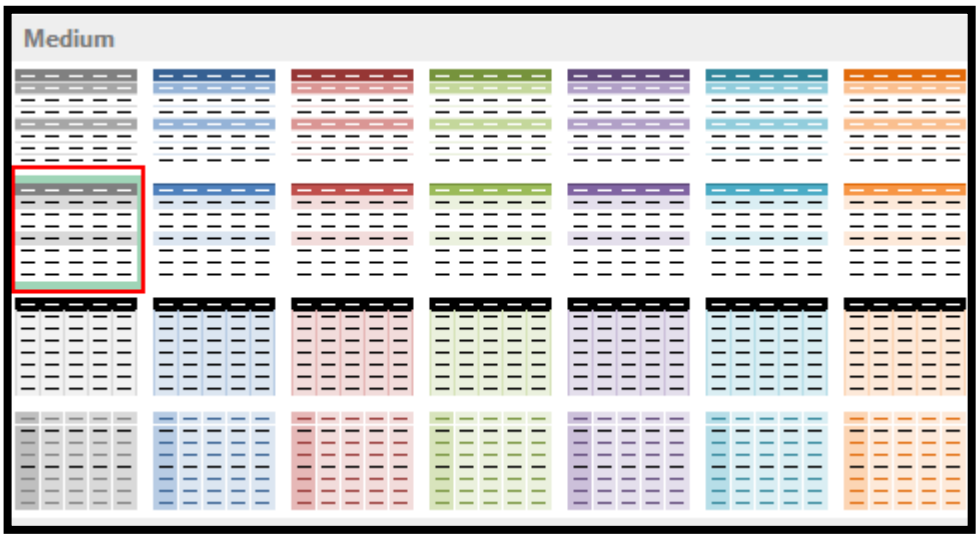

Figure 11: Pivot Table Style

4.1.1 Pivot Table Slicers

- If the report is for Excel 2010 + and a slicer is used, the format to use is the Green style under the Dark section

Figure 12: Pivot Slicer Style

- Ensure the "Hide items with no data" has been selected in the Slicer Settings to ensure that items relevant to other data sets are not retained in the slicer.

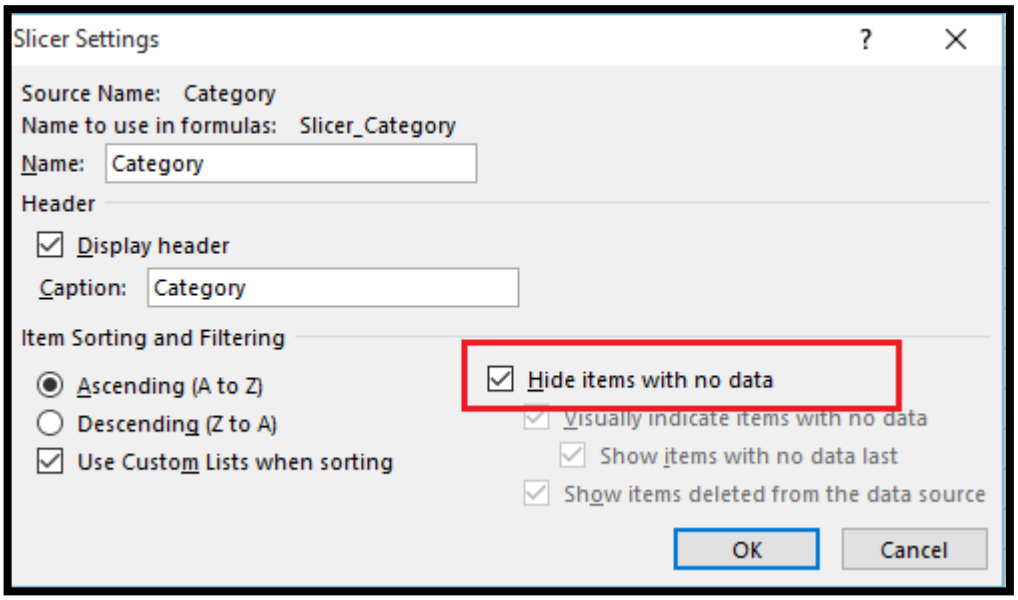

Figure 13: Pivot Slicer Settings

- If the report is for Excel 2013+ and a timeline is used, the format to use is the Green style under the Dark section

Figure 14: Pivot Timeline Style

- All other formatting, e.g. font, font size, font colour, etc. should be consistent throughout the report.

4.2 Power View

- When formatting any Power View report ensure that either the Theme 4 or Slipstream theme has been used.

Figure 15: Power View Theme

4.3 Pivot Charts

Do not use Pie Charts or donut charts as the data labels may become distorted due to different data scenarios.

All areas of a pivot chart can be formatted. To format the various sections of a pivot chart:

❖ Data Series – right click on the data bars and select *Format Data Series*

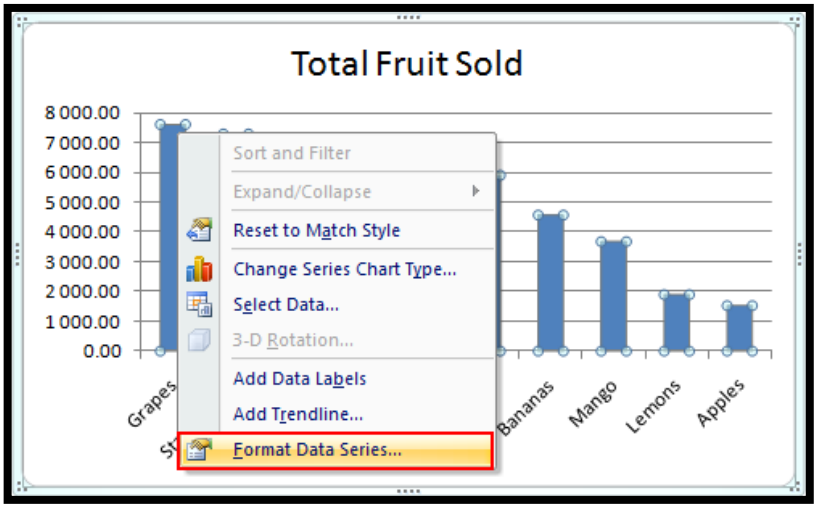

Figure 16: Format Axis

Select *Fill* and *Vary colours by point* to format the data series

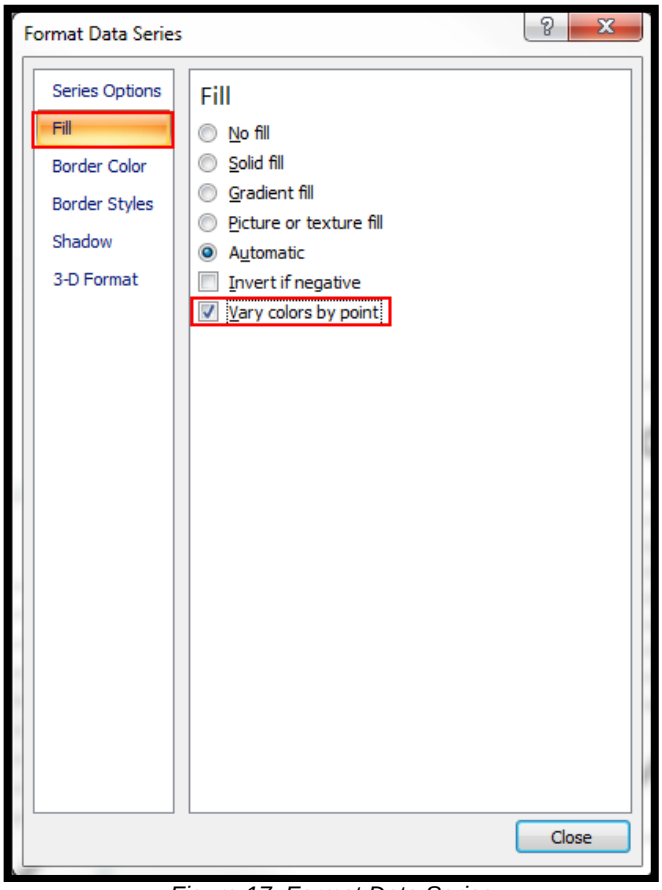

Figure 17: Format Data Series

Data labels are not needed on all charts. When using data labels ensure that they are required for the specific chart, that using them will give the user a better visual of the data being displayed and that they will not overlap when used with different data scenarios.

- Vertical and Horizontal Axis – right click on the axis labels and select *Format Axis.* Axis labels should always be set to “Low”. This will ensure that the labels are displayed correctly when the data contains positive and negative values.

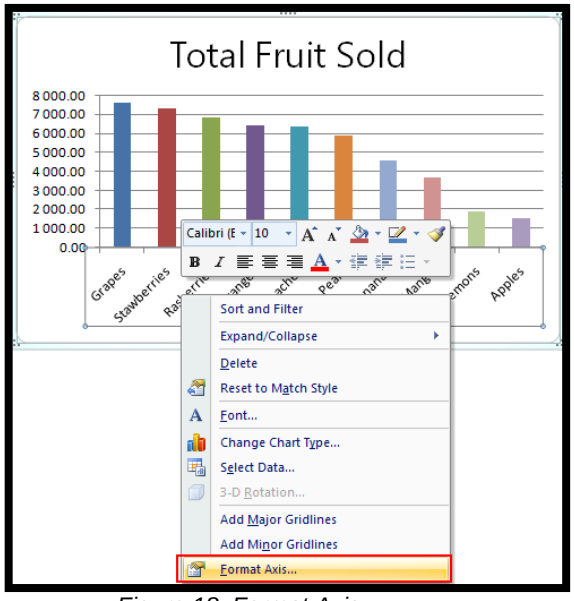

Figure 18: Format Axis

- Select the gridlines of the pivot chart and press *Delete* to delete them

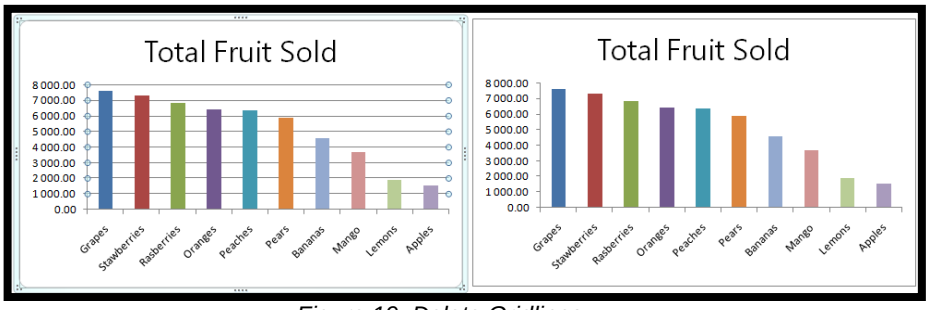

Figure 19: Delete Gridlines

- Right click in the legend to format

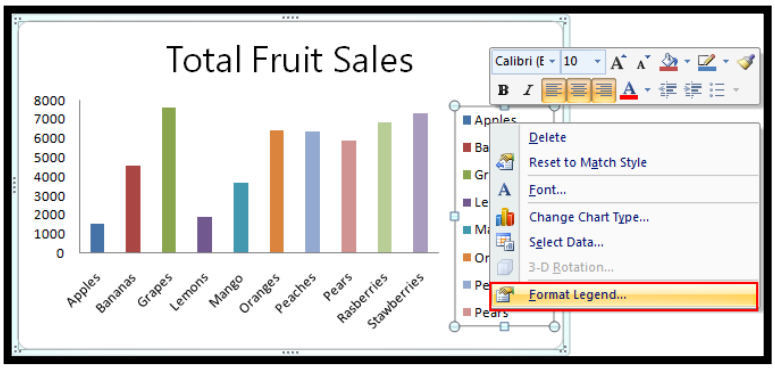

Figure 20: Format Legend

- To remove the border, right click in the Chart Area and select *Format Chart Area*

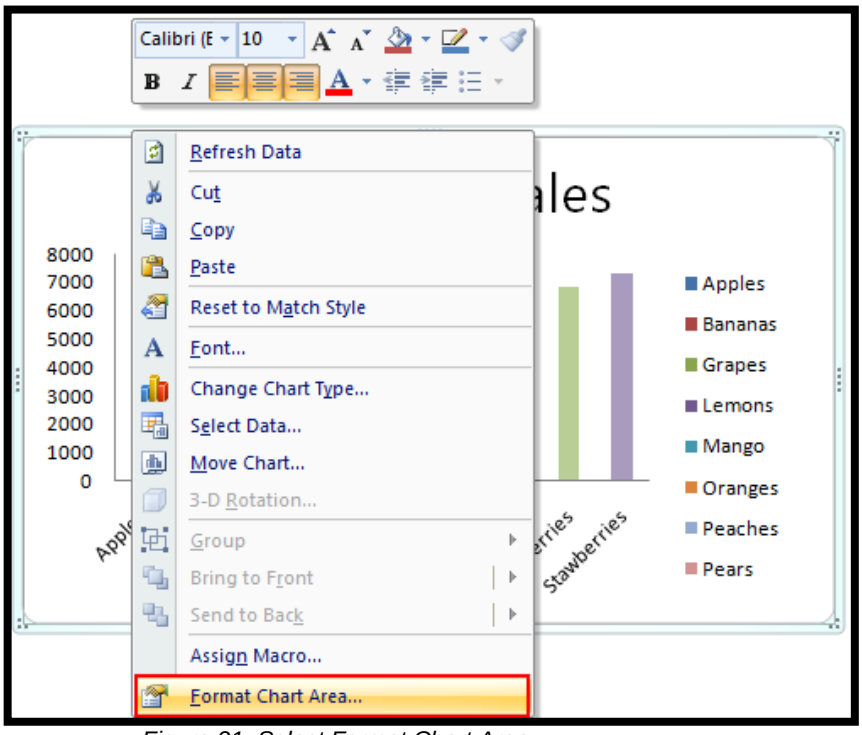

Figure 21: Select Format Chart Area

Select *Border Colour* and *No Line* to remove the outline

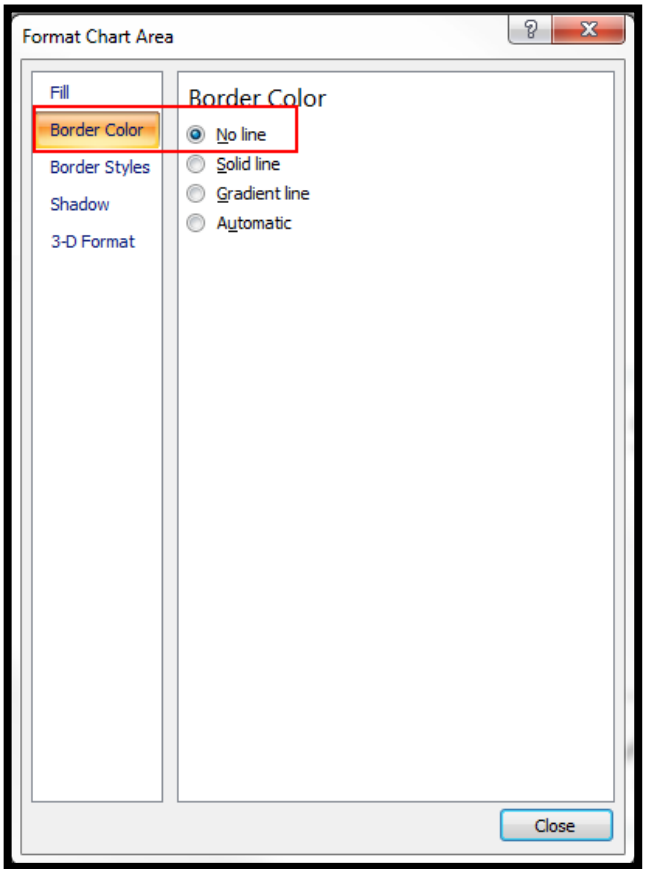

Figure 22: Set Border Colour to No Line

4.4 Excel Formatting

- Set report headings at the top of each worksheet that is used as a final end result. Include parameter values within the report headings where necessary.
- All headings are to be in Segoe UI font with the main heading set to size 24 and the sub heading set to size 16.
- The main heading is to be in Sage Bright Green (52 / 178 / 51) and the sub heading in Sage Dark Grey (77 / 79 / 83).
- The body of the report is to be in Arial with a font size of 10 and black (Automatic).
- Set “Freeze panes” to enable easy scrolling around the worksheet without losing view of report headings etc.
- Hide the display of zero values on the worksheets.
- Hide the display of gridlines on the visible worksheets.
- Adjust the zoom display if necessary but to a minimum of 75%.
- Ensure the correct worksheets in the workbook have been hidden.
- The template is to be saved on the correct worksheet with the cursor position in the first blank cell.

5.0 Look and Feel - Desktop

When developing a template for integrations, the report needs to be developed on the earliest possible version of Excel and to link the template back as an .xltx for a macro free Excel 2007+ report or .xltm for a macro enabled report. This will ensure that the template is compatible on all supported versions of Excel. Any Report Designer templates created needs to be developed using Excel 2007and linked back as an .xltx file. Ensure that the *Excel Colours Theme* is set to *Office 2007 – 2010* under the *Page Layout* menu option.

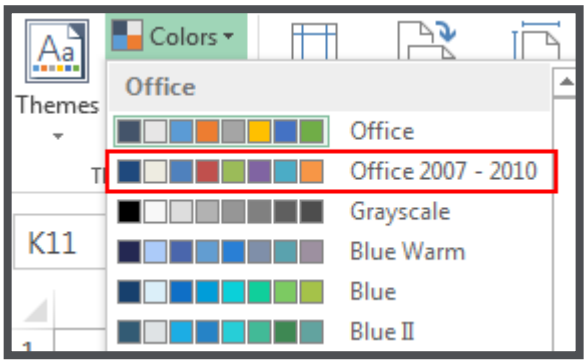

Figure 23: Page Layout Theme

5.1 Fonts

The font style applies to reports created for both integrations and the Free Template Store.

Headings are standard across all reports and in all Excel versions:

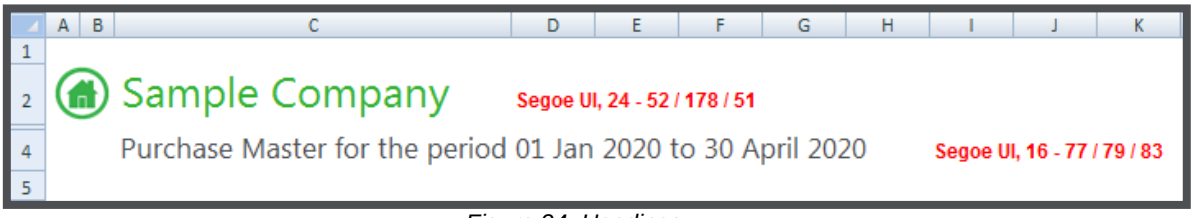

Figure 24: Headings

All other text is in *Arial* with a font *size of 10* and *colour black*. It should be noted that the font for the body of the pivot table will automatically take on the format specified in the Excel Default settings which is found on the Home tab under the Normal style section.

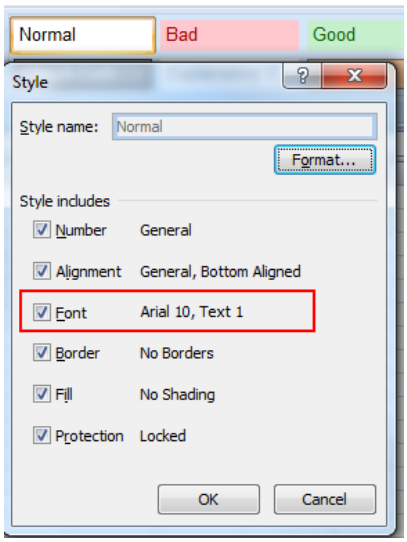

Figure 25: Excel Default Font

5.2 Pivot tables

If the report is for Excel 2010 + and a slicer is used, the format to use is the Green style under the Dark section

Figure 26: Pivot Slicer Style

- If the report is for Excel 2013+ and a timeline is used, the format to use is the Green style under the Dark section

Figure 27: Pivot Timeline Style

6.0 Examples of workbooks in each version of Excel

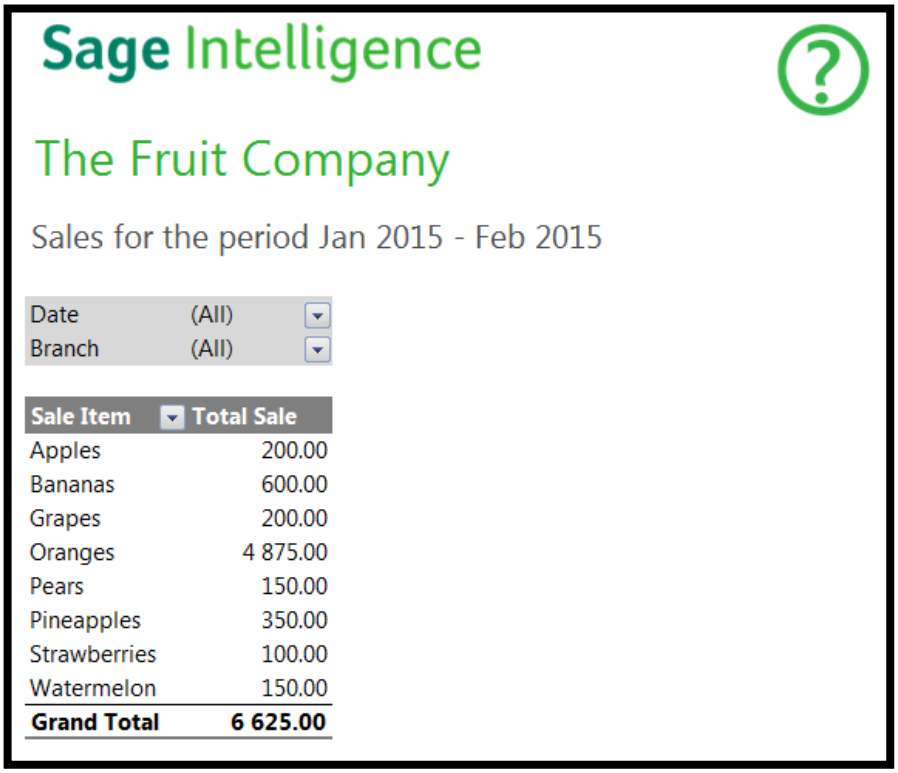

Figure 28: Excel 2007

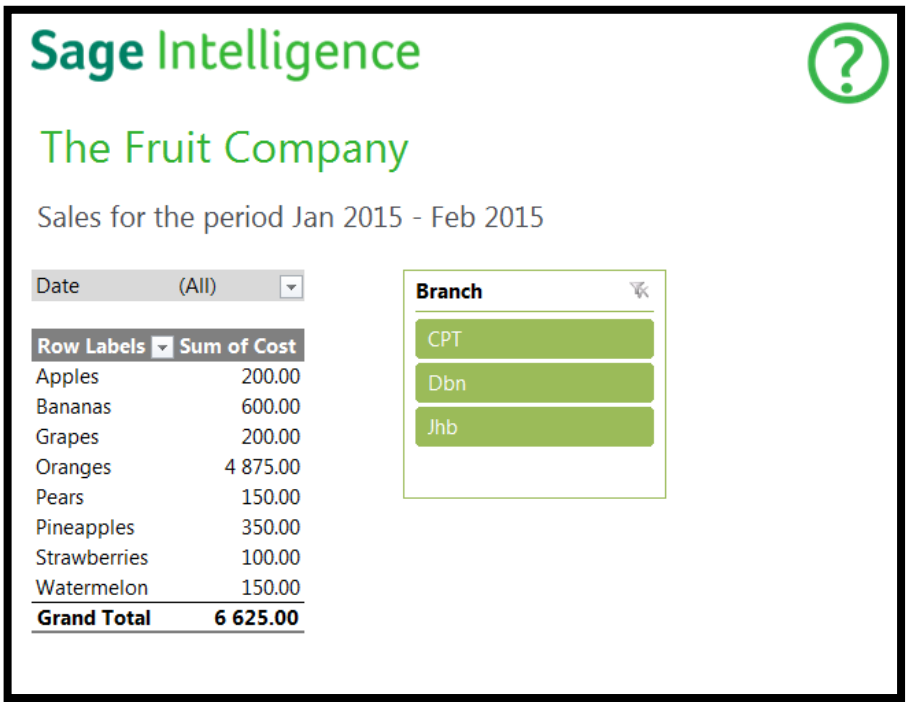

Figure 29: Excel 2010

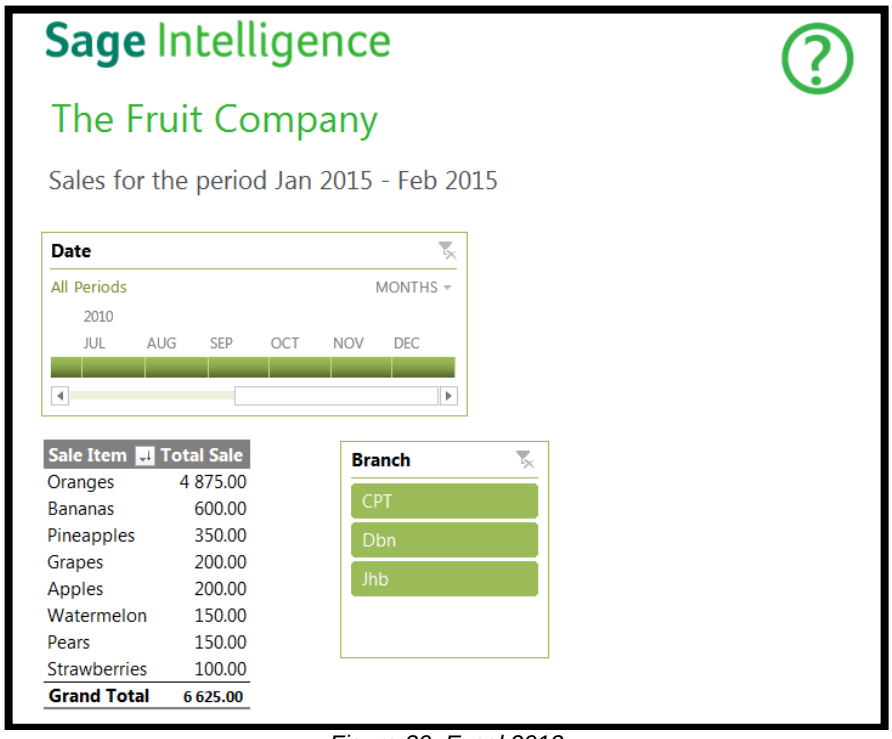

Figure 30: Excel 2013

6.1 Dashboards

For Dashboard reports, we should attempt to create a dashboard as the one shown in Figure 44.1. However, if your group headings are unable to fit in your header row without compromising the 75% page view, then you can use the Dashboard layout in Figure 44.2.

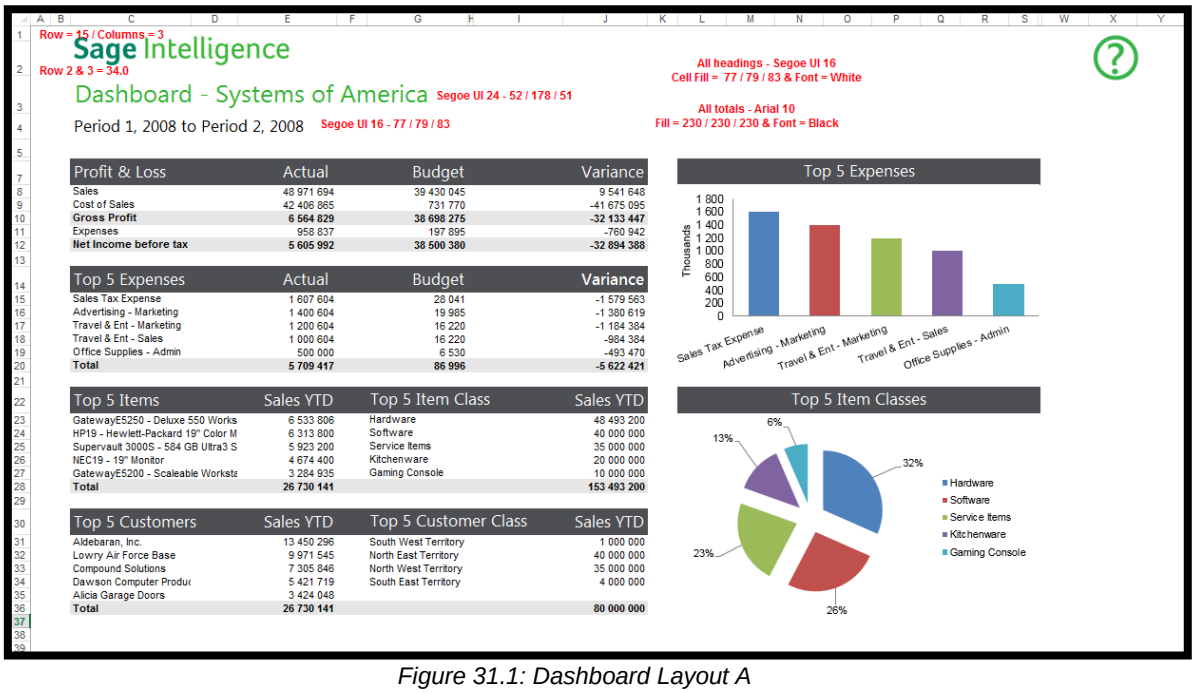

Figure 31.1: Dashboard Layout A

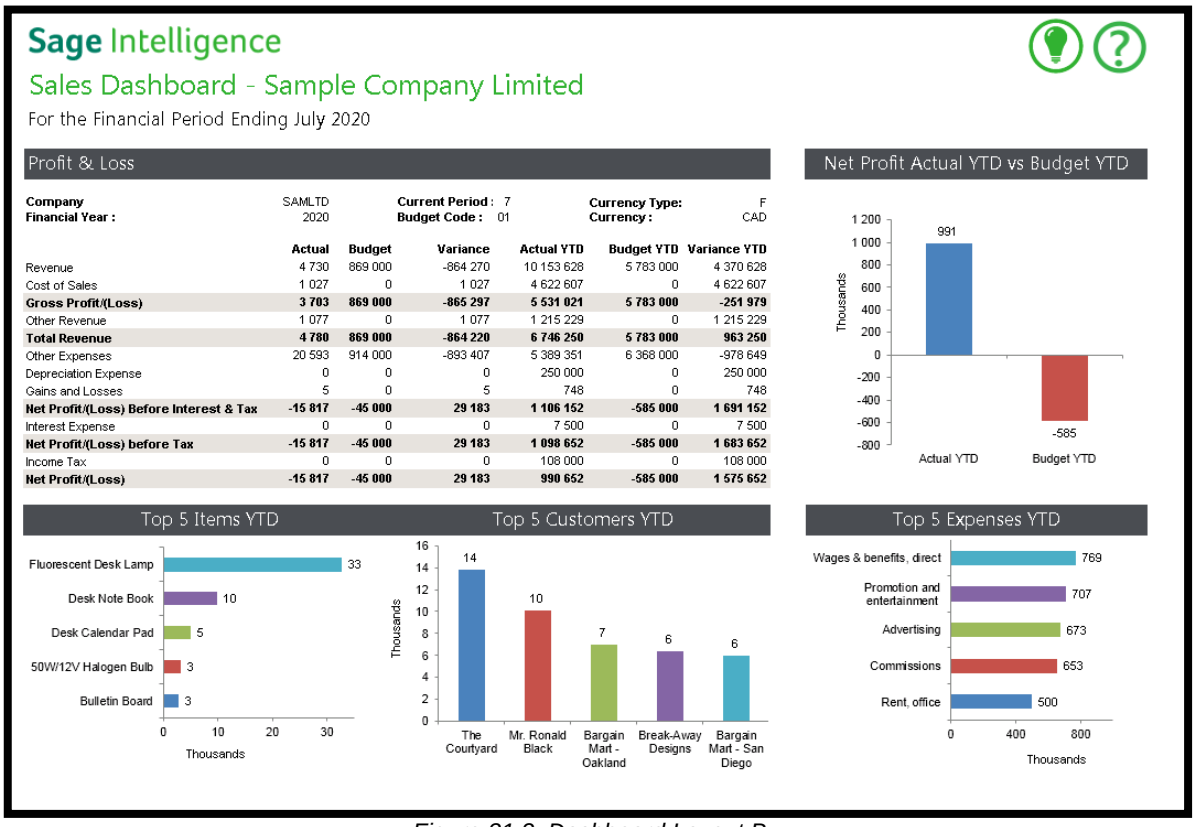

Figure 31.2: Dashboard Layout B

6.2 Designer Layouts

The Financial Report Designer Task Pane layouts will retain the current look and feel as the Layout Generator layouts are formatted in the backend.

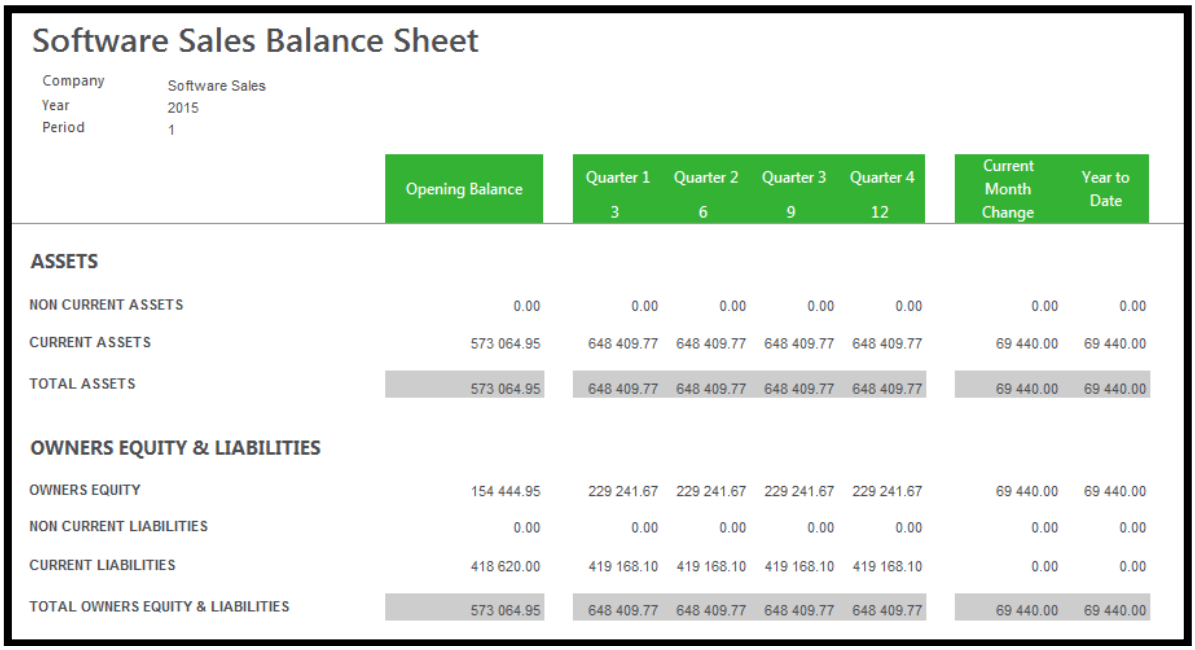

Figure 32: Financial Report Designer

7.0 Look and Feel - Online

7.1 Theme Selection

Theme must be slipstream

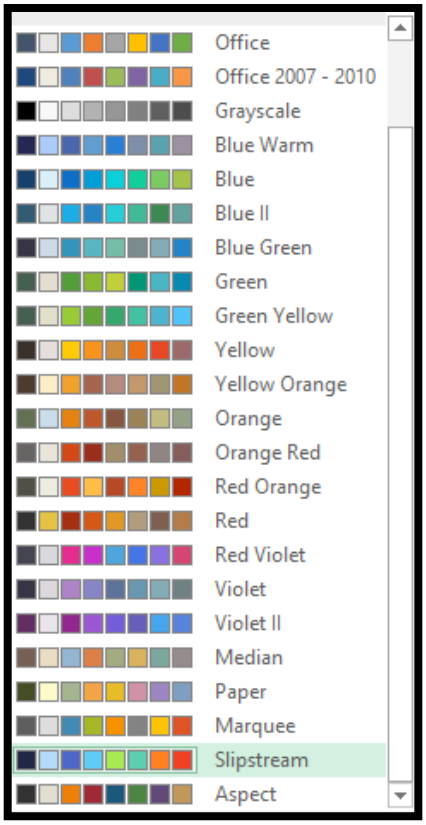

Figure 33: Colour Theme

7.2 Pivot Tables

Choose Medium 7 as your base pivot table.

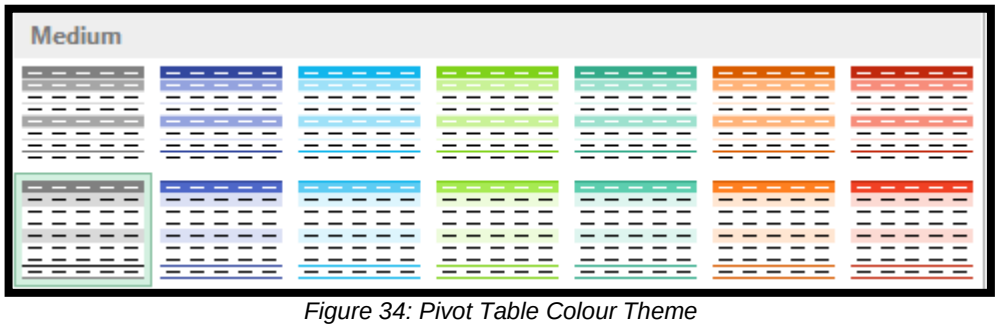

Figure 34: Pivot Table Colour Theme

Duplicate this pivot table style

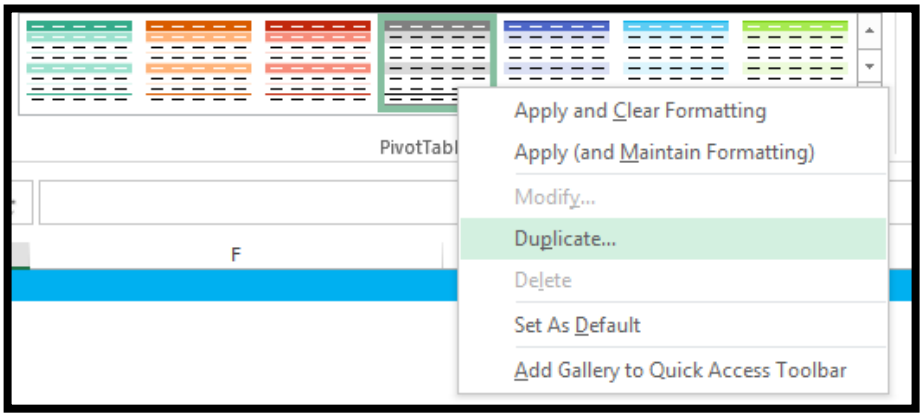

Figure 35: Duplicate Pivot Table Style

You will be prompted to modify the pivot table style. Go to **Heading Row** as seen below and click format.

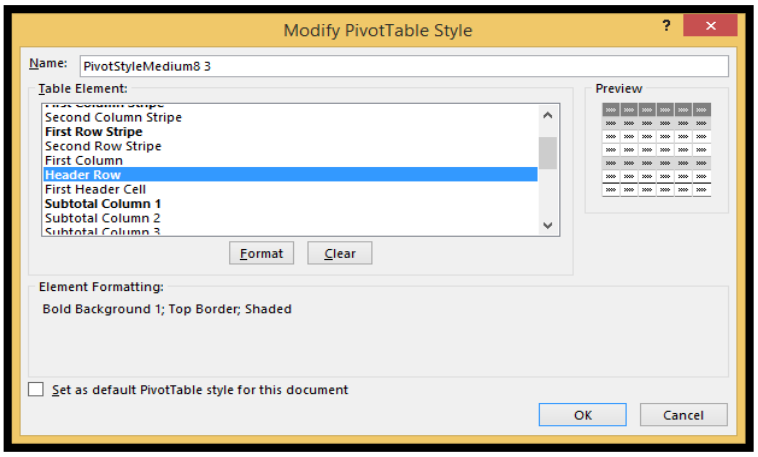

Figure 36: Modify Pivot Table Style

Go to the fill option and set the fill to 77 79 83 (Sage Dark Grey)

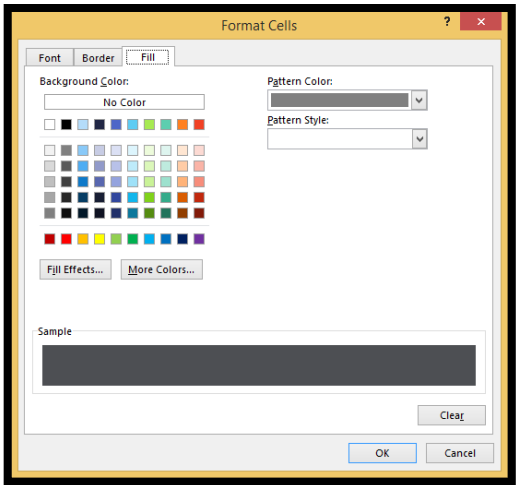

Figure 37: Fill colour

Go to Row Subheading 1

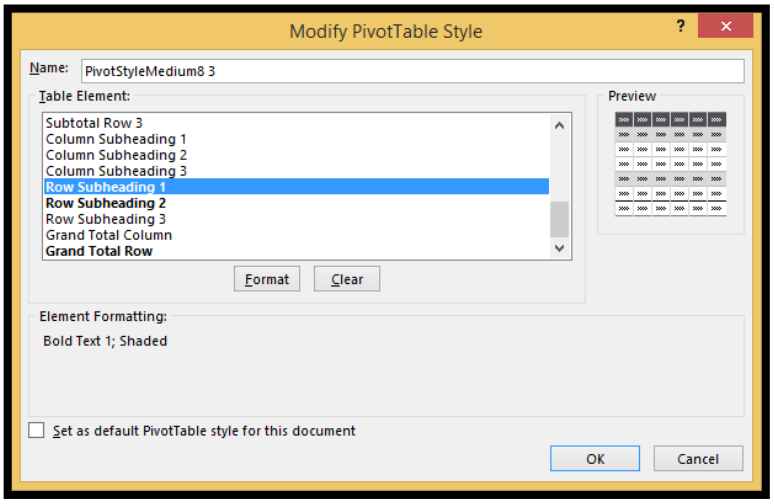

Figure 38: Modify Pivot Table Style

Set fill to No Colour

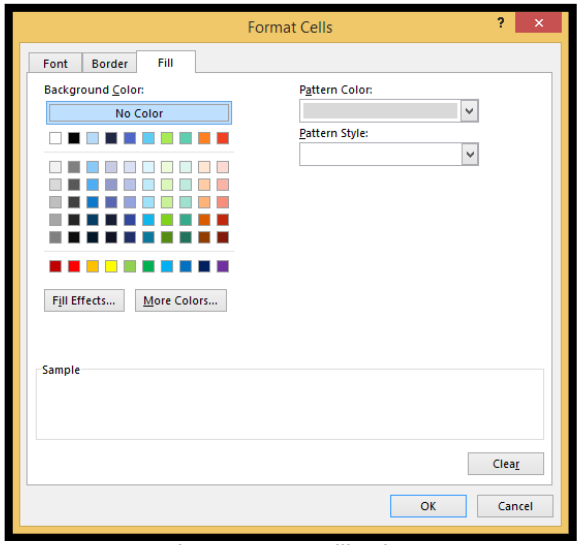

Figure 39: Set Fill colour

Select your new Pivot Table Style for your pivot table.

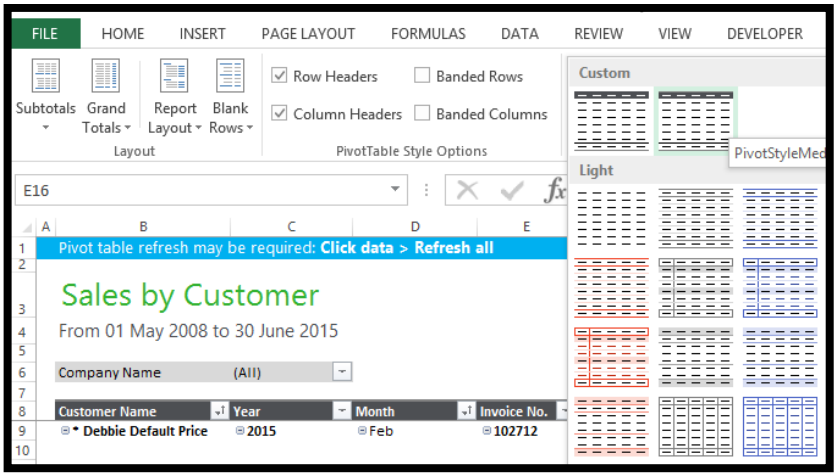

Figure 40: Custom Pivot Style

This can be reused for all your reports.

7.3 Charts

Start with a pie chart but do not retain them in your report.

Always start with a pie chart if you want your chart to contain data labels, and select style 3 to begin

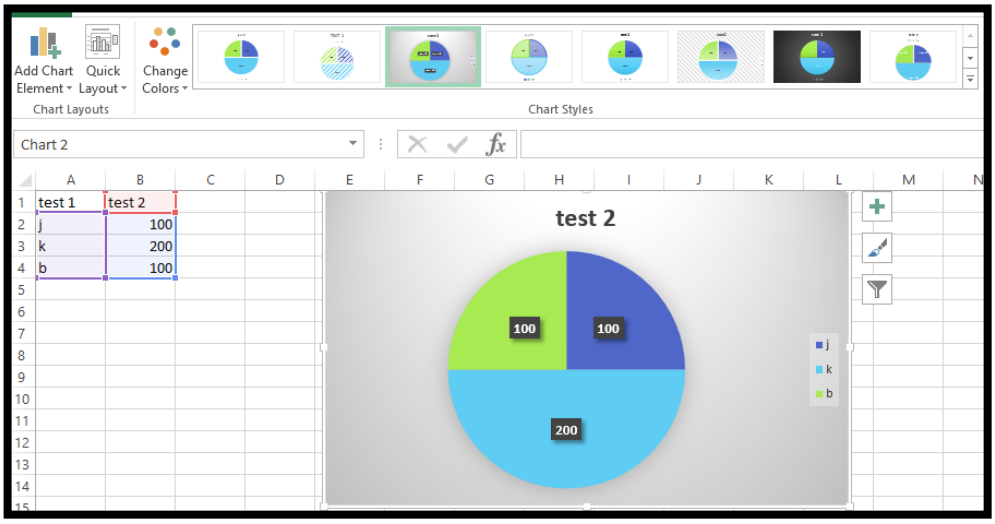

Figure 41: Pie Charts

Right click on chart and select the “Format Chart Area” option, select no fill and no line as seen below. Do the same for the legend for your chart. Delete your chart title.

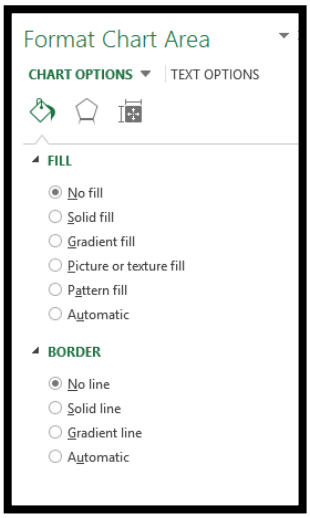

Figure 42: Format Chart Area Fill Settings

Format your data labels and legend to Arial 10 and then Your Pie Chart should look like the below

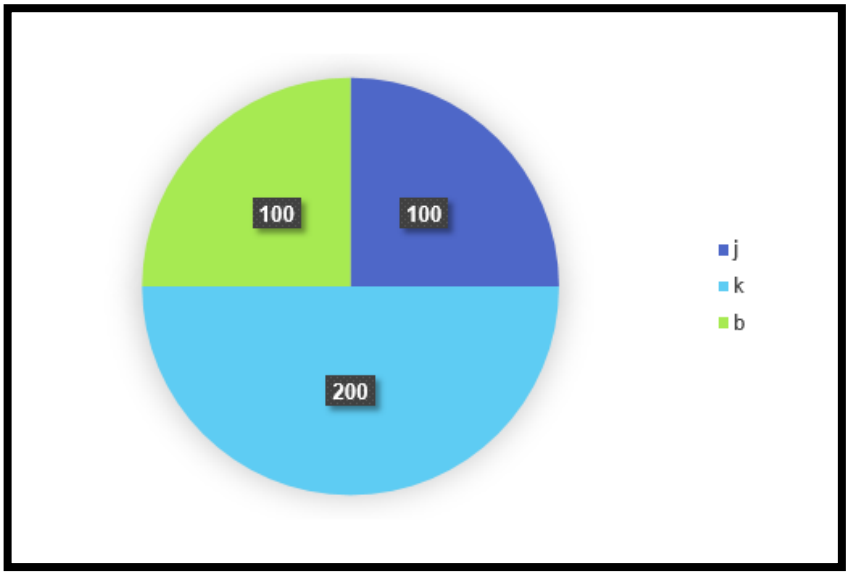

Figure 43: Format Chart Area

From here you can change your chart type if you need to by right clicking on the chart.

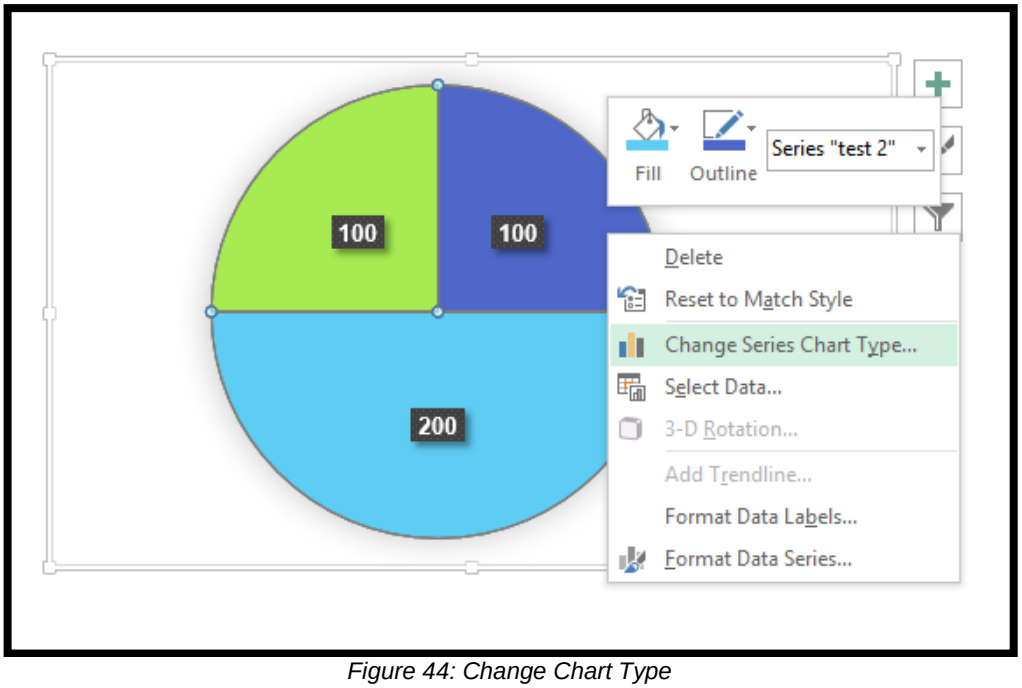

Figure 44: Change Chart Type

Bar Charts and Column Charts

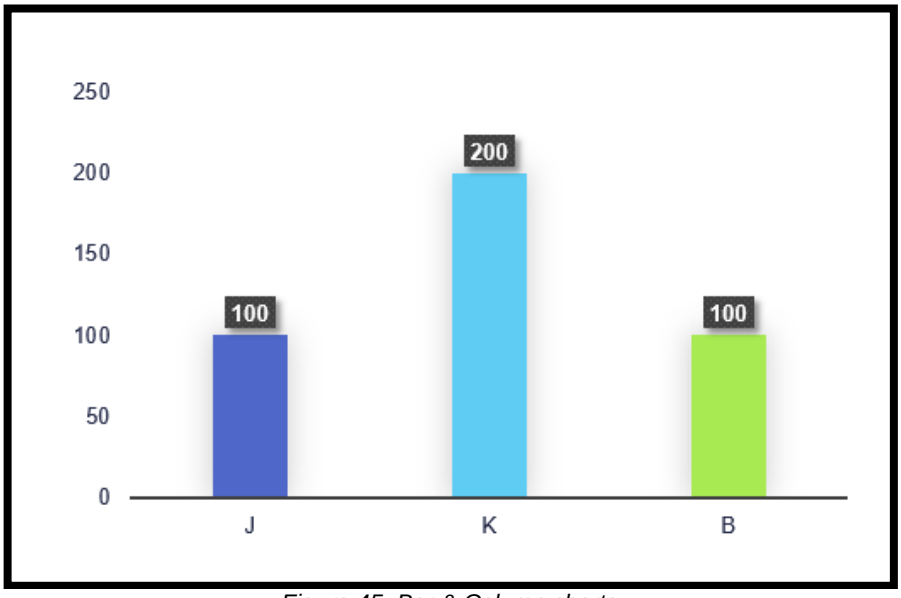

Figure 45: Bar & Column charts

No gridlines, Text on X and Y axis must be Arial 10 black.
Axis label must be set to low

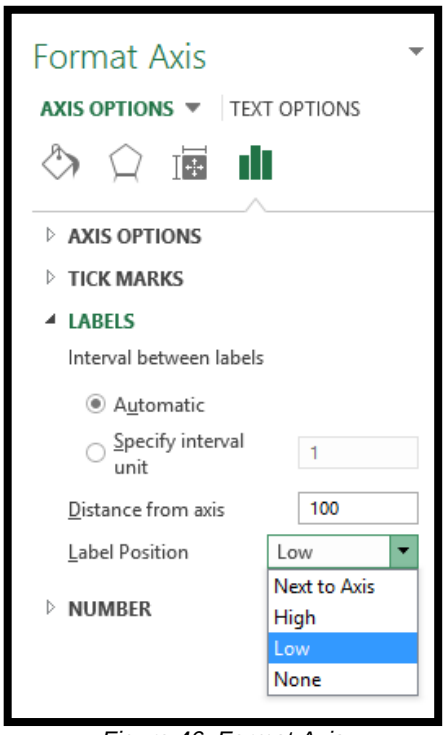

Figure 46: Format Axis

7.4 Slicers

Timelines will sometimes vanish on Excel Online so do not use them.

Slicers must use the below style. To get this style available in your workbook, you have to copy and paste a slicer with this format into your workbook (Slicer can be found in Sage One Reports).

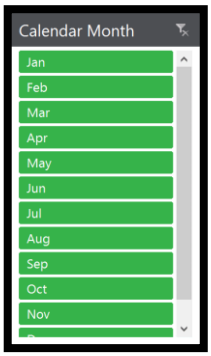

Figure 47: Slicer style

Thereafter the slicer style should be available in your slicer options.

Figure 48: Slicer style Options

7.5 Financial

7.5.1 Layouts

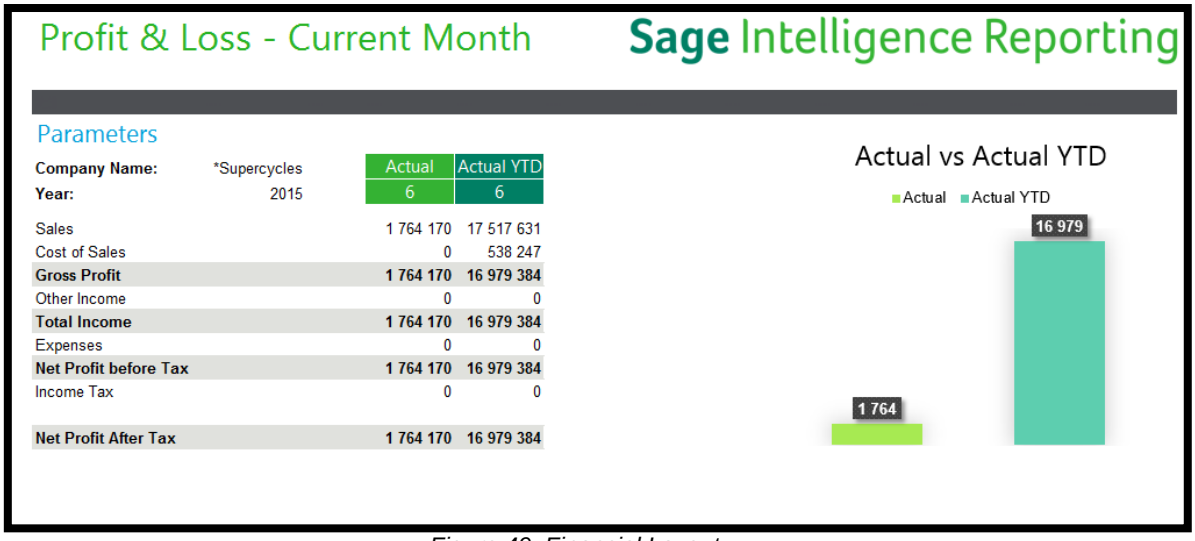

Figure 49: Financial Layout

- Heading : Segoe UI 24 – Sage Bright Green – R52 G178 B51
- Parameters : Segoe UI 16 – Sage Blue – R0 G159 B218
- Parameter Name : Arial 10 bold – Black
- Parameter Value : Arial 10 – Black
- Rows – Arial 10
- Subtotal Rows – Arial 10 Bold – Black – Fill : Sage Light Grey – R224 G225 B221
- Columns Headers : Segoe UI 11 – White
    - Fill Primary – Sage Bright Green - R52 G178 B51
    - Fill Secondary – Sage Dark Green – R0 G127 B100

7.5.2 Sparklines

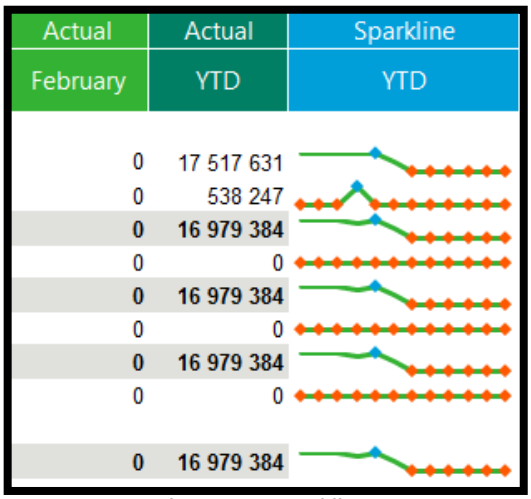

Figure 50: Sparklines

- Heading: Segoe UI 11 – White - Fill - Sage Blue
- Line Weight: 2.25 point
- Line Colour: Sage Bright Green
- High Point: Sage Blue
- Low Point: Sage Orange R255 G88 B0

8.0 Report Writing SQL Standards

8.1 Key Words

All key words are to be in capital letters:

```
SELECT
RTRIM(Table1.Expression1)
FROM
Table1
WHERE Table1.Expression1 = 1
```

8.2 Aliases

All Aliases to be encapsulated in square brackets.

```
SELECT
Table1.Expression1 AS [Name]
FROM
Table1
```

8.3 Indentation

8.3.1 Expressions for SQL Query Type Containers

For the purpose of readability and code comments where applicable, expressions should each be on its line.

```
SELECT
  Table1.Expression1
, Table1.Expression2
, Table1.Expression3
FROM
Table1
```

8.3.2 Case Statements

Logical tests and their outcome should remain on the same line.

```
SELECT
CASE WHEN Table1.Expression1 = 1 THEN 100
        WHEN Table1.Expression1 =2 THEN 200
        ELSE 0
END AS [Name]
FROM
Table1
```

8.3.3 Joins

Join Statements need to be indented as follows

```
SELECT
Table1.Expression1
FROM
Table1
        INNER JOIN Table2
          ON Table2.Expression1 = Table1.Expression1
       INNER JOIN Table3
         ON Table3.Expression1 = Table2.Expression1
```

8.3.4 Where clause

Where clause conditions are to be on their own line. This is to make it easier when reading, commenting or omitting a clause.

```
SELECT
Table1.Expression1
FROM
Table1
WHERE Table1.Expression1 >= 1
AND Table1.Expression1 <=100
```

8.3.5 Subqueries

```
LEFT JOIN (SELECT
            Table1.Expression1
            ,Table1. Expression2
            FROM
           Table1
          WHERE
           Table1. Expression1= 0
           ) as TableSub1
  ON TableSub1.Expression1 = Table2.Expression1
```

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