



# XLCubed and data-connected Pivot Tables

With each new version of Office, Pivot Tables change to some degree, and the newer versions have added some additional cube and tabular reporting capabilities. In all cases though, cube based, or data-connected reporting and analysis is something which Excel does 'as-well as' all the other areas it covers.

XLCubed has been developed from the ground up to provide the most complete user reporting and analysis experience within Excel, letting users leverage existing skills with no programming, and with a simple web deployment model. This core focus, and a decade of refinement and corporate customer experience provides a much more productive and extensible reporting environment, freeing time for business users to add value through analysis rather than producing reports.

XLCubed delivers a managed self-service reporting model where users can access the full power of Analysis Services, and display it as needed in Excel, on the web, or on mobile devices and without having to go back to IT for reporting changes.

This paper addresses some of the most commonly identified limitations in the native Pivot Tables approach, and how these are handled within the XLCubed products.



## Common issues and limitations with cube connected pivot tables

### 1) Excel Integration

People like working in Excel as they have a good understanding of how it works, and because it's a hugely powerful productivity tool. When a product which operates within Excel forces user selections and calculations exclusively through its own dialogs, it's losing a lot of the power, flexibility and intuitive nature of Excel, and in many ways that's true of the cube-connected pivot table. Part of XLCubed's design goal is to let users leverage their existing skillset as much as possible.

Key to this is the ability to use a standard Excel cell or range of cells as a selector, or criteria input for any part of a report. As soon as that's the case it opens up the whole Excel model to the report building experience and capability. Users can populate the cell through simple text input, copy-paste, formulae, combo-boxes or any other Excel based approach. One cell can be the driver for an individual formula based cube retrieval, for a grid, or for multiple grids and formulae across multiple sheets. It makes the process of building a 'joined-up' report straightforward and almost limitless in terms of flexibility.

#### Business Scenario (time is money...)

An analyst in a retailer is frequently asked to provide recent sales performance reporting on a list of SKUs which are running low on central stock. The SKUs are simply listed in an email request, having been sourced from the inventory system. The requests are typically for between 25 and several hundred SKUs. While the required information itself is simple enough, the repetitive process of searching a large hierarchy, finding each SKU and then repeating this in each pivot table making up the report was hugely time consuming. Replacing this process with range-driven XLCubed grids meant a time saving of 10 minutes to several hours per request depending on the number of cases involved and complexity of the report. The user simply pastes the required cases into an Excel range, and all grids are driven from that range.

### 2) Calculations

Not every calculation required in a specific report will already exist in the cube. When an Excel user wants to add a calculation to a report they expect to add it using Excel. XLCubed lets users add dynamic calculations into both grids and formula reports by simply typing a standard Excel formula. The calculation can fill down as needed when the report is drilled, but understands the cube-context where the users starts to slice and dice across axes.

XLCubed also provides GUI driven workbook level calculations, where users can create custom groupings, and add time calculation logic etc.

### 3) My Cube has hierarchies – can I use them please...

A key aspect of Analysis Services appeal as a data platform is the flexibility that hierarchical reporting provides. Users can start at the higher levels and drill down to additional detail as needed, which most reporting tools handle, but there are other important elements in terms of being able to make flexible selections within a hierarchy not catered for in standard Pivot tables.

- 1) Set based selections from a chosen member
  - a. Descendants at a level e.g. show all days within a selected quarter (skipping the month level), or show all cities within a selected country (skipping the state/province level).
  - b. Lowest descendants – go directly to all lowest level HR Cost accounts
  - c. Descendants – show everything beneath the selected member in the hierarchy (e.g. display the entire structure of the fully expanded P&L)
- 2) Dynamic Exclusions on a changing set of data
  - a. Show all currently active products except those specified in a range of Excel cells.
- 3) Member searching from Excel cell content. Helpful in product hierarchies where the product names or codes are structured, e.g. p0078\*

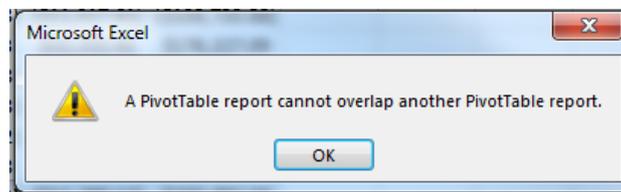
#### Business Scenario

Management want a report listing the sales by city, in rank order for the selected country. The available hierarchy is modelled as Region->Country->State->City. To handle this in Pivot tables requires the addition of a new hierarchy to the cube, which will typically require significant elapsed time. In XLCubed it's already in the user's control, using 'descendants at level', and can be implemented straight away at a report level and in the control of the business user.

Can I search them please? Pivot tables limit a member search to the currently selected level in the hierarchy. That's fine if you know the structure, but in a deep hierarchy can be problematic and time consuming. XLCubed gives you the option of searching either the entire hierarchy or a specific level.

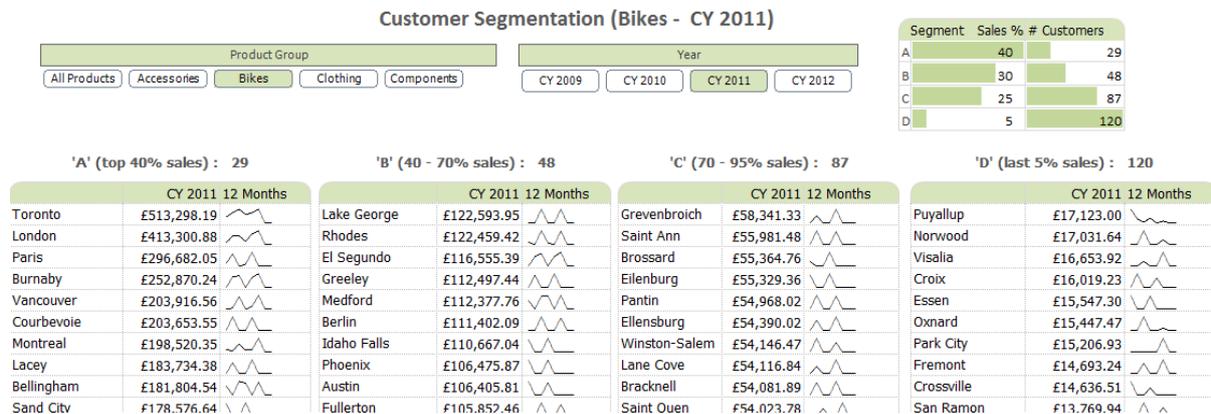
### 4) A changing world

Business changes over time through new products, new services, new entities to name but a few. Structured reports need to be able to handle not just changing numbers, but also variable rows and columns based on the underlying data. Pivot tables are destructive if they grow (i.e. they will overwrite data / other Pivot tables. XLCubed grids and formulae can 'push' other data or grids to allow for data expansion, and cope with a changing world.



## 5) Ranking & Sorting

XLCubed enables rich and very flexible ranking and filtering from simple top 10's to nested rankings and filters, where the number of elements to rank, or the filtered value itself can become part of the report selection. It also caters for combining sets of data, and dynamic member exclusion within the rankings. It lets users do significantly more in terms of analysis, and provide much more interactive ranking based reports than is possible in the standard pivot table environment.



## 6) Flexible Formula Reporting which users 'get'

The formula reporting approach provides total flexibility in reporting layout. This can be extremely useful in dashboards or scorecards, and also in formal financial reporting, where the required layout is more than a straightforward data table.

The Excel Only approach:

A cube-connected Pivot table can be converted to CubeValue and CubeMember formulae.

Our experience is that users resist working with CubeValue and Cube Member due to usability and maintenance. It seems like a relatively small percentage of users able or happy to use the Excel formula approach. The key restrictions are listed below

1. The formulae themselves are not straightforward to understand – cubevalue requires a list of cubeMember cells.
2. CubeValue formulae can't reference standard Excel text as input arguments (can only reference CubeMember() formulae).
3. No User Interface to Edit them.
4. No User interface to insert new Members.
5. No ability to drill down to next hierarchy level
6. No ability to decompose the number within the cube
7. No way to jump in-context to another part of the report

Formula Reporting in XLCubed:

XLCubed has always provided an option to convert a grid to formulae. Once converted, the key formulae are XL3Member() and XL3Lookup(). XL3Lookup is more easily understood as it is a collection of hierarchy:member arguments (e.g. hierarchy1, member1, hierarchy2, member2...).



Users generally pick this up quickly, and there are user dialogs for both formulae where the user can build the formula and select members through a guided UI.

XLCubed can accept the text in a cell, or range of cells as an argument to a formula. This gives tremendous flexibility for users as they build reports. Users can:

- Use Combo boxes / list boxes to populate cells with the report filter criteria
- Use XLCubed slicers
- Use Excel data logic to build month rolling reports (or XLCubed XL3MemberNavigate() )
- Simply type-in product codes etc. to retrieve by / or copy-paste into a range

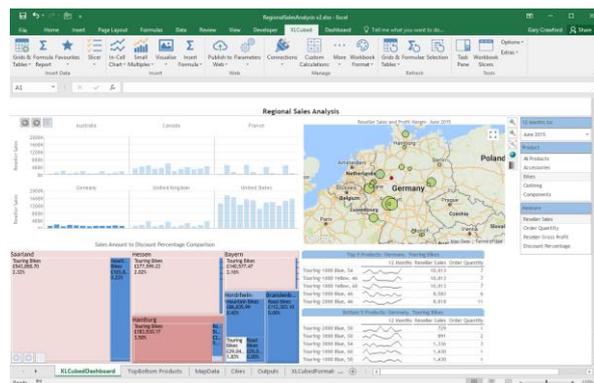
Even the best highly formatted reports raise as many questions as answers, and in that respect an Excel-only formula report prevents the answering of additional questions

XLCubed formula reports retain interactivity:

1. Can drill-down to the next level of a hierarchy
  - a. Reports are formatted for print, but end-users can drill down to detail when needed.
2. Can drill-through from any value cell
3. Can run breakout to split any report value by any hierarchy in the cube
4. Can use XL3Link() to jump to another part of the report in the context of the clicked cell.

## 7) Data Visualisation

XLCubed provides a number of additional chart types and data visualisation techniques to extend what's available in Excel itself. Excel gives a high degree of control over formatting and layout of tables, and XLCubed further extends what can be achieved. XLCubed adds rich library of in-cell charts, Treemaps, interactive mall Multiple charts and Maps. XLCubed also provides 'viewports' which cater for the display of a larger range held on another worksheet within a smaller, scrollable control and which can address some common layout challenges in Excel.



## 8) Dashboards

XLCubed dashboard sheet allow users to build screen responsive dashboards which adapt to the device they are being viewed on. This is particularly useful when publishing reports to XLCubed Web, which may be accessed by mobile users.



## 9) Flexible Slicers & Integrated Reporting

XLCubed provides truly flexible report slicers. They can be displayed as treeviews, combo boxes, buttons, list-boxes, and calendar selectors. Native Excel slicers are limited to buttons, which can be cumbersome if there are many possible choices. Slicers are virtually unlimited in their content and can combine elements from different levels in the hierarchy. They can also be filtered and ranked to the requirements of a specific report.

Business Scenarios include (based on a product hierarchy)

- We only want products with more than \$500K sales in the last 6 months to be available for selection.
- We want the product slicer to display the top 10 products, in rank order.
- We have a deep product hierarchy, and for the purposes of this dashboard want the user to select the top level category in Slicer 1, and then be able to choose the appropriate lowest level products in Slicer 2.
- On a changing dimension, we want the user to be able to choose all products with several exceptions which we can manage in an Excel range.

Individual XLCubed slicers are flexible enough to be used for multiple data sources. So one slicer can control the retrieval for data held in cubes, tabular, and relational SQL.

## Web and Mobile Deployment

### 1) Straightforward, Governed Web Deployment

Any report or dashboard built in XLCubed Excel Edition can be published to XLCubed Web with just a few clicks. Web users can have full interactivity within the report, with no client side installation required. XLCubed Web forms its own simple portal, and is very straightforward to setup, configure and maintain. It requires a tiny fraction of the setup effort of SharePoint.

### 2) Mobile

XLCubed's iOS and Android apps provide mobile access to reports and dashboards which have been published to XLCubed web. Data- connected reports developed by Excel users can be available to mobile users in seconds.