

# Understanding BEx Query Designer: Part-3 Calculated Key Figures and restricted Key Figures



## Applies to:

SAP NetWeaver BW.

## Summary

This document is the third installment of a 6 part Query Designer Training guide for Beginners. It deals with understanding more advanced elements in the query designer i.e. Calculated Key Figures and Restricted Key Figures. This document will also be helpful to intermediate and advanced level users to learn some usually ignored but helpful facts about the Query Designer.

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## The BEx Query Designer

### Definition

It is an Independent desktop application for defining queries.

### Use

You analyze the dataset of the Business Information Warehouse by defining queries for InfoProviders using the BEx Query Designer. By selecting and combining InfoObjects (characteristics and key figures) or reusable structures in a query, you determine the way in which you navigate through and evaluate the data in the selected InfoProvider.

### Integration

You open the Query Designer from Start/Programs/Business Explorer/Query Designer.

You can also call up the BEx Query Designer from the following components:

- BEx Analyzer
- BEx Web Application Designer
- Crystal Reports (Crystal Reports  $\geq$  8.5 incl. CR add-ons for SAP)

### Features

The BEx Query Designer contains the following functions:

- You can use the queries that you define in the query designer for OLAP reporting and also for tabular reporting.
- You can parameterize the queries by using variables for characteristic values, hierarchies, hierarchy nodes, texts, or formulas.
- You can select InfoObjects more precisely by:
  - . Restricting characteristics to characteristic values, characteristic intervals and hierarchy nodes
  - . Defining formulas
  - . Defining selections
  - . Defining reusable calculated and restricted key figures.
  - . Using local or reusable structures
  - . Defining exceptions
  - . Defining conditions

The most significant components of the query definition are the filter and navigation:

- Selections in the **filter** have a limiting effect on the whole query. When defining the filter, you select characteristic values from one or more characteristics or from a key figure. All of the InfoProvider data is aggregated using the filter selection of the query. The filter selection cannot be changed by navigation.
- For navigation, you select user-defined characteristics and determine the content of the rows and columns of the query. You use this selection to determine the data areas of the InfoProvider over which you want to navigate. The arrangement of the contents of the rows and columns also determines the default view of the query and the rows and columns axes in the results area.

After it is inserted into the Web browser, a query is displayed in the default initial view. By navigating through the query, you can generate different views of the InfoProvider data, by dragging one of the user-defined characteristics into the rows or columns of the query, for example, or by filtering a characteristic according to a single characteristic value.

With the definition of a query, the InfoProvider data can be evaluated specifically and quickly. The more detail in which the query is defined, the quicker its execution and navigation.

## Calculated Key Figures

### Use

You can recalculate the key figures of an InfoProvider for reuse in the Query Designer using formulas. Calculated key figures consist of formula definitions containing basic key figures, restricted key figures or precalculated key figures.

### Procedure to Define a New Calculated Key Figure

In the InfoProvider objects display frame, select Key Figure and from the context menu (right-mouse click), choose New Calculated Key Figure.

If a calculated key figure has already been defined for this InfoProvider, you can also select the Calculated Key Figures entry and, from the context menu, choose New Calculated Key Figure.

The New Calculated Key Figure dialog box appears.

The upper part of the screen contains a text field in which you enter a description of the calculated key figure.

Beneath this is the input field for the formula that you want to use to calculate the key figure. The bottom left screen area contains all of the operands available for the formula definition. These are:

- The basic key figures calculated key figures and restricted key figures from the relevant InfoProvider.

- All form variables
- Basic functions
- Percentage functions
- Data functions
- Mathematical functions
- Trigonometric functions
- Boolean operators

Between the operands and the functions, the symbols for the basic arithmetic operations are displayed. To the right of the functions, there is a number block.

Proceed as follows to define a formula:

- Choose the operands you want to use, and insert them in the entry field for the formula by double-clicking or by using Drag&Drop.
- Choose the calculation functions you want to use by either clicking on the symbols for the basic arithmetic operations, double-clicking on the functions, or using Drag&Drop.
- Select the numerical values for the formula by clicking on the number block.


## 2. Define your formula using the available operands and operators.

If, when defining a formula, you want to use a variable that is not contained in the operands, you must first create the variable. Highlight the Formula Variable entry and using the right mouse button on the context menu, choose New Formula. You reach the variable wizard that takes you through a step-by-step process for defining a new variable.

If you want to change a formula variable, select the variable and, from the context menu, choose Edit. The variable editor appears.

Note that when you execute a query, the key figures are always calculated as the same unit. That is, a formula is semantically incorrect if, for example, a currency unit (for example, USD) is added to a weight unit (for example, kg). If you want to calculate values regardless of the unit, use the function Value Without Dimension (Without Units).

## 3. Check the formula definition and choose Formula Syntax Check .

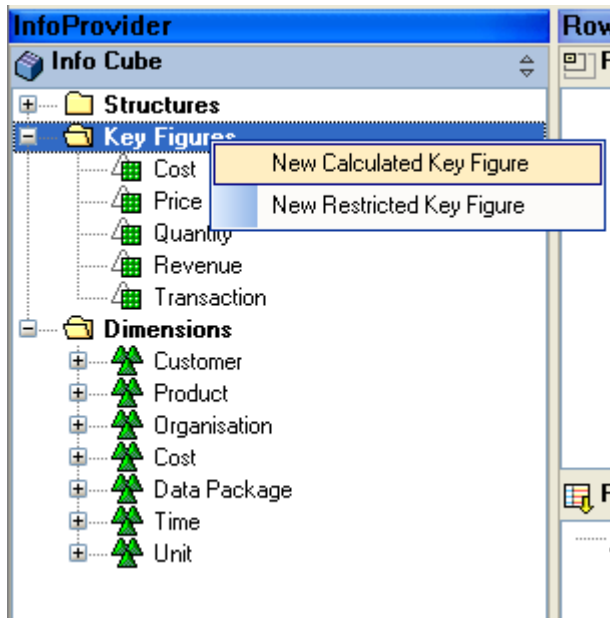
The Formula Syntax Check  function checks only the correctness of the syntax in the formula. It does not check whether the formula makes sense semantically, for example, if it contains the same units. You make semantic checks using the function Check Query

## 4. Enter a description for the calculated key figure..

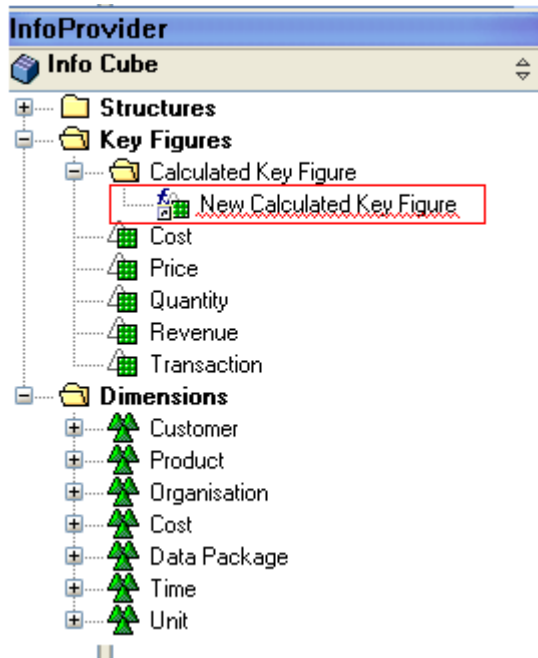
5. Choose OK. The new calculated key figure is defined for the InfoProvider.

### Illustrated Implementation of Calculated Key Figures

To create a new Calculated Key Figure, Right-Click on the Key Figures Folder and select New Calculated Key Figure option from the Context menu as shown below.

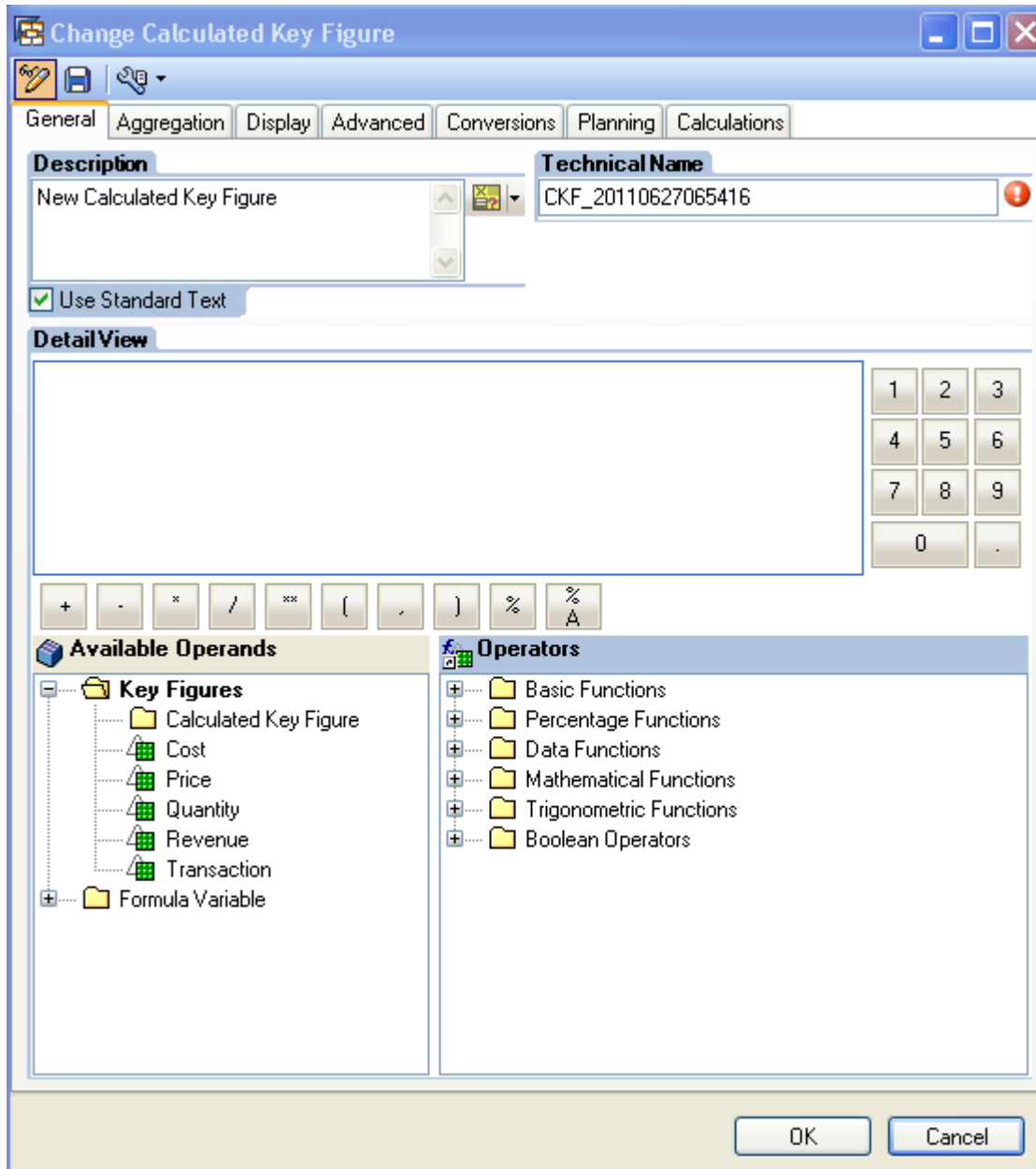


You will notice that a new undefined Calculated key figure is created (circled in red below).



Double click on the newly create created Calculated key figure to define it.

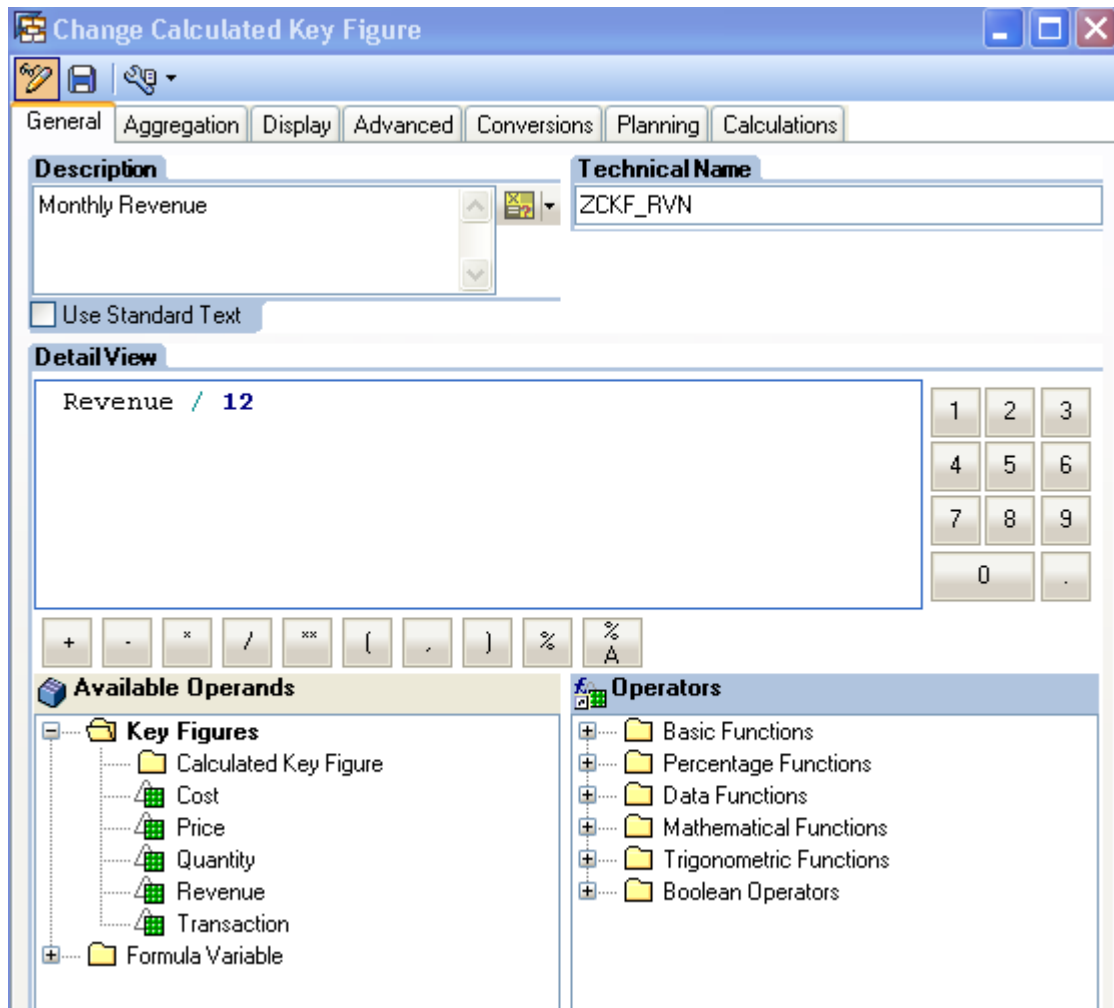
The following pop-up opens.



Here we will define monthly revenue formula by dividing the Revenue by 12.

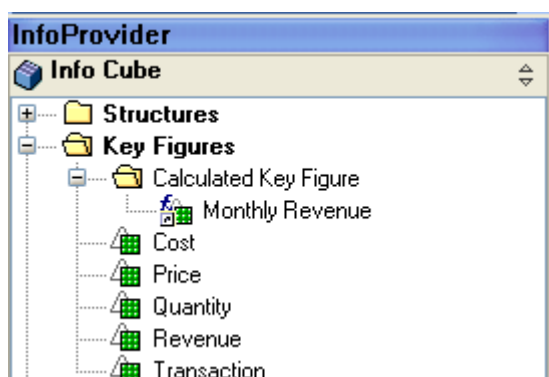
Also, give a meaningful description to the CKF along with a new technical name.

The fully filled up pop-up will appear as the following.



Press Ok to confirm.

Now, the fully defined CKF can be seen in the InfoProvider pane as shown below.



Now, to use this new CKF, you can simply drag and drop it into the Rows or Columns area as any other Key figure.

Note: The advantage of using a Calculated Key Figure is that the CKF is available for reuse in all the queries that are built on that InfoProvider



## Restricted Key Figures

### Use

You can restrict the key figures of an InfoProvider for reuse by selecting one or more characteristics. The key figures that are restricted by one or more characteristic selections can be basic key figures, calculated key figures or key figures that are already restricted.

### Procedure

#### **Defining a New Restricted Key Figure**

In the InfoProvider objects display frame, select Key Figure and from the context menu (right-mouse click), choose New Restricted Key Figure.

If a restricted key figure has already been defined for this InfoProvider, you can also select the Restricted Key Figures entry and, from the context menu, choose New Restricted Key Figure using the right mouse button.

The New Restricted Key Figure dialog box appears.

The text field, in which you can enter a description of the restricted key figure, is found in the upper part of the screen.

Underneath the text field, on the left, is the directory of all the objects available in the InfoProvider. The empty field for defining the restricted key figure is on the right-hand side of the screen.

Using Drag&Drop, choose a key figure from the InfoProvider, and restrict it by selecting one or more characteristic values.

You can also use variables in place of the characteristic values. However, note that you cannot use the following variable types in restricted key figures for technical reasons.

- Variables with *Replacement with Query* process type
- Variables that represent a precalculated value set

You can use these variable types to restrict characteristics in the rows, columns or in the filter. Choose *OK*.

#### **Editing restricted key figures**

Note that when you change a restricted key figure, these changes are effective in all queries that use this restricted key figure.

You can see where the restricted key figure is used. Choose *Where-used List* from the context menu of the restricted key figure (secondary mouse click).

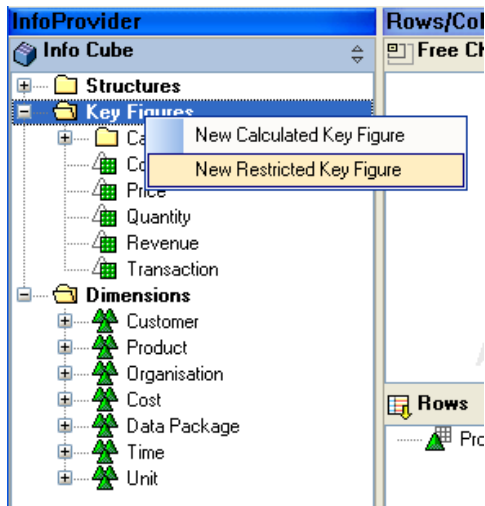
1. In the InfoProvider objects display frame, select the restricted key figure and, from the context menu (right-mouse click), choose *Edit*.
2. Make the required changes.
3. Choose *OK*.

### Determining properties for the restricted key figure

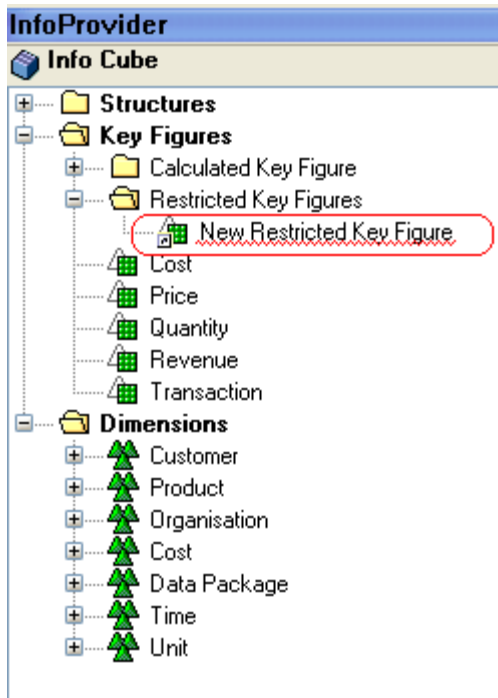
1. In the left display frame for InfoProvider objects, select the restricted key figure and, from the context menu, choose Properties.
2. Make the required settings for the description, number format and currency translation for the restricted key figure.

### Illustrated Implementation of Restricted Key Figures

To create a new Restricted Key Figure, Right-Click on the Key Figures Folder and select New Restricted Key Figure option from the Context menu as shown below.

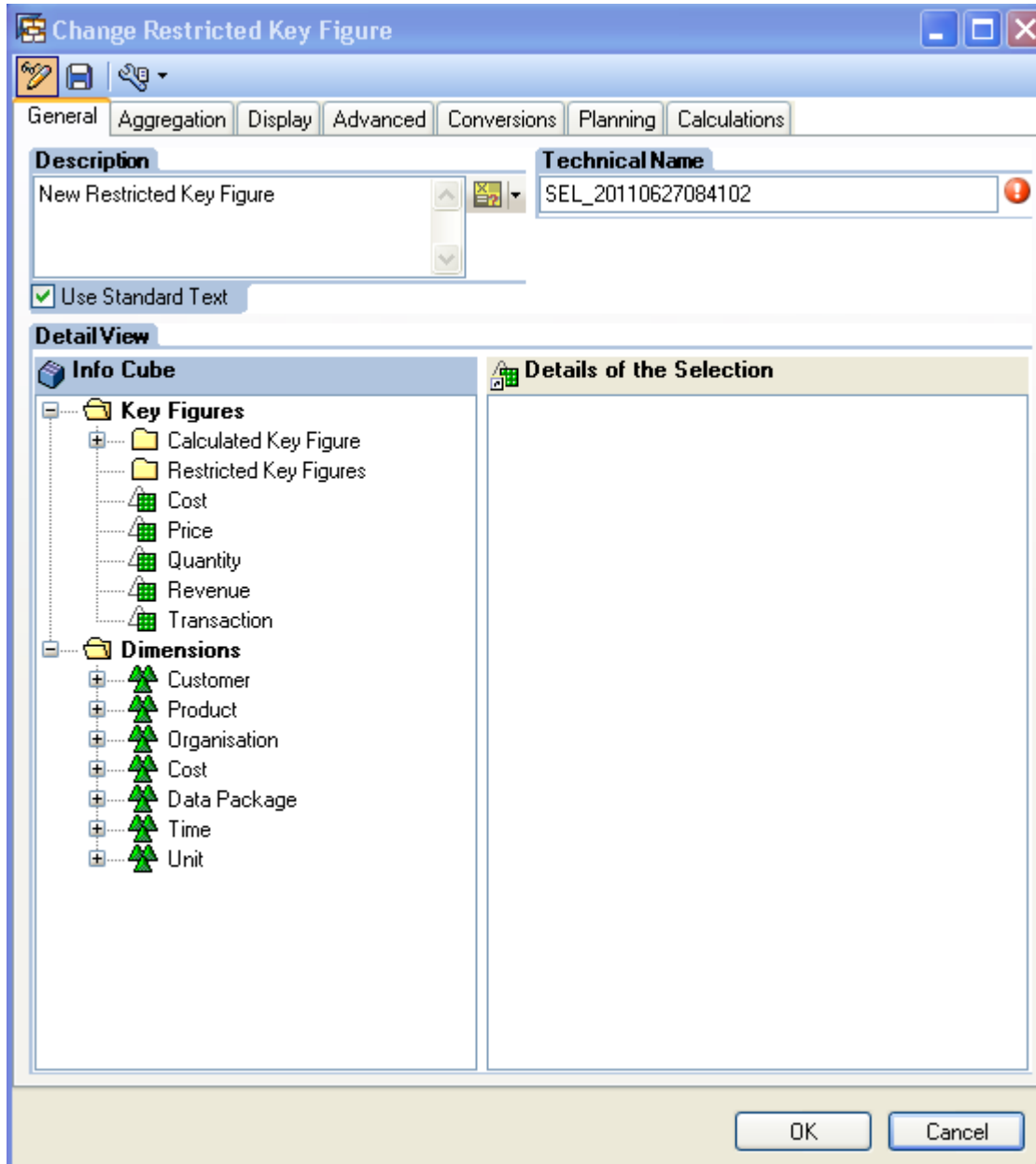


You will notice that a new undefined Restricted key figure is created (circled in red below).



Double click on the newly create created Restricted key figure to define it.

The following pop-up opens.

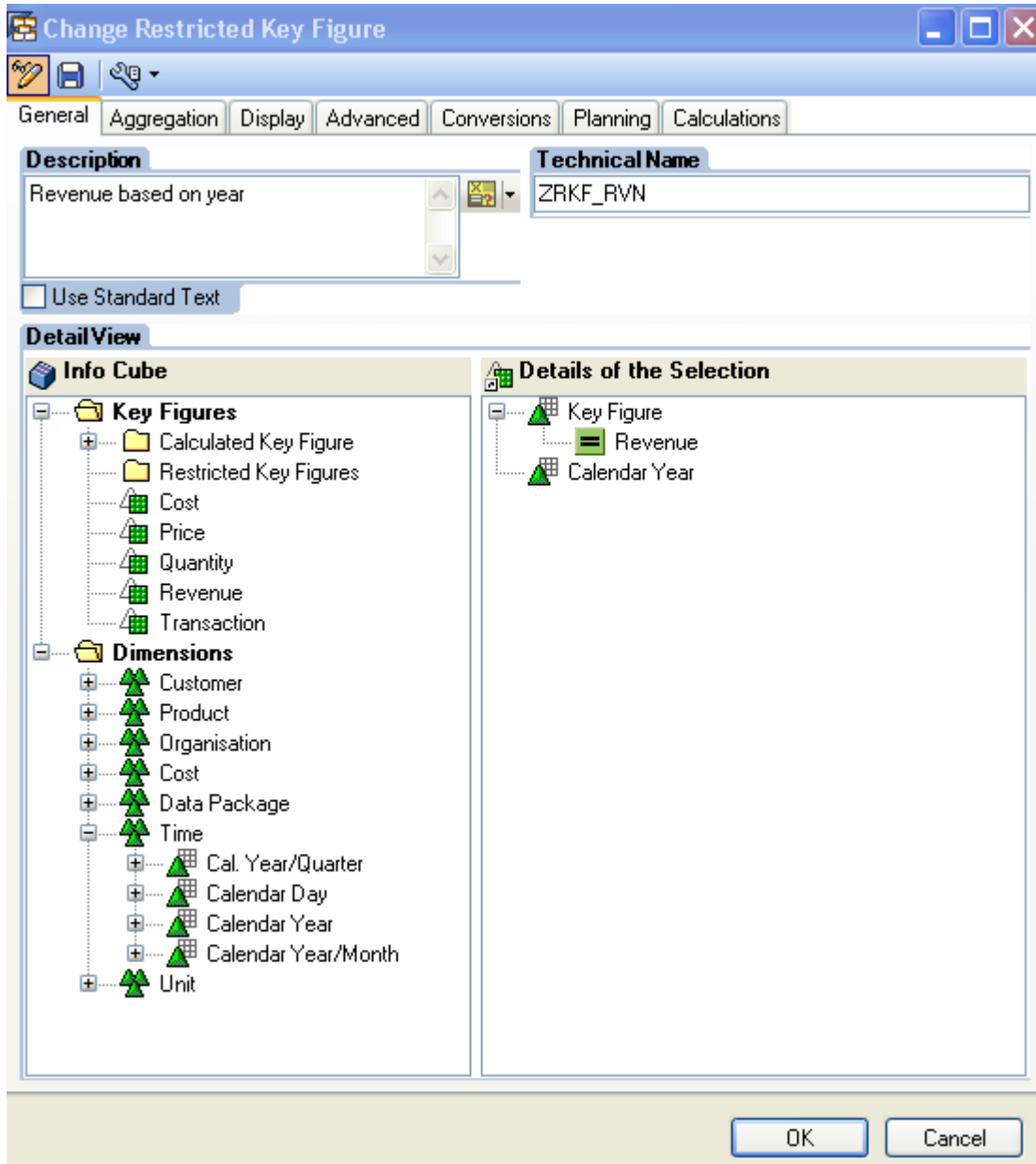


Also, give a meaningful description to the RKF along with a new technical name.

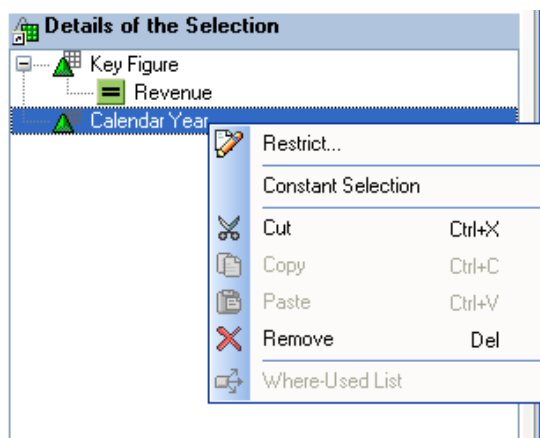
In this example, we will use the RKF to determine the Revenue restricted on Calendar year input at runtime by the user.

The fully filled up pop-up will appear as following.

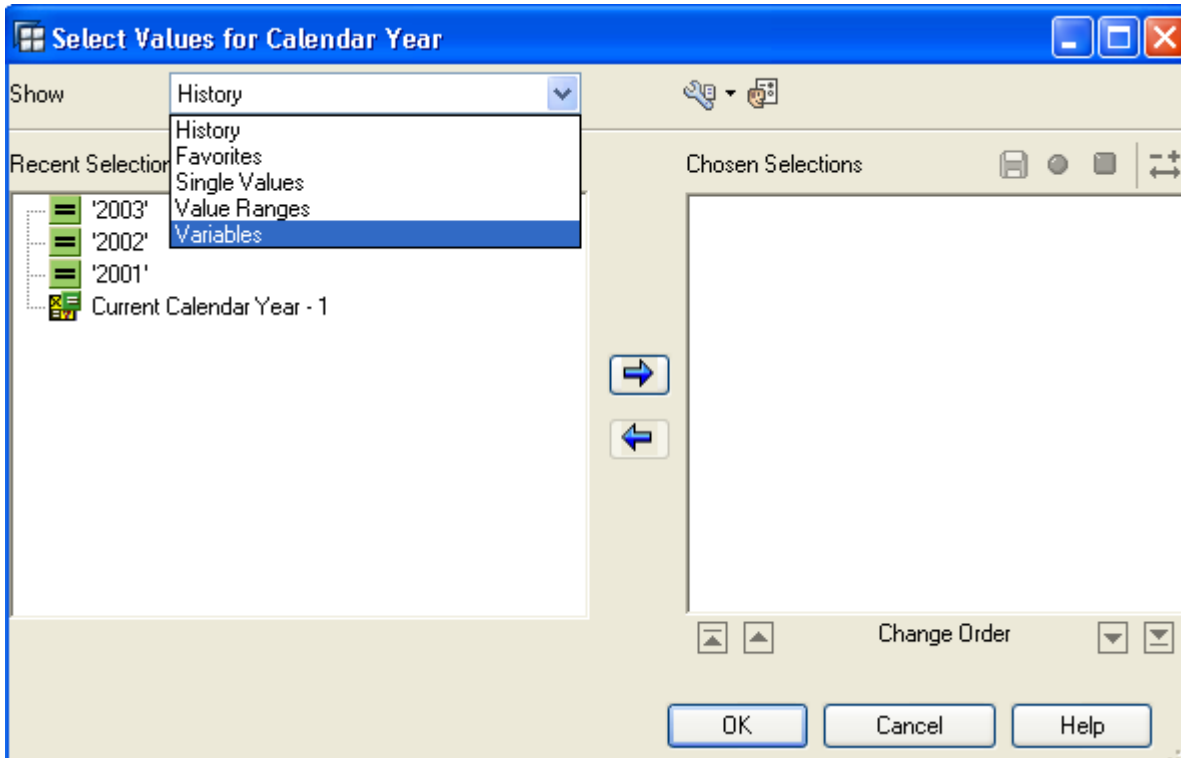
Also, we have dragged and dropped Revenue Key Figure and Calendar Year Characteristic into the Details of selections pane.



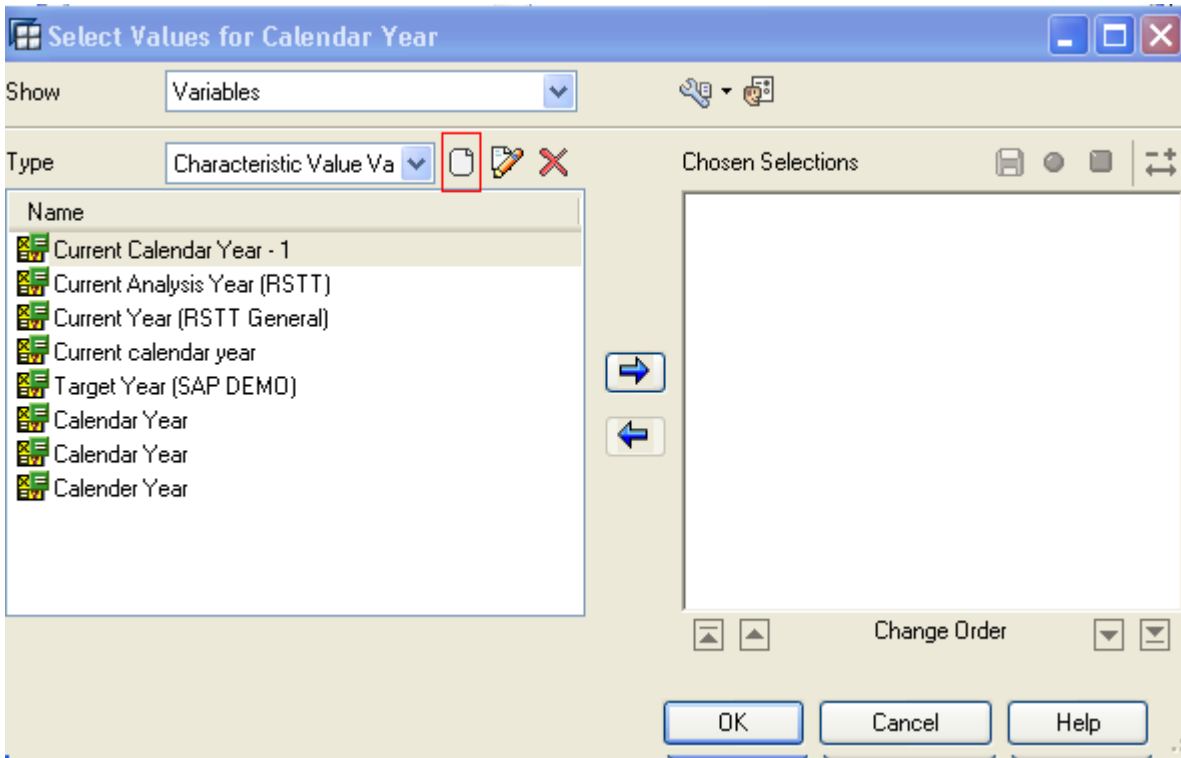
Now, to restrict the calendar year based on user input, right click on the Calendar year characteristic and select restrict from the context menu.



Now, in the following pop-up select the Variables option from the Show Drop down menu.



Now click on the Create button (circled in red) below.

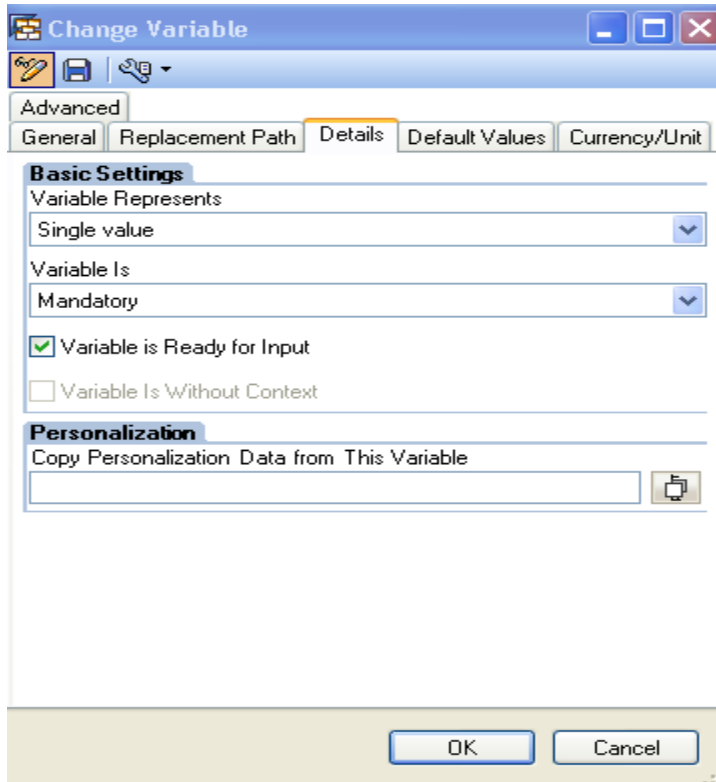


You will get the following pop-up

Now, give the variable a meaningful description and Technical name. Also, select the Manual input Processing type.

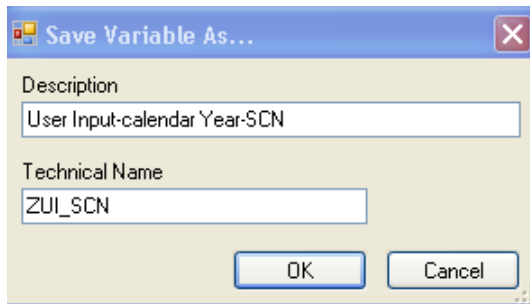
Now, switch to the Details tab.

We will select the single value input and make it Mandatory here by selecting the options shown below.



Press Ok to confirm.

You will receive the following pop-up

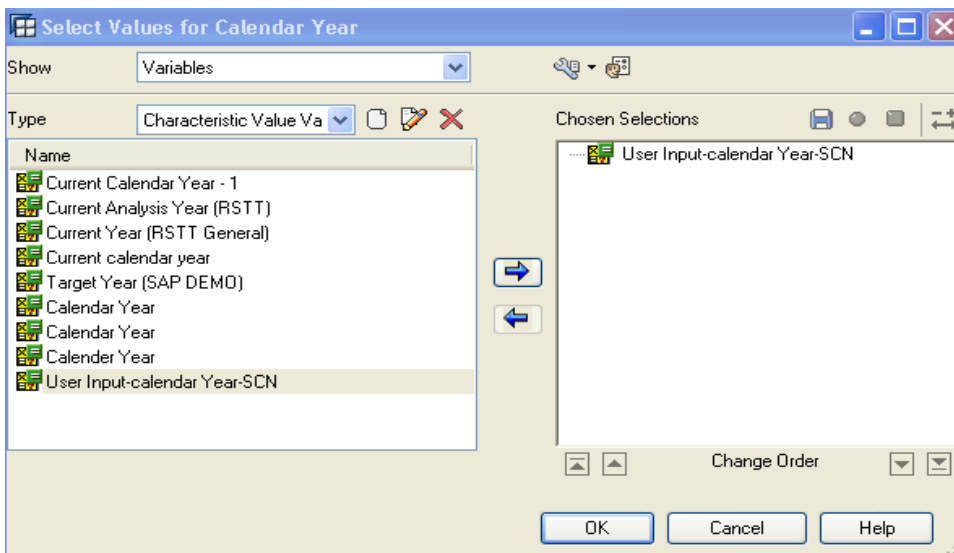
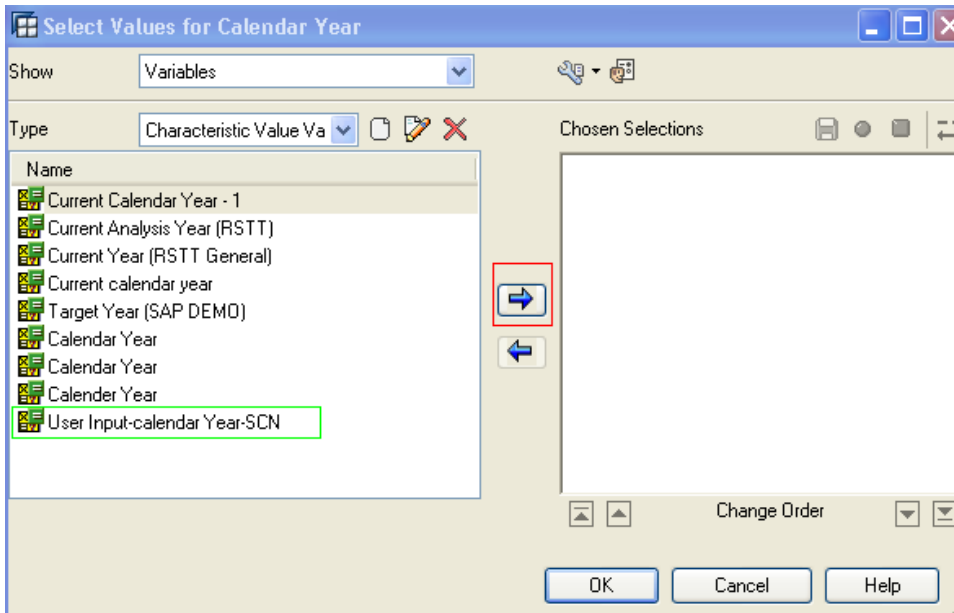


Press OK to confirm.

You will reach the previous pop-up.

You can see that the new variable has been added (circled in green below).

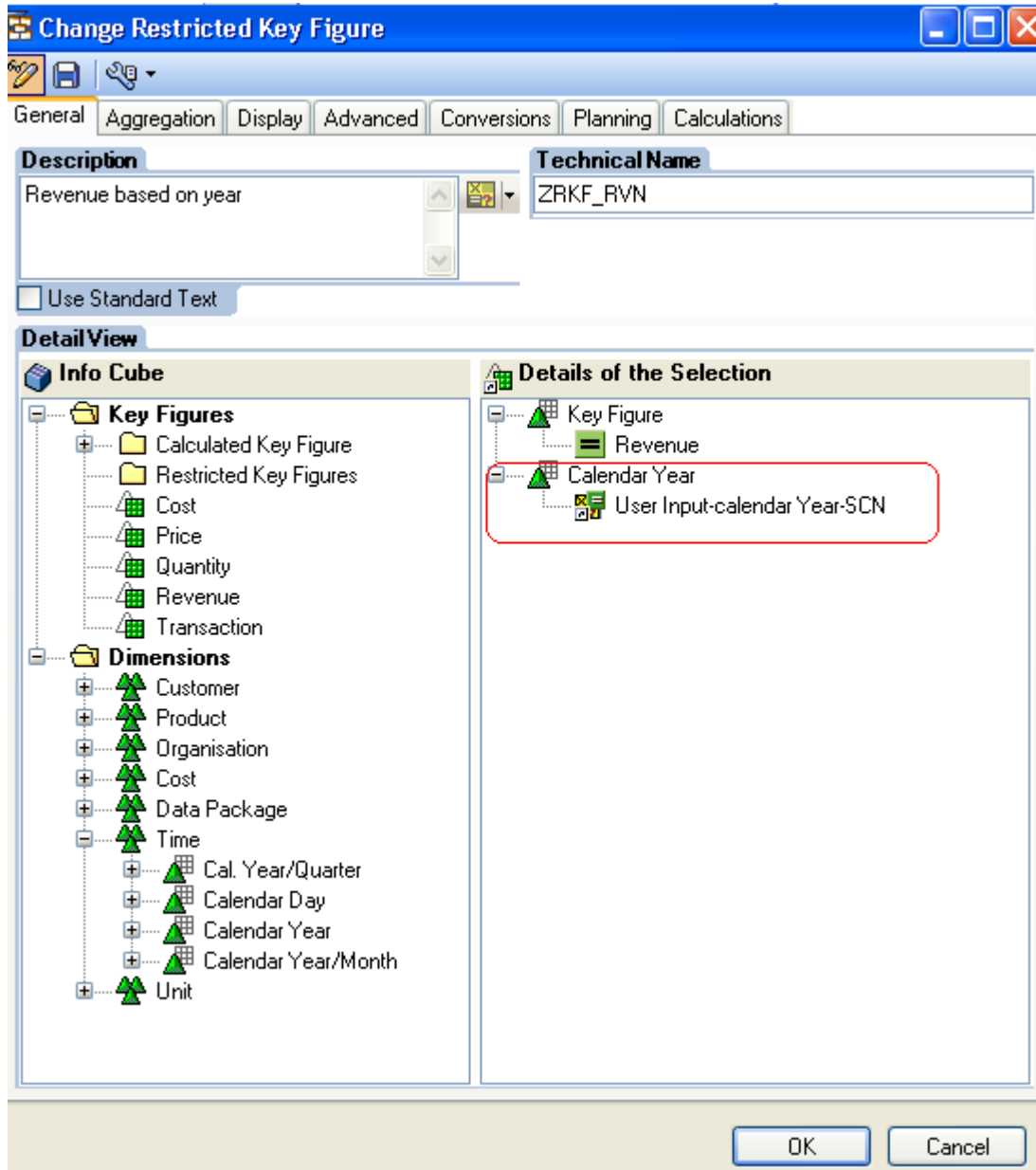
Press the arrow button (circled in Red below) to move the variable to the Chosen selections pane.



Press OK to confirm the selection.

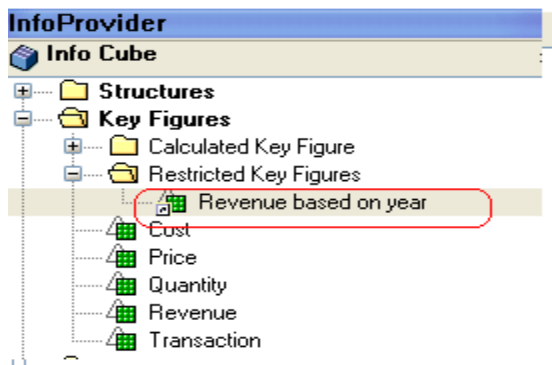


You can see that the new variable restriction has been added successfully (Circled in red below).



Press OK to confirm

Now, the fully defined RKF can be seen in the InfoProvider pane as shown below.



Now, to use this new RKF, you can simply drag and drop it into the Rows or Columns area as any other Key figure.

Note: The advantage of using a Restricted Key Figure is that the RKF is available for reuse in all the queries that are built on that InfoProvider

## Transporting Calculated and Restricted Key Figures

To make the calculated and restricted key figures available in various BI systems, transport them.

If the transport system is activated, a dialog box for specifying a transport request appears when you save the calculated and restricted key figures. Enter the required transport request.

Note: If a fixed standard BEx transport request is specified, the calculated and restricted key figures are automatically written to this request and the transport request dialog box is not displayed.

The technical names of the object types (TLOGO) for these key figures in transport requests are as follows:

- Calculated key figures: ELEM (ELEM.CKF)
- Restricted key figures: ELEM (ELEM.SEL)

## Related Content

[http://help.sap.com/saphelp\\_erp2004/helpdata/en/4d/e2bebb41da1d42917100471b364efa/content.htm](http://help.sap.com/saphelp_erp2004/helpdata/en/4d/e2bebb41da1d42917100471b364efa/content.htm)

<http://sapdocs.info/sap/bw-bi-bobj/sap-bex-query-designer/>

[http://help.sap.com/saphelp\\_nw04/helpdata/en/f1/0a569ae09411d2acb90000e829fbfe/content.htm](http://help.sap.com/saphelp_nw04/helpdata/en/f1/0a569ae09411d2acb90000e829fbfe/content.htm)

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