

MS Excel – a Versatile Computer Aided Audit Tool

*It's good to know many things, but it is always better.....
..... to make best use of whatever little you know – Anonymous*

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MS Excel – a CAAT

MS Excel software needs no introduction; it's a simple application which most of us use every day -time-in and out. The versatile spreadsheet is available almost on all machines and seldomly one will find an accountant / auditor not using it. While mostly it is popular for making statements, charts, etc., it can conveniently be also used as CAAT. This article is to facilitate to make best use of whatever little is known by user about MSeExcel.

Some of the important MSeExcel-functions that are useful as CAAT for audit / investigation are described below.

- 'IF'
- 'IF' in combination with 'AND'
- 'IF' in Combination with 'AND' & 'OR'
- 'CountIF' and 'SUMIF'
- 'SUMIFS'
- 'VLOOKUP'
- Pivot Table Function
- Formula Auditing

Note : The above list is not exhaustive but is only an illustrative one. There are many other useful functions and the users may develop skills once he/she starts practicing them. Also it needs to be noted that there are several ways in MS Excel to achieve the same results; therefore this article attempts to only explain a few of them.

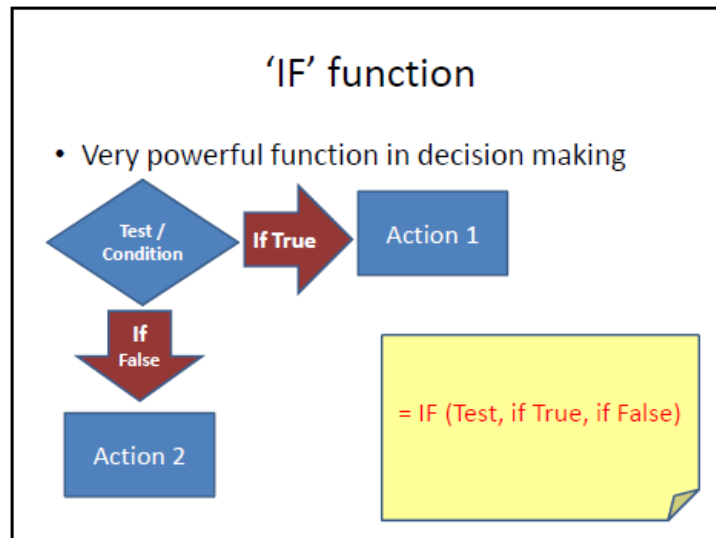
The above functions are explained in detail with its corresponding application in audit / fraud investigations.

The 'IF' Function

The IF Function along with its derivative usage with 'AND' / 'OR' can be useful for:

- Detecting Gaps
- Finding Duplicates
- Locating Multiple Records
- Flagging Records
- Ageing Analysis or Advance Analysis
- Extracting Records meeting certain criteria (Combination with filter commands or with Pivot Table commands)

The 'IF' function is very powerful element in decision making. The function can be simply explained as follows :



The Syntax of 'IF' function :

= IF (Test, if True, if

Example of 'IF' Function :

The given data is list of cheques issued and the objective is to determine gaps of missing cheque numbers.

Step 2 : Use 'IF' function to determine Gaps

	A	B	C	D	E	F	G	H	I	J	K	L
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18	Date	Bank	Chq No.	Name	Amount Rs	Chq Missing	Chq Missed					
19	3-Dec-2009		103401	Amcol Engineering Stores	172,800							
20	3-Dec-2009		103402	Shakti Auto Works	151,296							
21	3-Dec-2009		103403	R.P Merchant	48,640							
22	3-Dec-2009		103404	H.S.Enterprise(H.U.F.)	332,800							
23	4-Dec-2009		103405	Sohil Trading Co.	148,595							
24	4-Dec-2009		103407	Swastic Hardware Mart	117,760	Missing	103406					
25	4-Dec-2009		103408	Shree Laxmi Narayan Entp.	96,000							
26	4-Dec-2009		103409	Pareen Enterprise	122,112							
27	5-Dec-2009		103410	Sohil Trading Co.	610,304							
28	5-Dec-2009		103411	Rajesh Enterprises	189,696							
29	5-Dec-2009		103412	H.S.Enterprise(H.U.F.)	207,360							
30	9-Dec-2009		103414	Saurin Enterprise	173,568	Missing	103413					
31	9-Dec-2009		103415	Swastic Hardware Mart	172,186							
32	9-Dec-2009		103416	H.N.Shah & Co.	448,000							
33	9-Dec-2009		103417	Ambica Enterprises	143,360							
34	9-Dec-2009		103419	Technoweld	251,136	Missing	103418					
35	10-Dec-2009		103420	Amcol Engineering Stores	330,752							

=IF(C24-C23=1,"","Missing")

Example of Nested-IF function

The given data is list of sales team with their date of joining, years of experience and sales achieved during a period. A salesman is entitled to promotion depending upon his/her experience and sales achieved. If his experience is under 3 years, he/she is eligible if the sales are over \$ 3mn and for others the eligibility sales criteria is \$ 5mn. The objective is to flag 'Eligible' status in Col-F

Nested 'IF' Function.

Data of Employees with Sales

Eligible for Promotion if

Exp over 3 yrs --> Sales Over \$ 5mn

Exp under 3 yrs --> Sales Over \$ 3mn

Formula: `=IF(D7>3,IF(E7>5000000,"Eligible","----"),IF(E7>3000000,"Eligible","----"))`

Test 1: `=IF(D7>3,`

Test 2: `IF(E7>5,000,000,"Eligible","----")` If true

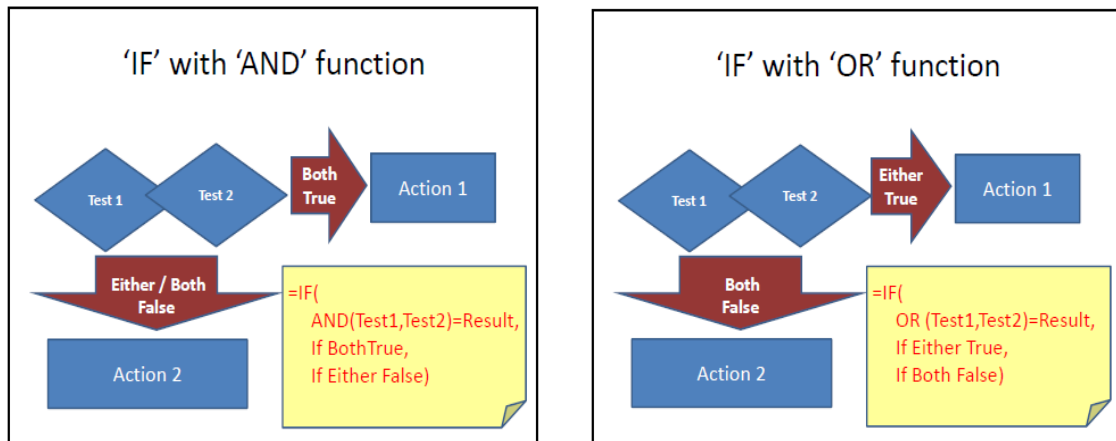
Test 3: `IF(E7>3000000,"Eligible","----")` If False

	Name	DOJ	Experience	total	Promotion
1	Amar	27-May-02	8.00	8,167,500	Eligible
2	Divya	1-Jul-02	8.00	2,747,250	----
3	Ghansham	1-Jun-06	4.00	5,821,200	Eligible
4	Giri	20-Jun-06	4.00	4,826,250	----
5	Girish	15-Jun-06	4.00	6,341,250	Eligible
6	Hiten	15-Jul-02	8.00	4,826,250	----
7	Irfan	1-Sep-06	4.00	4,083,750	----
8	James	1-Nov-06	4.00	4,158,000	----
9	Jeetu	1-Dec-06	4.00	4,826,250	----
10	Mandar	28-Mar-07	3.00	3,281,250	Eligible
11	Mangaldas	14-Mar-07	3.00	1,782,000	----
12	Manv	30-Jan-06	4.00	6,335,000	Eligible
13	Mithun	1-Dec-06	4.00	6,682,500	Eligible
14	Nikhil	27-Aug-07	3.00	2,004,750	----

The Eligible and Not-Eligible employees can be filtered separately to check with the promotions given.

Using 'IF' function in combination with 'AND' / 'OR'

Sometimes we need to have two or more tests that needs simultaneous confirmation for logical actions, this can be done by using the 'AND' or 'OR' with the 'IF' function. These results can also be achieved using the Nested-IF functions, however sometimes it may be easier to use 'AND'/'OR' functions. The 'IF' in combination with 'AND'/'OR' are explained below :



Syntax of 'IF' function used in combination with 'AND'

=IF(AND(Test1,Test2)=Result,If True,If False)

Example of 'IF' function used in combination with 'AND' :

The given data is a list of payments stating details of cheque nos., bills reference (against which the payments are made) and the name of vendor with the amounts. Here is order to establish multi-payments, one need to compare the vendor names and the bills numbers. When there is match for both criteria (Name and Bill No.) then double payment flag is set.

**=IF(AND(E27=E28,
D27=D28) =TRUE,
"Dbl Pymnt", "")**

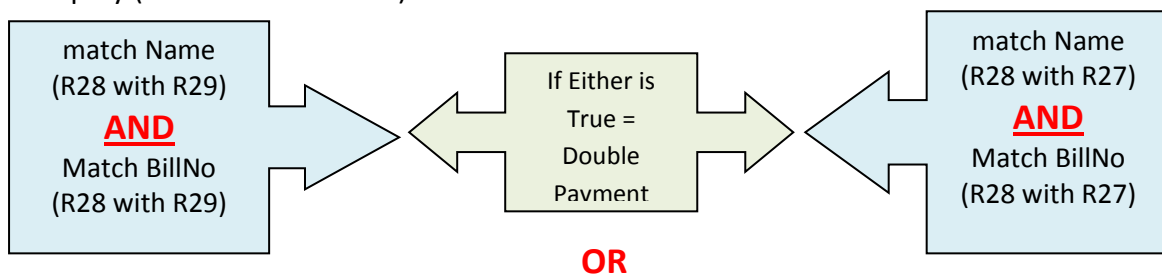
Syntax of 'IF' function used in combination with 'OR'

=IF(OR(Test1,Test2)=Result,If Either True,If Both False)

Example of 'IF' function used in combination with 'AND' + 'OR'

Continuing with the same example as above, it can be seen that we are able to flag only one of the two records of double payments. On applying filters, though we have details of the double payments, we cannot show both the records. It happens because we are comparing the record on current line with a below-line item (in above example Row27 is compared with Row28). Therefore to flag both the records (or if there more than 2 than all the records), we need to compare the current line item with line-item above and line-item below. That is, say for record at Row28, we need to check Row28-with-Row29 AND Row28-with-Row27. If either combination matches then that record needs to be flagged for "Dbl Pymnt".

To simplify (at Record at Row28) we need to :



H28

On filtering the "Dbl Pymnt" records, we are able to get all the bills that are paid more than once.

The 'COUNTIF' Function

This function counts the number of records satisfying user criteria. This function is extremely useful in analysis of master databases (vendors, customers, employees, etc.) to determine whether there is nexus between them. For example common telephone numbers, fax nos., contact person references, email_ids., etc. can give a clue of linkages. This function can be coupled with 'filter' command to give instant results.

Syntax Of 'COUNTIF' Function:

= COUNTIF(criteria_

Example Of 'COUNTIF' Function:

The given data is of vendors details –Vendor_name, city, fax-nos. and telephone nos. By using the 'Countif' function we can count (say for Row2) how many times the fax number (in cell C2) is repeated in the entire Col-C (the count is stored in Col-D). Similarly we can also count how many times the tel_no. (in cell E2) is repeated in the entire Col-E (the count is stored in Col-F).

	A	B	C	D	E	F	G	H	I	J	K	L
1	Name	City	Fax Num	Fax-Count	Telephone	Count						
2	KETHAVATH	AP-HYDERABAD		0	9490191578	1						
3	DEVIDAS	MH-NAGPUR		0	7122762359	1						
4	MOHMED	GJ-SURAT		0	9324771766	1						
5	VILAS BASHAL	MH-PUNE	022-87543245	2	9819794444	2						
6	GYAN SINGH	MH-PRATAPGARH		0		1						
7	GYAN	MP-INDORE		0	9425356428	1						
8	NAMINATH JADHAV	MH-PUNE		0	9323728255	2						
9	SHRI BHAGWATI MOTORS	MH-NAVI MUMBAI		0	9323728288	1						
10	VISHWAJIT	MH-NAVI MUMBAI		0	9323728234	1						
11	PRASHANT	WB-CALCUTTA		0	9831002441	2						
12	NILESH	MH-THANE		0	9820399934	1						
13	SHIDHAR	MH-AMRAVATI		0		1						
14	K BHANUSHALI	MH-NAVI MUMBAI		0	98672291333	1						
15	FIROZ	GJ-AHMEDABAD		0	9426180227	2						
16	JAYESH VORA	MH-NAVI MUMBAI		0	9324049347	1						
17	MUKESH JAIN	MH-NAVI MUMBAI		0	36799146	1						
18	NILESH	MH-PUNE		0	9422348760	1						
19	ANIL	MP-JABALPUR		0	9300114330	1						
20	MOHSIN	MH-NAVI MUMBAI		0		1						
21	HUNNY MOTORS	DL-NEW DELHI	011-28548081	2	011-28548090	2						
22	nakul	MP-JABALPUR		0	9425383630	1						
23	NASIR KHAN	GJ-AHMEDABAD		0	9426179977	1						
24	AJIT	MP-KATNI		0	94251572289	1						
25	MAHENDRA KR JAIN	MH-NAGPUR		0	2652044	1						
26	BASHIR	MH-NAVI MUMBAI		0	9322257098	1						
27	SAI	MH-MAHARASHTRA		0	9323728237	1						
28	MANOHAR	MH-NAVI MUMBAI		0		1						
29	BHAGWATI	MH-NAVI MUMBAI		0	9323728200	1						
30	H PATHAN	MH-GUJARAT		0		1						
31	A SHAIKH	MH-AHMEDNAGAR		0	9825521541	1						

For count of telephone nos.
=COUNTIF(E\$1:E\$1501,E2)

For count of fax nos.
=COUNTIF(C\$1:C\$1501,C2)

Thereafter set filters for :

- fax-counts more than 2 and
- tel-counts more than 2

following result is obtained....

.....the linakages bet' the partys are highlighted.

	A	B	C	D	E	F
1	Name	City	Fax Num	Fax-Count	Telephone	Count
5	VILAS BASHAL	MH-PUNE	022-87543245	2	9819794444	2
21	HUNNY MOTORS	DL-NEW DELHI	011-28548081	2	011-28548090	2
164	VIBA MOTORS	MH-PUNE	022-87543245	2	9819794444	2
167	SHAILESH	GJ-AHMEDABAD	0271-44558677	2	9327484160	2
172	JAYDEEP ENTERPRISES	GJ-AHMEDABAD	0271-44558677	2	9327484160	2
212	PAWANJEET SINGH	DL-NEW DELHI	011-32648611	3	9212230990	3
274	GURUNANAK MOTORS	DL-NEW DELHI	011-32648611	3	9212230990	3
730	PERU MOTORS WORKS	TN-TIRUVARUR	04366-251696	2	9443383686	2
731	SWARANJIT SINGH CHHATWA	DL-NEW DELHI	011-28548081	2	011-28548090	2
740	JASBIR SINGH	DL-NEW DELHI	011-32648611	3	9212230990	3
880	G NAGESHWAR	KA-BANGALORE - 3 (East	040-6654 6700	2	9886673199	2
942	MANJUNATH	KA-BANGALORE - 2 (Wes	040-6654 6700	2	9886673199	2
992	KALIAPERUMAL	TN-TIRUVARUR	04366-251696	2	9443383686	2
1502						

The filtered records can be copied on another sheet and sorted on fax_no. / tel_no to get the proper result :

	A	B	C	D	E	F	G
1	Name	City	Fax Number	Fax-Count	Telephone 2	Count	
2	HUNNY MOTORS	DL-NEW DELHI	011-28548081	2	011-28548090	2	
3	SWARANJIT SINGH CHHATWAL	DL-NEW DELHI	011-28548081	2	011-28548090	2	
4	PAWANJEET SINGH	DL-NEW DELHI	011-32648611	3	9212230990	3	
5	GURUNANAK MOTORS	DL-NEW DELHI	011-32648611	3	9212230990	3	
6	JASBIR SINGH	DL-NEW DELHI	011-32648611	3	9212230990	3	
7	VILAS BASHAL	MH-PUNE	022-87543245	2	9819794444	2	
8	VIBA MOTORS	MH-PUNE	022-87543245	2	9819794444	2	
9	SHAILESH	GJ-AHMEDABAD	0271-44558677	2	9327484160	2	
10	JAYDEEP ENTERPRISES	GJ-AHMEDABAD	0271-44558677	2	9327484160	2	
11	G NAGESHWAR	KA-BANGALORE - 3 (East)	040-6654 6700	2	9886673199	2	
12	MANJUNATH	KA-BANGALORE - 2 (West)	040-6654 6700	2	9886673199	2	
13	PERU MOTORS WORKS	TN-TIRUVARUR	04366-251696	2	9443383686	2	
14	KALIAPERUMAL	TN-TIRUVARUR	04366-251696	2	9443383686	2	
15							
16							

The 'SUMIF' Function

This is an extension of widely used 'Sum' function but here the 'SUM' is combined with 'IF'. Thus summation can be obtained of selected records satisfying user defined criteria. This function operates the same way as Pivot Table Command. However, Pivot Table function is not on real-time basis (one need to refresh to get updated results); 'SUMIF' function on other hand works on real-time basis (changes in data instantly updates this formula)

Syntax of the SumIF function is as follows :

= SUMIF(criteria_range, criteria,
sum_range)

Example of the SumIF function:

Given data is of quantities of fruits sale with summary of total auntities (kgs.) sold. To check the summary calculation, the SUMIF function can be easily used. Say for fruit-Dates, we take sum of Col-D only for the records where 'Dates' appear in Col-C. Therefore criteria_range will be the Fruit-name (C19:C40), Criteria = C45 ("Dates") and sum_range is quantities in Col D (D19:D40). It needs to be noted that the criteria_range (19:40) matches with sum_range (19:40). The calculated numbers can be compared with the given quantities to show the differences.

E45 =SUMIF(C19:C40,C45,D19:D40)											
	A	B	C	D	E	F	G	H	I	J	K
18		Date	Fruit	Kgs							
19		3-Dec-2009	Apples	1,440							
20		3-Dec-2009	Mangoes	1,261							
21		3-Dec-2009	Dates	405							
22		3-Dec-2009	Mangoes	2,773							
23		4-Dec-2009	Apples	1,238							
24		4-Dec-2009	Mangoes	981							
25		4-Dec-2009	Mangoes	800							
26		4-Dec-2009	Apples	1,018							
27		5-Dec-2009	Dates	5,086							
28		5-Dec-2009	Mangoes	1,581							
29		5-Dec-2009	Mangoes	1,728							
30		9-Dec-2009	Apples	1,446							
31		9-Dec-2009	Dates	1,435							
32		9-Dec-2009	Apples	3,733							
33		9-Dec-2009	Apples	1,195							
34		9-Dec-2009	Dates	2,093							
35		10-Dec-2009	Dates	2,756							
36		10-Dec-2009	Mangoes	267							
37		10-Dec-2009	Apples	666							
38		10-Dec-2009	Apples	3,627							
39		10-Dec-2009	Mangoes	2,496							
40		11-Dec-2009	Apples	5,312							
41			Total	43,337							
42											
43		Summary									
44		3-Dec to 11-Dec	Fruits	Kgs	Calculated	Difference					
45			Dates	11,775	11,775	(0)					
46			Mangoes	19,675	11,887	7,788					
47			Apples	11,887	19,675	(7,788)					

The differences (actuals v/s. calculated) are stored in Col-F which can be filtered for non-zeros.

The 'VLOOKUP' Function

This function is extremely useful in linking two databases. This can be, however, only done if there is a common unique reference (generally referred to as 'primary key') between the two databases. All databases built-up on RDBMS work on this prime principle and hence generally it is easy to generate a primary key.

There can be several applications of 'Vlookup' function. A few examples could be :

- To verify the rates billed with standard rate-card prices,
- To confirm proper application of interest rates charged for bank advances.
- To vouchsafe whether all dispatches are billed or vice-versa. Similarly vendor- bills can be checked with the Inventory receipts.
- Quantities, rates, etc. in purchase orders can be compared with the vendor_bills. Or even the rates charged can be analysed by comparing multi-vendors or same vendor over different period.
- Multi-years Inventories records can be compared.
- Employee payroll can be compared over the period or with master records.
- Tax rates for employees (withholding tax) , invoices, etc. can be checked.
- Production records can be checked to inventories and vice-versa.

The list can be endless and an effective use can be made depending upon the circumstances and subject matter of the audit / investigation.

Syntax Of VLOOKUP function :

**=VLOOKUP (lookup_value ,
table array . Col Index.**

Explanation of the formula :

- **Lookup_value** : Criteria value to search in the first column of the table array
- **Table_array** : The Database - the values in the first column of table_array are the values searched by lookup_value. These values can be text, numbers, or logical values. Uppercase and lowercase text are equivalent.
- **Col_index_num** : The column number in table_array from which the matching value must be returned. Generally 2, 3,4,5
- **Range_lookup** : A logical value true or false → to find an exact match or an approximate match.

Range_lookup: A logical value true or false → exact match or an approx match.

If TRUE or omitted :
exact or approximate match is returned.
If an exact match is not found, the next largest value that is less than lookup_value is returned.

- The values in the first column of table_array must be placed in ascending **sort order**; if not incorrect value.

If FALSE, VLOOKUP will only find an exact match.

- The first col. **need not be sorted**. If there are multi-values in the first col., the first value found is used.
- If exact match is not found → #N/A

Example of VLOOKUP

Given two databases (i) data of sales (marked with green frame) and (ii) data of standard rate card prices (marked with yellow frame). In practice usually the databases are in different worksheets or workbooks, but here it is shown in same worksheet for easy understanding. However the principle is same. The objective is to check whether the correct rates are invoiced to the customer. Using VLOOKUP function, the rates (in Col.D) of rate card (B23:D36) is extracted in Col-Q. The formula is explained in figure below. The difference between rates invoiced (Col.M) and rates chargeable (Col-Q extracted as aforesaid) can be compared.

Q24 =VLOOKUP(J24,\$B\$23:\$D\$36,3,0)

=VLOOKUP(J24, B23:D36, 3, 0)

lookup value
table
col index

Rate Card				Sale Bill Data				Correct Rates	Difference
Prd-Id	Product	Rate/ Kg		Bill Name	Prd-Id	Product	Qty_Kg	Rate_Rs	Bill_Val_Rs.
10001	Cold Roll - 3mm	206.25		1 D	10003	Cold Roll - 8mm	3500	253.64	887,740
10002	Cold Roll - 5mm	228.88		2 R	10007	Cold Roll - 20mm	1161	811.00	941,571
10003	Cold Roll - 8mm	253.64		3 H	10004	Cold Roll - 10mm	2500	285.00	712,500
10004	Cold Roll - 10mm	285.00		4 K	20003	MS Sheet - 8mm	600	3,017.90	2,074,506
10005	Cold Roll - 15mm	642.10		5 W	10006	Cold Roll - 18mm	5050	767.46	3,875,673
10006	Cold Roll - 18mm	767.46		6 G	20006	MS Sheet - 20mm	885	7,641.42	6,762,657
10007	Cold Roll - 20mm	811.00		7 H	20004	MS Sheet - 10mm	2700	3,670.80	9,911,160
20001	MS Sheet - 3mm	2,677.91		8 K	10002	Cold Roll - 5mm	420	206.25	86,625
20002	MS Sheet - 5mm	3,017.90		9 L	20004	MS Sheet - 10mm	1583	3,670.80	5,810,876
20003	MS Sheet - 8mm	3,457.51		10 D	20006	MS Sheet - 20mm	10197	7,641.42	77,919,560
20004	MS Sheet - 10mm	3,670.80		11 H	20004	MS Sheet - 10mm	4862	3,670.80	17,847,430
20005	MS Sheet - 15mm	5,743.25		12 L	10003	Cold Roll - 8mm	2000	253.64	507,280
20006	MS Sheet - 20mm	7,641.42		13 E	20002	MS Sheet - 5mm	2046	3,017.90	6,174,623
				14 H	10003	Cold Roll - 8mm	1400	253.64	355,096
				15 K	10007	Cold Roll - 20mm	320	811.00	259,520
				16 E	10003	Cold Roll - 8mm	3500	233.84	887,740
				17 L	10007	Cold Roll - 20mm	1161	811.00	941,571
				18 G	10006	Cold Roll - 18mm	5050	767.46	3,875,673
				19 H	20006	MS Sheet - 20mm	885	7,641.42	6,762,657
				20 W	20004	MS Sheet - 10mm	2700	3,270.80	9,911,160
				21 D	10002	Cold Roll - 5mm	420	232.00	86,625

The Col-R can be filtered for non-zero to list the differences which is list where the rates are charged higher or lower for further investigation.

The Pivot Table Function

This function quickly summarizes large data by :

- Querying the data in many user-friendly ways.
- Subtotaling and aggregating numeric data, summarizing data by categories and subcategories, and creating custom calculations and formulae. Besides summing (sum), it can also find average, max, min, etc.
- Expanding and collapsing levels to focus on results, drill-downs to details from the summary.
- Moving rows to columns or vice-versa; see different summaries using various scenarios.
- Filtering, sorting, grouping, etc.

Application of Pivot Table function:

There can be several uses of the Pivot table function, a few examples can be as follows :

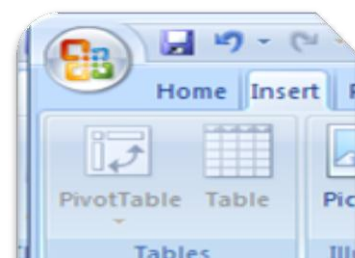
- Stratification / Classification of Data – periodwise, party-wise, assets-wise, etc.
- Creating various scenarios with if-then categories, using with filters it is possible to expand and collapse levels. For example in data of vendor bills, a pivot can be created to see Vendor_wise+Item_wise summary or Item_wise+Vendor_wise summary.
- Create Trial Balance of General Ledger, Accounts Payable, Accounts Receivable, Bank Account balances, etc.
- Inventory Summary, Slow Moving / Non-moving Stock, etc.
- Digital Analysis e.g. Benfords Law, Relative Size Factor (RSF), etc.

How to apply the Pivot Table:

Unlike many formulae, the Pivot function does not begin with a '=' sign. This is more of a command and hence not a formula. Therefore this command needs to refresh from time to time to obtain correct results. If there is need for an update on real-time basis, one can use SUMIF, COUNTIF, etc.

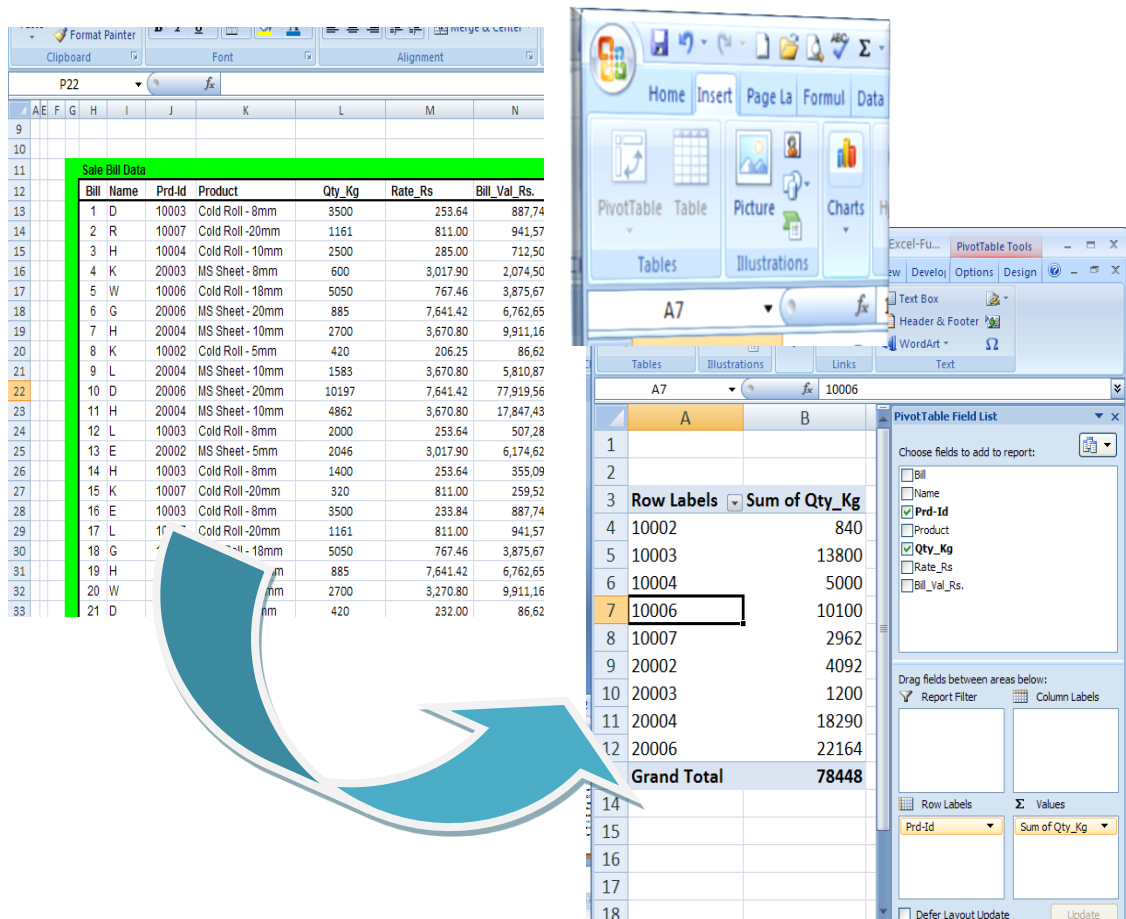
To apply the Pivot command, in the insert tab select the PivotTable icon and one needs to navigate through the interactive dialogue box. Select the appropriate data range and where you need to place the output table (the appropriate choice generally should be 'in new sheet' since that will not conflict with your data). Select the appropriate fields for the vertical and horizontal crosstabs as Row_labels and Col_labels. The

data to be summarised should be placed in the 'value' section. Here by selecting the 'value field settings', one can select the sum, count, average, max, min, product, etc. Cosmetic touch can be given to the table by selecting appropriate formats or charts.

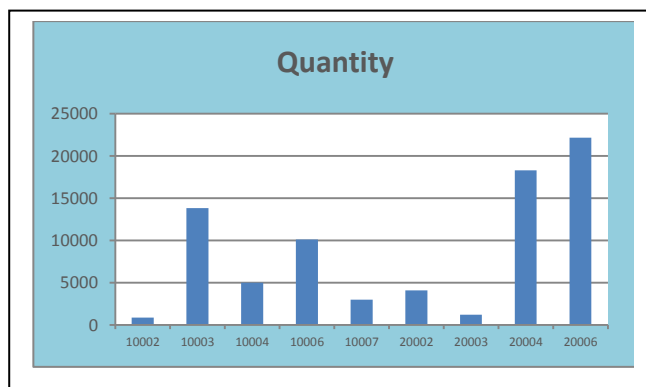


Example of Pivot Table :

Given data is of sales during a period giving details of Bill_No., Customer_name, Product_Id, Quantity billed, etc. The objective is to summarise the quantity product_code wise. Applying the Pivot Table the pivot table / charts can be obtained as shown below :



The data can be tabulated on a chart to get an overview and the spikes can be analysed for detailed verification. This is simple use for understanding the principle however complex queries and charts can be generated for different scenarios to give much more insights into the data.



Formula Auditing

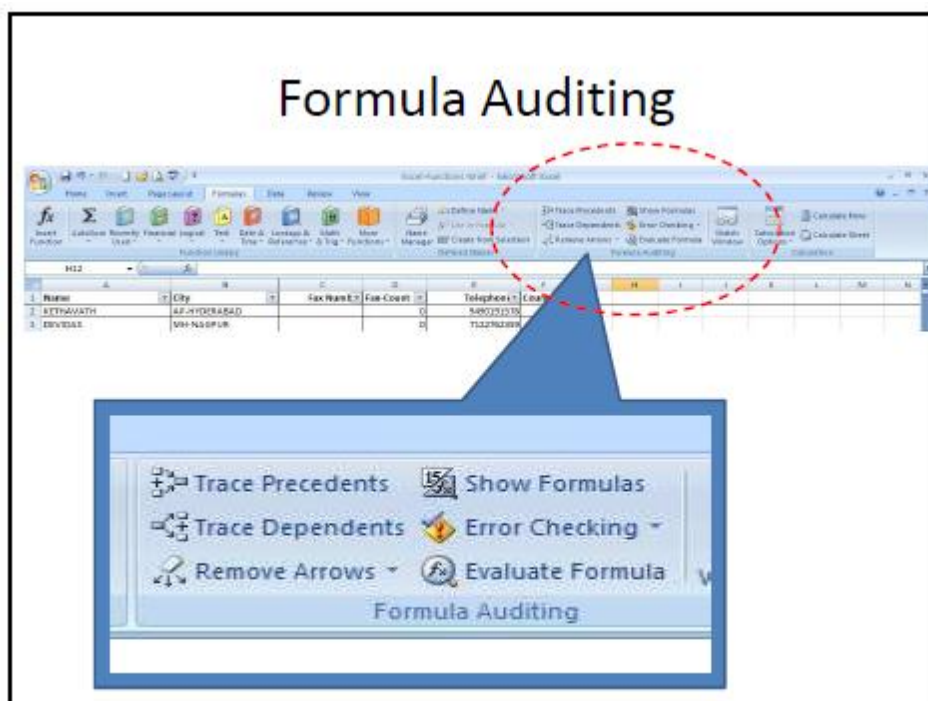
Very often some excel sheets are very complicatedly built-up -- there are many variables spread across multiple sheets and complex formulae make it difficult to audit. Most often such sheets are verified based on rebuild-and-compare method. This can sometime take enormous effort and hence may not be viable. This is where the Formula Auditing options come handy.

This is an in-built tool in MS Excel to quickly spot errors / omissions by locating inconsistencies in data having regard to surrounding region. A check run is conducted for:

- Cell containing formula that result in error
- Inconsistent calculated column in tables
- Cell containing years represented as two digits
- Numbers formatted as text
- Formulae inconsistent with other formulae in the region
- Formulae which omitted cells in a region
- Unlock cells containing formulae
- Formulae referring to empty cells
- Data entered in a table is invalid

How to use the Formula Auditing Options :

Click on the 'Formula' tab and then select the 'Formual Audting' section as shown in figure below. There are different audit tools available, a combination of which can throw up exceptions. Since this does not change the data, there no fear for data modification.



- Trace dependent and precedents diagrammatically show various relationship between the cells. Repeatedly pressing these commands shows a pattern of linkages (see the linkages in blue arrows in the figure below); one can easily spot variations (marked in red circle) if any.

	J	K	L	M	N	O	P	Q	R	S	T	U	V
		CAGR	Extrapolation		Projections								
			2000-01	2001-02	Year 1 2002-03	Year2 2003-04	Year 3 2004-05	Year 4 2005-06	Year 5 2006-07	Year 6 2007-08	Year 7 2008-09	Total	
9	1999-00												
5	0.96	1.34%	0.95	0.93711	0.925995	0.91483	0.903913	0.893142	0.882516	0.872032	0.861689	5.554018	
0	0.85	8.32%	0.92	0.99732	1.080302	1.170184	1.267544	1.373004	1.487239	1.610977	1.745011	9.734262	
2	4.19	49.03%	13.74	20.48121	30.52274	45.48743	67.789	101.0246	19.82211	29.54049	44.02360	338.2099	
												353.4982	
	10.6		11.45	12.286	13.111	13.926	14.730	15.523	16.306	17.078	17.840		
	10.05		10.97	11.965	13.045	14.216	15.483	16.856	18.343	19.954	21.699		
	40.47		54.21	74.694	105.217	150.705	218.494	319.518	339.340	368.881	412.904		
	8.48		9.16	9.829	10.489	11.141	11.784	12.419	13.045	13.662	14.272		
	8.0376		8.77	9.572	10.436	11.372	12.386	13.485	14.675	15.963	17.359		
	32.376		43.37	59.756	84.174	120.564	174.795	255.615	271.472	295.105	330.323		
					9.814235	9.814235	0.663463	0.707051	0.745122	0.782682	0.819874	13.55153	
					0.574322	0.626177	0.693794	0.743188	0.809092	0.880479	0.957806	13.689	
					3.585332	5.050423	7.23382	10.48769	15.33687	22.88933	33.70628	75.68875	
					6.74013	6.729065	4.723276	5.00192	5.27628	5.641715	5.991429	49.10555	
					1.654625	1.796361	10.36549	2.116192	2.29633	2.491457	2.70282	33.42327	
					34.10807	50.53785	75.02282	111.5123	15.15898	45.82883	61.72988	413.8987	
					41.50283	58.06328	86.86068	115.1287	38.98295	49.875	76.01413	466.4275	

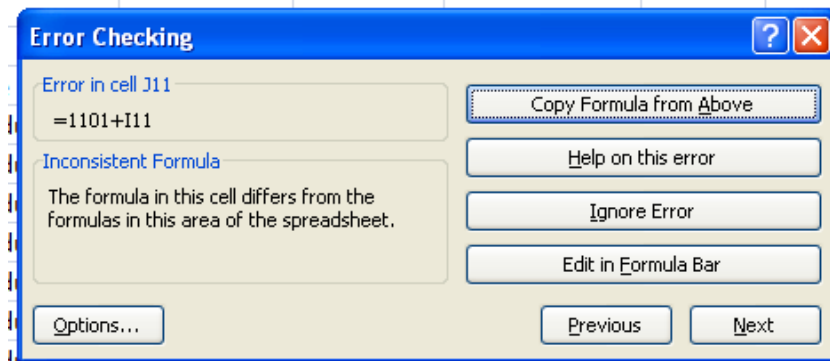
- As the name suggests, the ‘Show Formula’ tab quickly converts the entire sheet from value to the formula as shown below so that one can spot any glaring errors, e.g. direct numbers entered (see the yellow highlighted cell in fig. below) as against expected formula or vice versa, some extra numbers inserted in cell along with formulae, etc.

Function Library					
K6		fx			
	A	B	C	D	E
1	Sale	April	May	June	Total
2	Product 1	1030	1072	1341	3,443
3	Product 2	1004	1158	1250	3,412
4	Product 3	1026	1212	1237	3,475
5	Product 4	1110	1183	1233	3,526
6	Product 5	1034	1010	1114	3,158
7	Product 6	1065	1015	1204	3,284
8	Product 7	1074	1075	1376	3,525
9	Product 8	1001	1108	1222	3,331
10	Product 9	1245	1264	1483	4,807
11	Product 10	1166	1462	1333	3,961
12	Product 11	1054	1278	1363	3,695
13	Product 12	1032	1297	1401	3,730
14	Product 13	1097	1487	1169	3,753
15	Product 14	1156	1019	1407	3,582
16	Product 15	1236	1258	1423	3,917
17	Product 16	1062	1273	1156	3,491
18	Product 17	1190	1180	1226	3,596
19	Product 18	1333	1162	1233	3,728
20					
21					

After Show Formula

Clipboard		Font		Alignment	
G9		fx			
	A	B	C	D	E
1	Sale	April	May	June	Total
2	Product 1	1030	1072	1341	=SUM(B2:D2)
3	Product 2	1004	1158	1250	=SUM(B3:D3)
4	Product 3	1026	1212	1237	=SUM(B4:D4)
5	Product 4	1110	1183	1233	=SUM(B5:D5)
6	Product 5	1034	1010	1114	=SUM(B6:D6)
7	Product 6	1065	1015	1204	=SUM(B7:D7)
8	Product 7	1074	1075	1376	=SUM(B8:D8)
9	Product 8	1001	1108	1222	=SUM(B9:D9)
10	Product 9	1245	1264	1483	4807
11	Product 10	1166	1462	1333	=SUM(B11:D11)
12	Product 11	1054	1278	1363	=SUM(B12:D12)
13	Product 12	1032	1297	1401	=SUM(B13:D13)
14	Product 13	1097	1487	1169	=SUM(B14:D14)
15	Product 14	1156	1019	1407	=SUM(B15:D15)
16	Product 15	1236	1258	1423	=SUM(B16:D16)
17	Product 16	1062	1273	1156	=SUM(B17:D17)
18	Product 17	1190	1180	1226	=SUM(B18:D18)
19	Product 18	1333	1162	1233	=SUM(B19:D19)
20					
21					

- Error checking commands works like a spell-check command. It basically checks all the possible errors and shows the errors in a dialogue box (as shown below) giving the cell numbers with possible error and explanation. The user can then correct the errors as he deems fit.



- Also one can use the green-corner sign (see adjacent screen shot) to spot errors. This is similar to the error checking. In error checking explanation is given, while in green-corner is just flagged (this is like the red line shown from wrong spelling in word file). This can be done by enabling the configuration settings in the as shown below.

