

MS-Excel – The King of BI

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Introduction

If you search for MS-Excel on the web, you will get millions of hits. Probably no other software is so widely used in the world as Excel. Despite the tremendous amount of 'excel-bashing' which some people indulge in, Excel continues to be hugely popular for the normal spreadsheet usage and also for BI & Data Analysis. Practically all business softwares give an interface to Excel. "Give me this report in Excel".... is probably the number 1 request to IT departments from their users.

Accountants and business men download data into excel files and create reports without any IT help. And with a little bit of knowledge of databases and VBA (Visual Basic for Applications), Excel can turn into a powerhouse of BI.

Rick Sherman (April 2005) of Athena Solutions, US says :

"The current king of business intelligence (BI) tools is Microsoft Excel. Microsoft states that there are over **150 million Excel** users, with many of them using it for reporting and analysis of corporate data.

For many years BI vendors have been building front-end tools to try to replace spreadsheets for querying, reporting and analyzing data results. But despite the fact that tens of thousands of BI tool licenses have been sold, spreadsheets are still the most pervasive and dominant too."
(http://searchcrm.techtarget.com/news/column/0,294698,sid11_gci1081869,00.html)

I know this, because I use Excel in my BI Practice. And come to think of it, a few years back I did not even know Excel.

Why Excel ?

While writing this article I thought as to why do I use Excel ?

- I think the main reason is that I can do anything with it. It is a tremendously powerful spreadsheet.
- But if I can't do something on the Excel frontend spreadsheet, I can use VBA and get it done.
- If I can't store enough data in excel, I can store that data in a database and retrieve it using Excel.

- If I can't do something myself, I search for the hundreds of excel add-ins which people have written and which can snap-in to Excel.
- I can search on the web and get answers to my queries, or I can post a question on the various Excel help forums and get quick answers.

Somehow, I have never managed to get stuck in Excel. And when I feel that I know everything, Microsoft comes out with a new version having amazing new features !

A Chance Encounter

A few years back I had heard of Excel as yet another spreadsheet. I had not worked on Excel at that time. Some time in year 2002, I was discussing with a friend of mine a feature called 'cross-tab' reports of a programming language called 'PowerBuilder', which was at its peak of popularity. He mentioned that feature called 'pivot table' in Excel could do similar things. He made a small pivot table and showed it to be, and I was amazed. At that instant I started my amazing journey into Excel.

But was it just my fascination with Excel, or did it have some solid industry backing ? I searched on the net, and found the following two references which bolstered my confidence in Excel.

Bill Gates in Business @ The Speed of Thought

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In most business organizations, people need to see information in a variety of ways. Senior executive often want to see a consolidated view of sales, then view by region, then by country. Sales managers want to see numbers by team and individual; sales or by customer accounts. Product managers want to see number by sales channels or to drill down to see what SKUs (stock keeping units) are selling well or poorly. Different people need to see month and year-to-date sales, actual sales vs. budget, year-over-year changes in sales and sales in U.S. dollars or other currencies. Typically, a company's finance department produces a very large number of separate reports to meet these various business needs.

Often, all of these reports can be produced digitally using an electronic spreadsheet. Outline controls enable business people to begin at a summary level and click on any item in order to drill into successive levels of detail. Another capability known as pivot tables enables people to see the same data in multiple ways. If you're viewing sales by salesperson and you want to shift to a view by the customer, you change the view by dragging the customer label to the proper row position. When these capabilities are combined with templates that build the underlying data into standard formats, the results are powerful flexible digital reports that each person can personalize to meet specific needs. Such reports can also be emailed around for further analysis and discussions.

We used Excel 97 at that time. After reading this book by Bill Gates, I started experimenting on how to connect to a database and pull in the data in Pivot tables. There were a lot of challenges along the way, but the Pivot table experience was thrilling. Connectivity of Excel to a database was also a great help.

I found that in the company where I was consulting the accountants had to regularly make a statutory format of the Financial Statements , called the Companies Act Schedule VI Balance Sheet. I experimented and found that I could create the required format in Excel, and each cell could be connected to the database, and the numbers directly picked up from there. Whenever new data came into the database, I could just refresh the Excel sheet and Hey Presto ! The statutory report was ready. Accountants were taking days to make this report, and this technology could do it in minutes !

Excel Pivot Tables:

Are You Using Them to Your Advantage?

by Paul W. Krieger

Introduction

In the last five years, many companies have either significantly upgraded or totally replaced their older computer systems. One clear priority for many firms: the ability to utilize a database that is Open Database Compliant (ODBC). If your firm has recently invested in such a system, you now have a wealth of previously unimagined capabilities and resources at your fingertips.

The ODBC environment provides dynamic connectivity between the spreadsheet and word processing programs residing on your workstation and the data residing in your accounting/financial reporting system. This connectivity can be maintained without reentering information, exporting files, dumping data, printing a report to file, or any of the other methods of distributing data that have been prevalent since the advent of the PC. While you may be proficient enough to create simple mail merges or mailing labels, much much more can be accomplished with the programs available on office computers today. With a small working knowledge of some of these tools, you can easily create meaningful and extremely flexible reports right from your PC workstation or desktop. Best of all, these enhanced capabilities are free, since you probably already own all of the software you need.

The Hidden Power of the Pivot Table

Microsoft's Excel Pivot Table is one of the most powerful and least-used desktop tools available today. The Pivot Table takes an ordinary Excel spreadsheet and turns it into an extraordinary management reporting system, with no need for custom-reporting capabilities.

I came across another interesting article by Paul Krieger in a magazine called "The CFO's ToolBox". The article was titled "Excel Pivot Tables : Are You using them to Your Advantage" – of which a partial extract is given alongside. The last para of the extract is of great interest.

"The Pivot Table takes an ordinary Excel spreadsheet and turns it into an extraordinary management reporting system, with no need for custom-reporting capabilities."

And it really is so ! I have by now generated hundreds of Excel-Pivot Tables in various domains like Financial Reporting, Accounts Receivable, Accounts Payable, Inventory Analysis, Product Profitability, Product Costing, Sales and Purchase Analysis, HR Analysis, Inflation Analysis etc..

My customers are thrilled with the results.

We have combined the inherent strengths of Pivot Tables with some database skills and some skills in VBA. With all this, Excel Pivot Tables provide a fascinating platform on which MIS Reports can be rapidly generated and circulated.

Contrary to the popular belief, an Excel Pivot table (even before the 2007 version) is not restricted to 65536 rows ! The Excel Pivot table can take even a million rows from a database.

Web access can be had by storing the reports on the document libraries of Sharepoint Portal. And for people not having Excel, web access can be had by publishing Excel reports on SharePoint using Excel Services.

Excel Hell !##??

Some people in the IT industry have popularized a scenario which is known as Excel Hell. The only thing good about this phrase is that it rhymes.

These people claim that with Excel everyone can create his own version of Management Information System (MIS) reports, and this leads to multiple versions of truth.

In my opinion, this is a problem with the way Excel is used and the way in which the solution is setup.. Excel Pivot Table templates, connected to SQL Databases can and do provide a single version of truth. Excel reports can be stored in a common folder, or uploaded in a document library like SharePoint, which makes the distribution very elegant. Solutions like RMS (Windows Rights Management Services) can give a good level of security on such documents.

For scalability and higher levels of security, Excel can also connect to enterprise grade databases like SQL Server Analysis Services (SSAS). There is absolutely no limit on the quantum of data which Excel can analyze once it connects to SSAS.

Solution Cost

Solutions built with Excel as a front end have significantly lower cost. Because of the enormous popularity of Excel, the learning curve is very low. It is most likely that the users would already be having Excel. As such they would not have to buy any other additional front end licenses. This would leverage their existing investment in Excel, and bring down the total cost of the solution.

With data in Excel Pivot tables, the user can generate various reports himself by just slicing/dicing the data. In one of the companies, I found the IT team had customized about 20 different types of Account Receivable reports. The outputs were all coming in normal text formats. The users would download these reports in Excel, format them and send them to their management. As the ERP they were using was one of the popular branded ERP's, the various customized reports had cost them a bomb to make. I requested the company to give me a sample of the base data from which these reports were generated.

Using this base data I created a Pivot Table. This Pivot Table based report, gave the users all the details (and much more) of the 20 reports which they had painstakingly customized. And it took me just about an hour to demonstrate the solution. Needless to say, the IT team was speechless !

Excel Based BI Solutions

Another very interesting point about Excel based BI solutions are that they can be built incrementally.

You don't have to make any huge new initial investment. You could start off with an entry level solution with MS-Access as the database, and Excel as the front end (all part of the MS-Office suite). This could be ideal for small departmental applications. As the appetite for information increases, you could upsize the MS-Access database to MS-SQL Server, standard edition. This would give you scalability on the backend. You could still generate the Excel reports directly from the relational database engine.

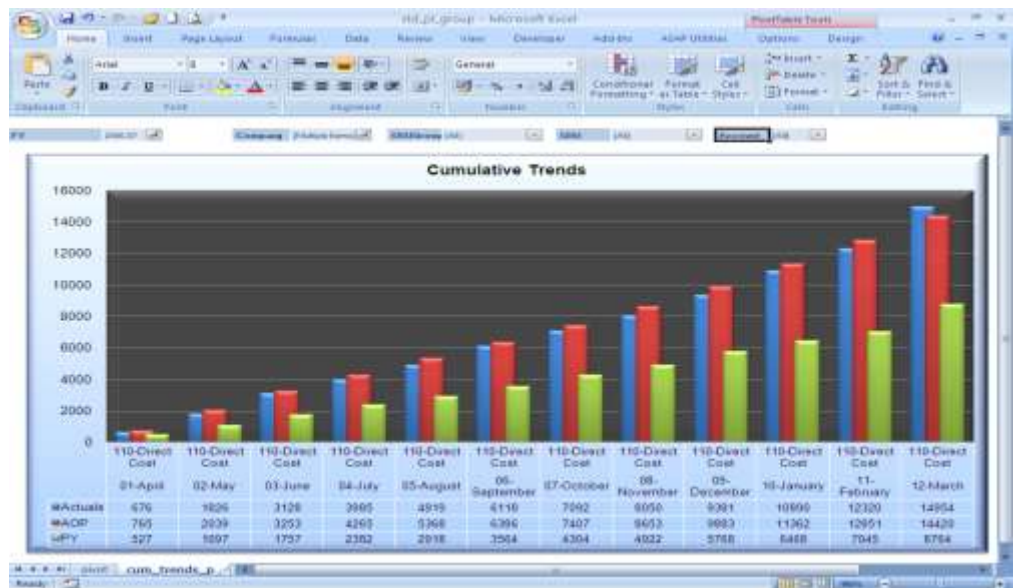
As the demands further increase you could further scale up your solution to enterprise edition of SQL Server, Sql Server Analysis Services, and SQL Server Integration Services. The front end could be Excel Pivot tables built on SSAS, and viewed over the web via SharePoint Server document libraries or via Excel Services! This type of architecture could give you the scalability you need at the backend database level, web access and the ease of use and familiarity of MS-Excel which users crave for!

A Picture says a Thousand Words

| Buyer | ABC CLASS | FSN CLASS | Inv Val | Nos |
|---------|---------------|-----------|---------|-----------|
| Buyer-1 | A-Class | B-Fast | 483,832 | 273,276 |
| | A-Class | D-NonMove | 0 | 3,454,081 |
| | A-Class Total | | 483,832 | 3,727,358 |
| | B-Class | B-Fast | 51,399 | 3,258 |
| Buyer-2 | A-Class | B-Fast | 295,512 | 58,352 |
| | A-Class | D-NonMove | 0 | 176,854 |
| | A-Class Total | | 295,512 | 239,275 |
| | B-Class | B-Fast | 243,952 | 2,318 |

The adjoining is an Excel Pivot table analysing Inventories. The underlying data was taken from a popular and branded ERP system. This was stored in MS-SQL Server. Various business rules to identify ABC class, FSN Class and Inventory Turns were applied to this base data. The report contains many dimensions by which the user can slice and dice the data, summarize and drill down to the lowest level. In just a few clicks the user can locate an item which is non-moving for a particular buyer! Who says finding a needle in a haystack is difficult !?

The adjoining Excel 2007 graph shows in a beautiful visual the trend of expenses. The interactive graph shows the budget, the actual and the same month in previous year comparisons. The user can select a company, or a SBU or the Revenue group which he wishes to see. This is just an example of the stunning interactive graphs which can be created in Excel 2007. Effortlessly, the same graph can be put on SharePoint and accessed on the WEB via Excel Services.



In such a scenario, users not having Excel can also view the graph in the same manner and with similar interactivity.

Need I say more ?

Conclusion:

The fact that you have read this article till here means that either you are as passionate about Excel as I am. Or you were an 'excel hell' proponent, and now you are converted and are planning to build your first Excel based BI solution. Great luck, either ways !

[The author solemnly certifies that he has not been hired by the marketing department of Microsoft . 😊]

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About the Author:



Sanjay Shah (B.Com, CA) is the CEO of Prosys Infotech Private Limited, a Pune, India based company specializing in developing BI solutions on the Microsoft BI Platform. Prosys has developed BI solutions for various companies like Honeywell Automation India Ltd., Alfa Laval India Limited, Tata Auto Components Ltd., Kirloskar Group Corporate Office, Kansai Nerolac Paints Limited etc. He can be contacted at sanjay@prosysinfotech.com.