

# SpagoBI 3.6 Charts Drill Down

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## **Acknowledgments**

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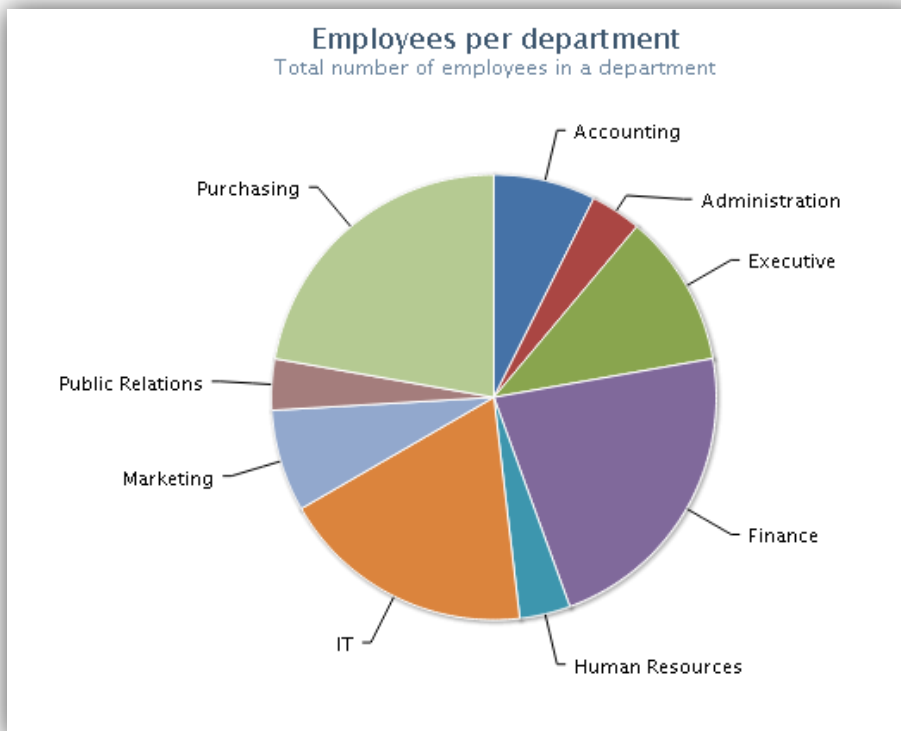
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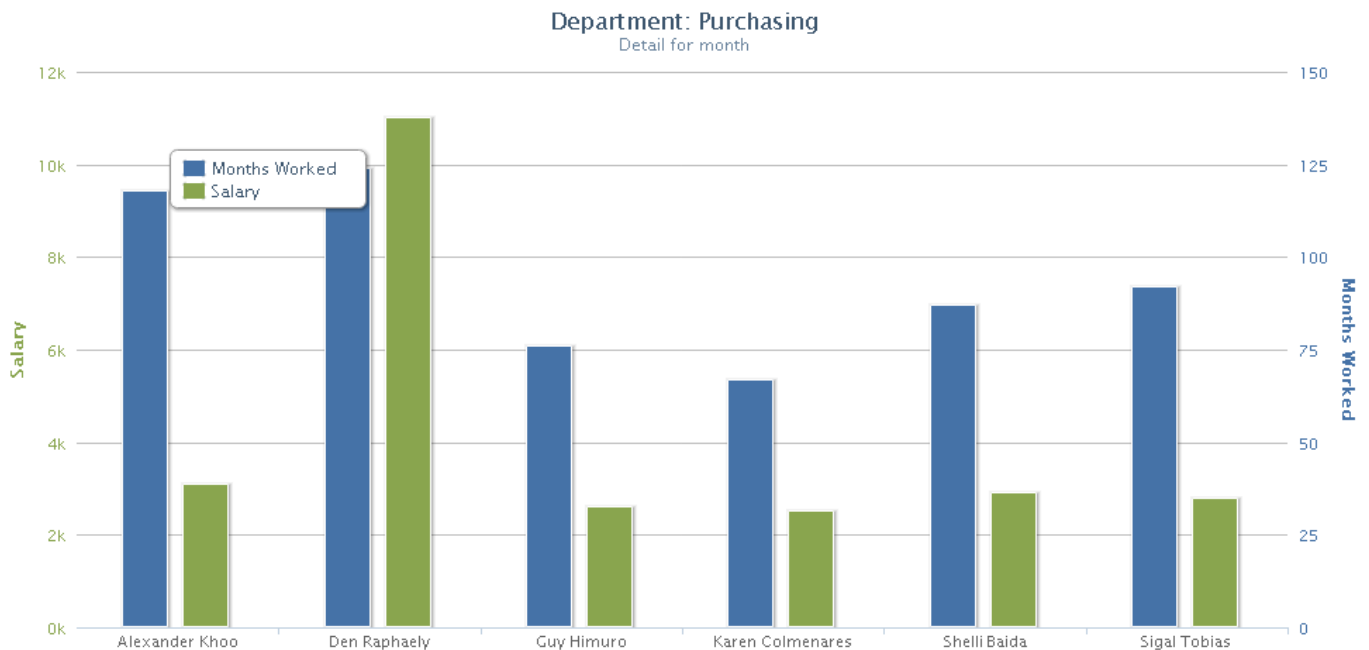
## Charts

Continuing from our first article “SpagoBI with ORACLE 11g” we had seen how to download Oracle database and use it with SpagoBI to create an OLAP document. In this series, we want to see how to use the HR schema available in the Oracle database to create a drill down chart. Here is the problem we are trying to address.

**PROBLEM ONE:** The HR manager would like a pie chart that gives a summary of departments and the total number of employees in each department. The pie chart will help to visually “see” which departments have the most employees. Below is the proposed solution to problem one.



**PROBLEM TWO:** The HR manager would like to know if there is any relation between the salary an employee earns and the number of months he/she have worked for the company. The manager would like a column chart that displays this information when he clicks any department in the pie chart above. Below is a sample solution.



Further to the problem above, when you click on any department in the pie chart, the title of the detail report should show which department you selected. Example if we click on purchasing, then the title of the detail chart should be “Department: Purchasing” as shown above. This problem is an example of cross navigation or drill down where you link two documents in SpagoBI and pass a parameter from the master document to the child document. The parameter is used to modify the query that is used to render the detail chart and also to create the title.

Here are the steps to achieve this.

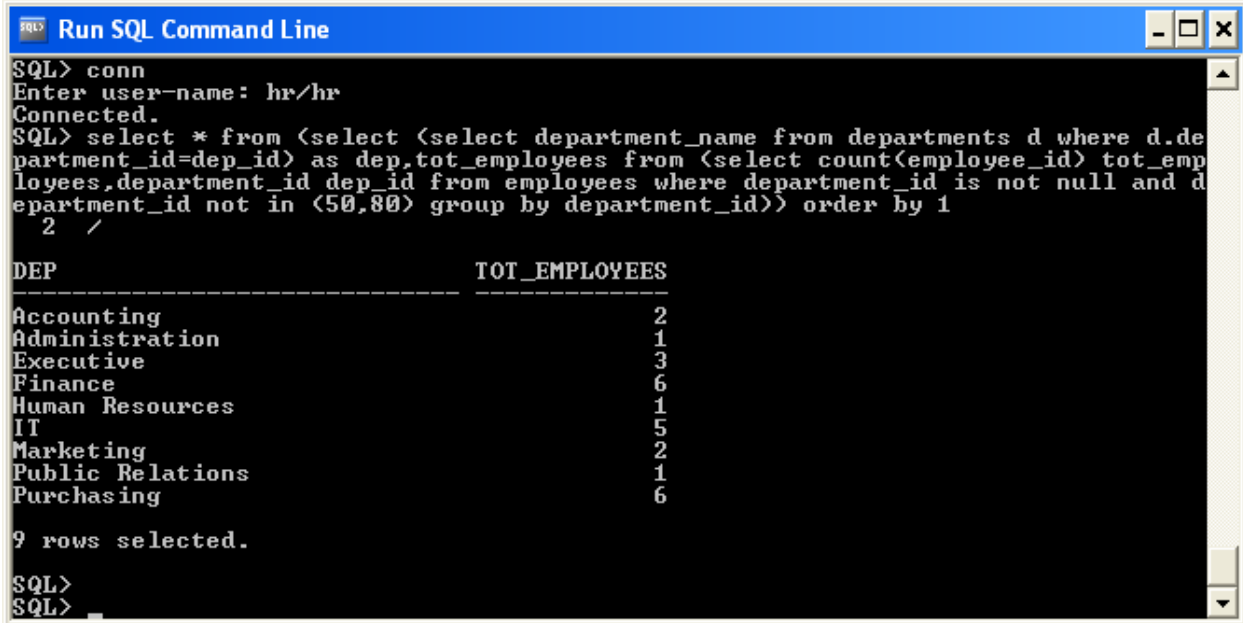
## Preparing the data.

We will create a chart which will display the total number of employees in any given department. When you click on any department, it will display another chart which shows the duration the employees have been with the company and his/her salary. In essence, we need to show the relation between the duration the employee have been with the company and the salary earned.

Login as user hr in the HR schema and use the sql query below to generate the total number of employees per department.

```
select * from (select (select department_name from departments d where d.department_id=dep_id)
as dep,tot_employees from (select count(employee_id) tot_employees,department_id dep_id from
employees where department_id is not null and department_id not in (50,80) group by
department_id)) order by 1
```

Sample run is shown below.



```
SQL> conn
Enter user-name: hr/hr
Connected.
SQL> select * from <select <select department_name from departments d where d.de
partment_id=dep_id> as dep,tot_employees from <select count(employee_id) tot_emp
loyees,department_id dep_id from employees where department_id is not null and d
epartment_id not in <50,80> group by department_id>> order by 1
2 /

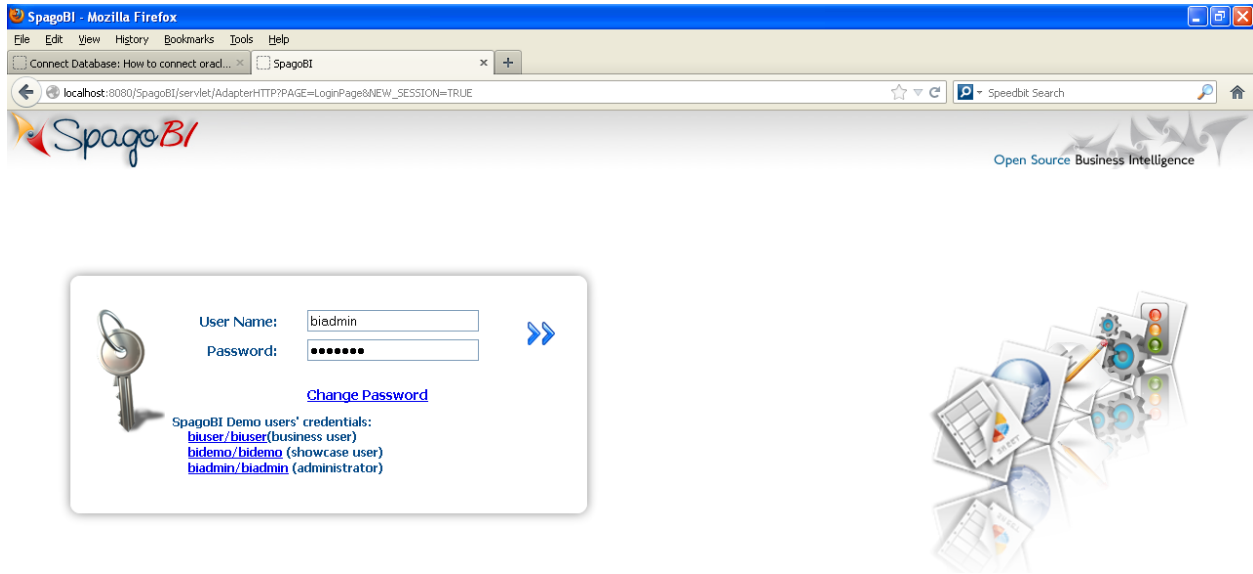
DEP                                TOT_EMPLOYEES
-----
Accounting                          2
Administration                       1
Executive                             3
Finance                               6
Human Resources                       1
IT                                     5
Marketing                             2
Public Relations                      1
Purchasing                           6

9 rows selected.

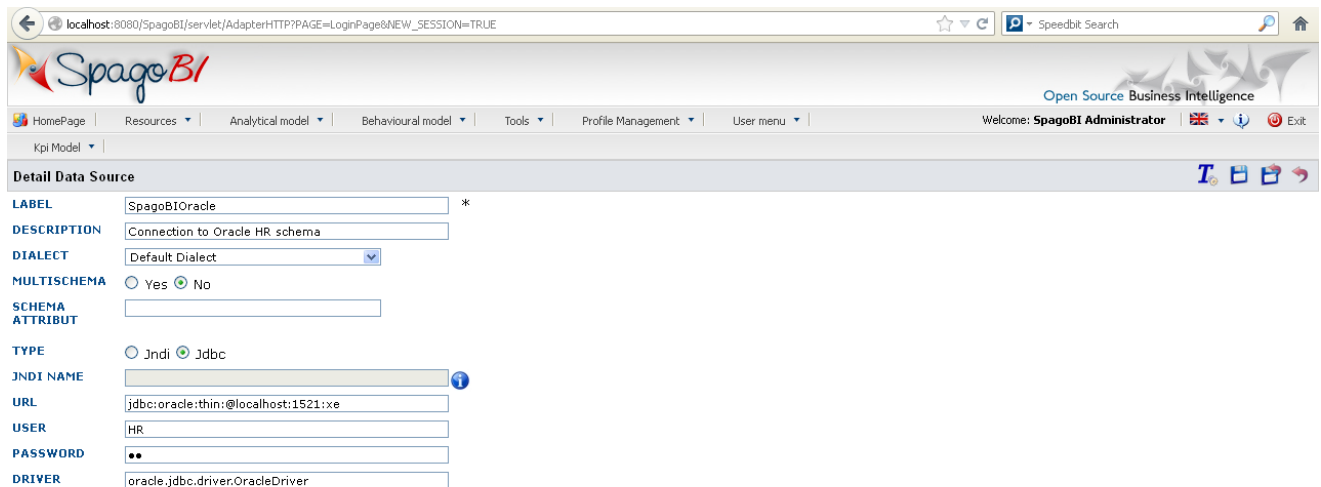
SQL>
SQL>
```

## Create Data source.

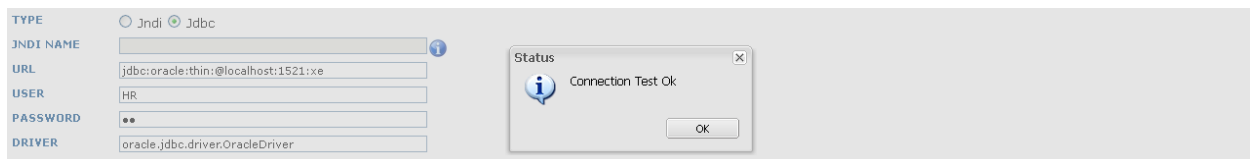
Now navigate to the URL <http://servername:8080/SpagoBI> and login using the username biadmin and password biadmin.



Navigate to Resources-> Data source. On the extreme right, click on insert button to create a new data source.



Test the connection. Should be Ok, and then Save.



We will be using this data source for the remainder of the book.

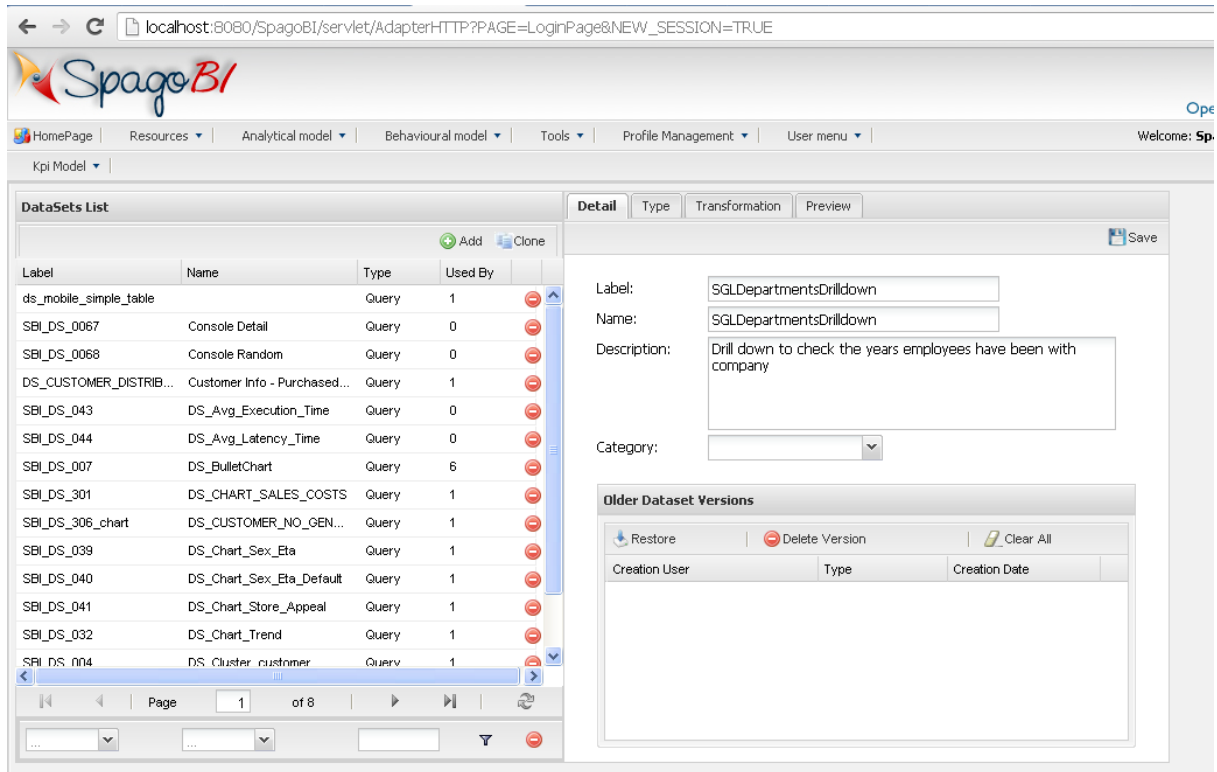
## Data Set

The dataset is the link to our query. To create the dataset in SpagoBI, proceed as follows.

1. Click on Resources -> dataset.



2. Click on the add button.
3. On the Label, write "SGLDepartmentsDrilldown"
4. On Name, write "SGLDepartmentsDrilldown"
5. On Description, write "Drill down to check the years employees have been with company"
6. You should have the following once you are done.



The screenshot shows the SpagoBI web interface. The browser address bar indicates the URL: localhost:8080/SpagoBI/servlet/AdapterHTTP?PAGE=LoginPage&NEW\_SESSION=TRUE. The SpagoBI logo is visible at the top left. The main navigation bar includes Home Page, Resources, Analytical model, Behavioural model, Tools, Profile Management, and User menu. The user is logged in as 'SpagoBI'. The main content area is titled 'Kpi Model' and contains a 'DataSets List' table and a 'Detail' view.

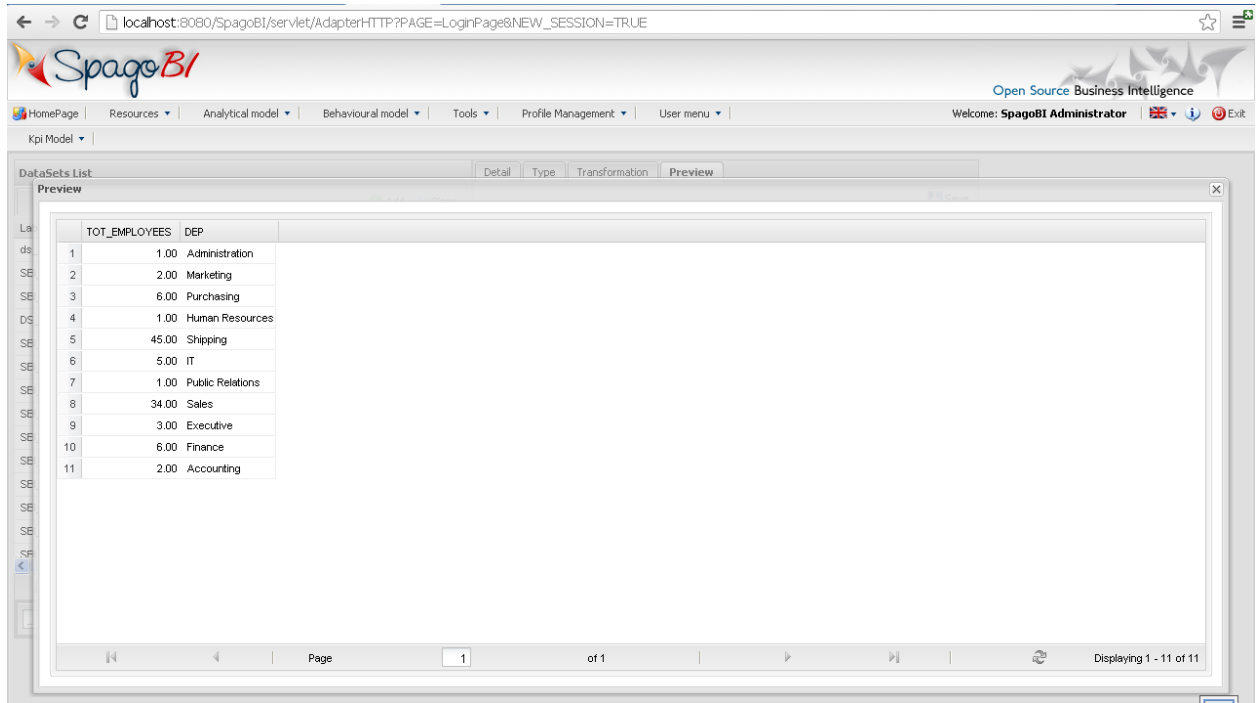
Label	Name	Type	Used By
ds_mobile_simple_table		Query	1
SBI_DS_0067	Console Detail	Query	0
SBI_DS_0068	Console Random	Query	0
DS_CUSTOMER_DISTRI...	Customer Info - Purchased...	Query	1
SBI_DS_043	DS_Avg_Execution_Time	Query	0
SBI_DS_044	DS_Avg_Latency_Time	Query	0
SBI_DS_007	DS_BulletChart	Query	6
SBI_DS_301	DS_CHART_SALES_COSTS	Query	1
SBI_DS_306_chart	DS_CUSTOMER_NO_GEN...	Query	1
SBI_DS_039	DS_Chart_Sex_Eta	Query	1
SBI_DS_040	DS_Chart_Sex_Eta_Default	Query	1
SBI_DS_041	DS_Chart_Store_Appeal	Query	1
SBI_DS_032	DS_Chart_Trend	Query	1
SBI_DS_004	DS_Cluster_customer	Query	1

The 'Detail' view shows the following fields:

- Label: SGLDepartmentsDrilldown
- Name: SGLDepartmentsDrilldown
- Description: Drill down to check the years employees have been with company
- Category: (dropdown menu)

Below the detail view is the 'Older Dataset Versions' section, which includes buttons for 'Restore', 'Delete Version', and 'Clear All', and a table with columns for 'Creation User', 'Type', and 'Creation Date'.

7. Click on the Type TAB.
8. Under DataSet Type, select Query.
9. Under data source select "SpagoBIOracle". Remember we had created this datasource previously.
10. Under Query, Paste the query we had created above.
11. You should have this once you are done.
12. Click on preview button. You should have the output shown below.



The screenshot shows the SpagoBI web interface. The browser address bar displays 'localhost:8080/SpagoBI/servlet/AdapterHTTP?PAGE=LoginPage&NEW\_SESSION=TRUE'. The SpagoBI logo is visible in the top left, and 'Open Source Business Intelligence' is in the top right. The user is logged in as 'SpagoBI Administrator'. The main content area shows a 'DataSets List' with a 'Preview' tab selected. The preview displays a table with 11 rows and 3 columns: 'TOT\_EMPLOYEES', 'DEP', and an unlabeled column. The data is as follows:

	TOT_EMPLOYEES	DEP	
1	1.00	Administration	
2	2.00	Marketing	
3	6.00	Purchasing	
4	1.00	Human Resources	
5	45.00	Shipping	
6	5.00	IT	
7	1.00	Public Relations	
8	34.00	Sales	
9	3.00	Executive	
10	6.00	Finance	
11	2.00	Accounting	

The interface also shows a 'Kpi Model' dropdown and navigation controls at the bottom of the preview window, including 'Page 1 of 1' and 'Displaying 1 - 11 of 11'.

13. Now save the data set.

## Creating Master Chart.

We will now create the master chart. From the master chart, we will be able to click any bar to drill down to the detail charts. Follow these steps.

1. Click on Analytical Model -> Documents Development.
2. Click on Insert. Add create the document as shown below.

**DOCUMENT DETAILS**

Label	<input type="text" value="EmployeeMaster"/>	*
Name	<input type="text" value="EmployeeMaster"/>	*
Description	<input type="text" value="Employee Master"/>	
Type	<input type="text" value="Real-time - DashBoard"/>	▼
Engine	<input type="text" value="SpagoBIJFreeChartEngine"/>	▼
Dataset	<input type="text" value="SGLDepartmentsDrilldown"/>	🔍
State	<input type="text" value="Development"/>	▼
Refresh seconds	<input type="text" value="0"/>	
Criptable	<input type="radio"/> True <input checked="" type="radio"/> False	
Visible	<input checked="" type="radio"/> True <input type="radio"/> False	
Visibility restrictions	<input type="text"/>	
	<input type="text" value=""/> = <input type="text"/>	➕ 📄
Template	<input type="button" value="Choose File"/> No file chosen	

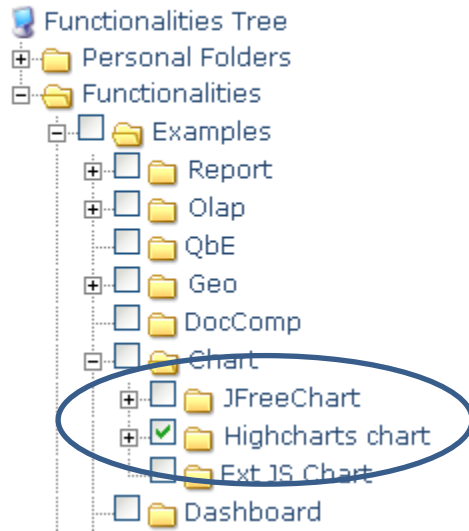
3. Under Template, Click on “Choose File” and select the location of the xml file that defines this document. I have put mine in C:\employees.xml. The contents of the xml are shown below.

```
<HIGHCHART width='80%' height='80%'>
<CHART type='pie' defaultSeriesType='pie' />
<TITLE text='Employees per department' />
<SUBTITLE text='Total number of employees in a department' />
<PLOT_OPTIONS >
  <PIE allowPointSelect='true' cursor='pointer' >
    <DATA_LABELS enabled='true' color='#000000' connectorColor='#000000' />
  </PIE>
</PLOT_OPTIONS>
<SERIES_LIST>
  <SERIES type='pie' name='Browser share' alias='DEP,TOT_EMPLOYEES' />
</SERIES_LIST>
<LEGEND layout='vertical'
  align='right'
  verticalAlign='top'
  x='-100'
  y='100'
  floating='true'
  borderWidth='1'
  backgroundColor='#FFFFFF'
  shadow='true' />
  <DRILL document="EMPLOYEEDETAIL">
<PARAM_LIST>
  <PARAM name='depname' type="CATEGORY" />
</PARAM_LIST>
</DRILL>
</HIGHCHART>
```

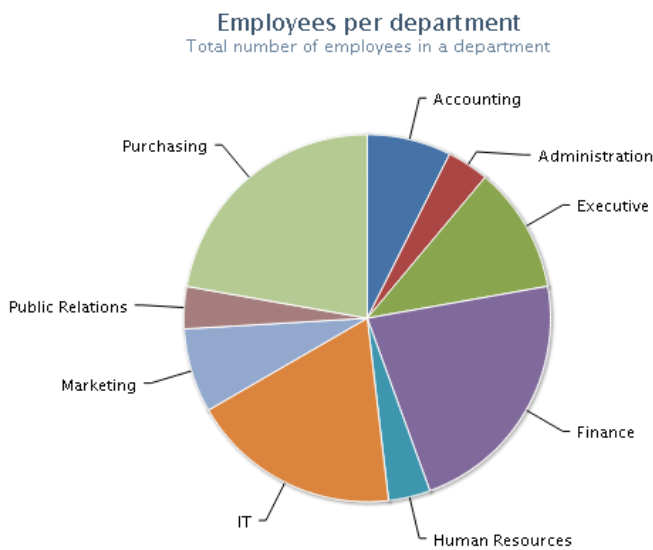
If you do not understand the contents of the xml, see my book “SpagoBI in 2 hours” or contact me at [xogutu@gmail.com](mailto:xogutu@gmail.com) on how to get the book.

4. Under **Show document templates** select the folder where you want your chart stored e.g [Highcharts chart](#)

**Show document templates**



5. Click on Save.
6. Navigate back to Home Page
7. Click on examples folder.
8. Click on Charts folder.
9. Click on Highcharts chart.
10. Select EmployeeMaster.



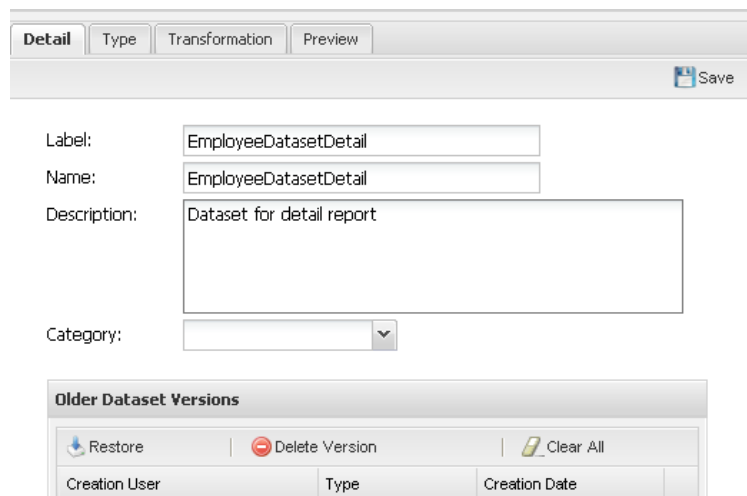
11. We are done with the master. Now let's create the detail chart.

## Detail Chart.

1. Use the query below for the detail data set. Call it EmployeeDatasetDetail. Notice the parameter definition ({P{depname}})

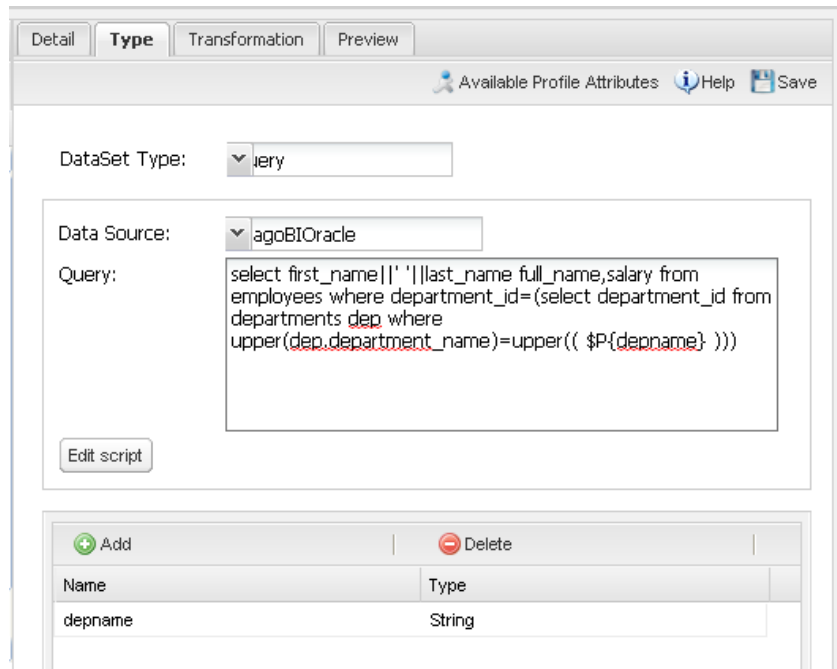
```
select * from (select first_name || ' ' || last_name as  
FULL_NAME,salary,trunc(months_between(sysdate,hire_date)) as months_worked from employees  
where department_id=(select department_id from departments dep where  
upper(dep.department_name)=upper({P{depname}}))) order by 1 asc
```

- a. Under detail enter the data as shown.



The screenshot shows a software interface for creating a detail dataset. The 'Detail' tab is selected. The 'Label' field contains 'EmployeeDatasetDetail', the 'Name' field contains 'EmployeeDatasetDetail', and the 'Description' field contains 'Dataset for detail report'. The 'Category' field is a dropdown menu. Below the main form is an 'Older Dataset Versions' section with buttons for 'Restore', 'Delete Version', and 'Clear All'. A table below these buttons has columns for 'Creation User', 'Type', and 'Creation Date'.

b. Under Type, enter the data as shown.



Detail **Type** Transformation Preview

Available Profile Attributes Help Save

DataSet Type: Query

Data Source: agoBIOracle

Query:

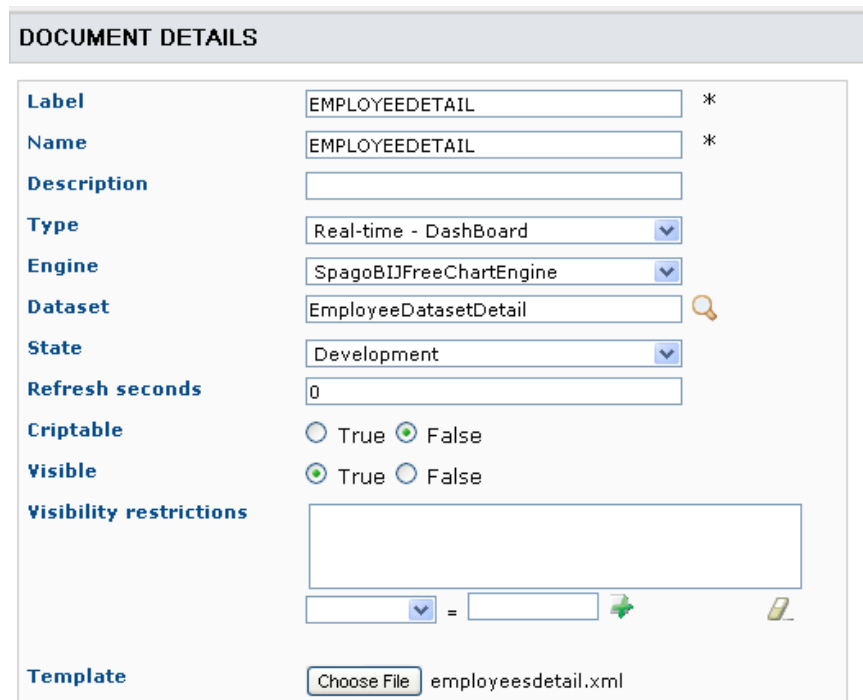
```
select first_name||' '||last_name full_name,salary from
employees where department_id=(select department_id from
departments dep where
upper(dep.department_name)=upper( :$P{depname} ))
```

Edit script

Name	Type
depname	String

c. Save EmployeeDatasetDetail.

d. Create the Employee detail chart as shown below. Save in the same folder as the Master.



**DOCUMENT DETAILS**

**Label** EMPLOYEEDETAIL \*

**Name** EMPLOYEEDETAIL \*

**Description**

**Type** Real-time - DashBoard

**Engine** SpagoBIJFreeChartEngine

**Dataset** EmployeeDatasetDetail

**State** Development

**Refresh seconds** 0

**Criptable**  True  False

**Visible**  True  False

**Visibility restrictions**

**Template** Choose File employeesdetail.xml

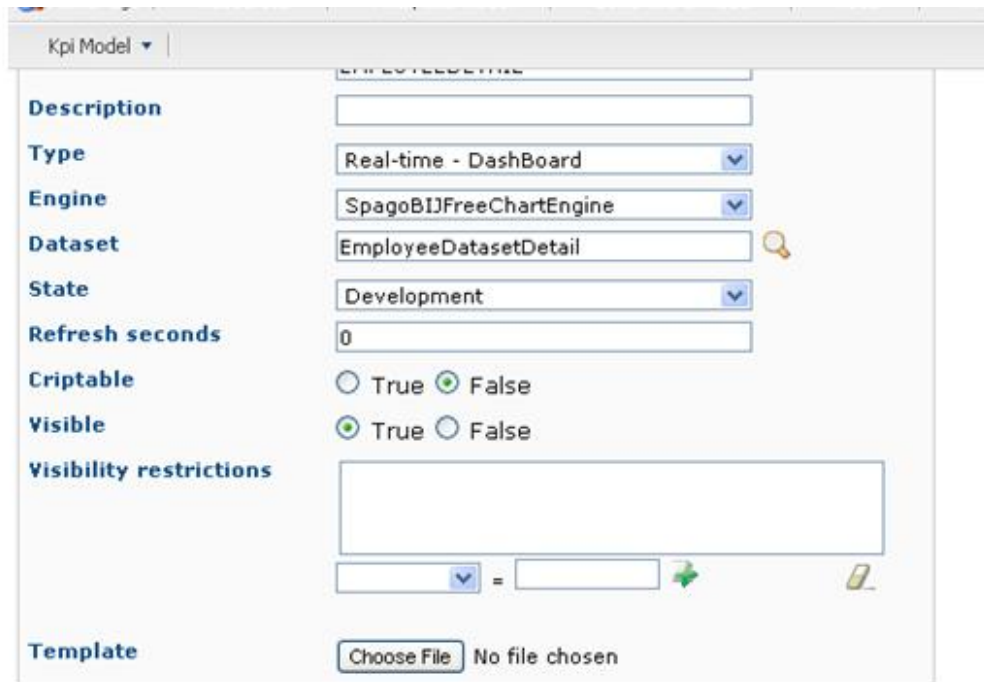
- e. Click browse and select the xml template (employeedetail.xml).

```
<HIGHCHART width='100%' height='100%'>
  <CHART zoomType='xy' />
  <TITLE text='Department: ${depname}' />
  <SUBTITLE text='Detail for month' />
  <X_AXIS alias='FULL_NAME' />
  <Y_AXIS_LIST>
    <Y_AXIS alias='SALARY'>
      <LABELS>
        <STYLE color='#89A54E' />
      </LABELS>
      <TITLE text='Salary'>
        <STYLE color='#89A54E' />
      </TITLE>
    </Y_AXIS>

    <Y_AXIS alias='MONTHS_WORKED' opposite='true'>
      <LABELS>
        <STYLE color='#4572A7' />
      </LABELS>
      <TITLE text='Months Worked'>
        <STYLE color='#4572A7' />
      </TITLE>
    </Y_AXIS>

  </Y_AXIS_LIST>
  <LEGEND layout='vertical'
    align='left'
    verticalAlign='top'
    x='120'
    y='100'
    floating='true'
    borderWidth='1'
    backgroundColor='#FFFFFF'
    shadow='true' />
  <SERIES_LIST allowPointSelect='false'>
    <SERIES name='Months Worked' color='#4572A7' type='column' yAxis='1'
alias='MONTHS_WORKED' />
    <SERIES name='Salary' color='#89A54E' type='column' alias='SALARY' />
  </SERIES_LIST>
</HIGHCHART>
```

- f. In the title definition, the statement **\$P{depname}** is used to get the contents of the text that was selected in the previous (master) chart.
- g. Create a document analytical driver as shown.



Kpi Model ▾

Description	<input type="text"/>
Type	Real-time - DashBoard ▾
Engine	SpagoBIJFreeChartEngine ▾
Dataset	EmployeeDatasetDetail 🔍
State	Development ▾
Refresh seconds	<input type="text" value="0"/>
Criptable	<input type="radio"/> True <input checked="" type="radio"/> False
Visible	<input checked="" type="radio"/> True <input type="radio"/> False
Visibility restrictions	<input type="text"/>
	<input type="text"/> ▾ = <input type="text"/> ➕ 📄
Template	<input type="button" value="Choose File"/> No file chosen



AN\_DEPARTMENT\_DETAIL New...

DOCUMENT ANALYTICAL DRIVER DETAILS

Title	<input type="text" value="AN_DEPARTMENT_DETAIL"/>	*
Analytical driver	<input type="text" value="DEP_NAME_DRIVER"/>	* 🔍
Url Name	<input type="text" value="depname"/>	*
Priority	<input type="text" value="1"/> ▾	
Visible	<input checked="" type="checkbox"/>	

- h. The details are shown below.



### ANALYTICAL DRIVERS DETAILS

<b>Label</b>	<input type="text" value="DEP_NAME_DRIVER"/>	*
<b>Name</b>	<input type="text" value="DEP_NAME_DRIVER"/>	*
<b>Description</b>	<input type="text"/>	
<b>Type</b>	<input type="radio"/> Date <input type="radio"/> Number <input checked="" type="radio"/> String	
<b>Functional</b>	<input type="checkbox"/>	
<b>Temporal</b>	<input checked="" type="checkbox"/>	

**ALL**

### ANALYTICAL DRIVER USE MODE DETAILS

<b>Label</b>	<input type="text" value="ALL"/>	*
<b>Name</b>	<input type="text" value="ALL"/>	*
<b>Description</b>	<input type="text"/>	
<b>Low</b>	<input type="radio"/> <input type="text" value=""/> * <input type="text" value="List values selection"/>	
<b>Manual Input</b>	<input checked="" type="radio"/>	
<b>Expandable</b>	<input type="checkbox"/>	

### Roles Associations

<input checked="" type="checkbox"/> /spagobi	<input checked="" type="checkbox"/> /spagobi/admin
<input checked="" type="checkbox"/> /spagobi/bam	<input checked="" type="checkbox"/> /spagobi/dev
<input checked="" type="checkbox"/> /spagobi/model	<input checked="" type="checkbox"/> /spagobi/modeladm
<input checked="" type="checkbox"/> /spagobi/op_reva	<input checked="" type="checkbox"/> /spagobi/test
<input checked="" type="checkbox"/> /spagobi/user/demo	<input checked="" type="checkbox"/> /spagobi/userb

### References.

[http://wiki.spagobi.org/xwiki/bin/view/spagobi\\_server/Highcharts+library#HCrossNavigation](http://wiki.spagobi.org/xwiki/bin/view/spagobi_server/Highcharts+library#HCrossNavigation)