The Art of Decision Making Utilizing Microsoft Excel
By Palani Murugappan

The decision you make in life makes you. Decisions such as choices you make, questions you ask, options you consider, all have a profound influence on your life and business. Why are then some reluctant or hesitant to make decisions? Is it due to accountability, responsibilities, uncertainties, or sheer lack of vital information? Most of the time, it is the combination of many. Interestingly, in today's fast paced corporate world, the trend has been moving towards decision making based on analyzing raw data.

To make that timely decision, you need unique tools. One such tool is Microsoft Excel. Its user friendly features enable one to perform reliable data analysis and an excellent choice to help companies make smart decisions quickly. Gathering meaningful information here refers to finding a pattern or trend in data, often bypassed by the human eye due to the sheer volume of it. The language of business can only be grasped when one is able to combine the elements of mathematics, statistics, and simple financial logic. By comprehending these elements, business needs are catered to in a timely manner more accurately.

Future investment value

Let us look at our first scenario. A company wants to know how much it will earn for a principal sum of RM100000 invested today based on varying interest rates for 5 years. Now, most calculations are based on the fact of fixed interest rates for the tenure of investment. Here, at the end of the fifth year, a profit of RM21780.34 has been realized (21.78%). Excel can perform this calculation quickly based on a built-in financial function.

Year	Interest Earned
1	3.75%
2	3.90%
3	3.85%
4	4.10%
5	4.50%

Principal Amount invested:	RM 100,000.00
Amount earned based on varying interest rates above:	RM 121,780.34
Percentage realised:	21.78%

Let us look at it further. The company now wants to consider keeping the principal amount invested for another 2 years, making that a total of 7 years. What kind of interest earned can it expect based on the previous 5 years? Based on the data provided, Excel can perform analysis by forecasting future values i.e. in this case, the interest earned on the sixth and seventh year. The highlighted figures for the sixth and seventh year are calculated based on a built-in statistical function.

Year	Interest Earned
1	3.75%
2	3.90%
3	3.85%
4	4.10%
5	4.50%
6	4.53%
7	4.70%

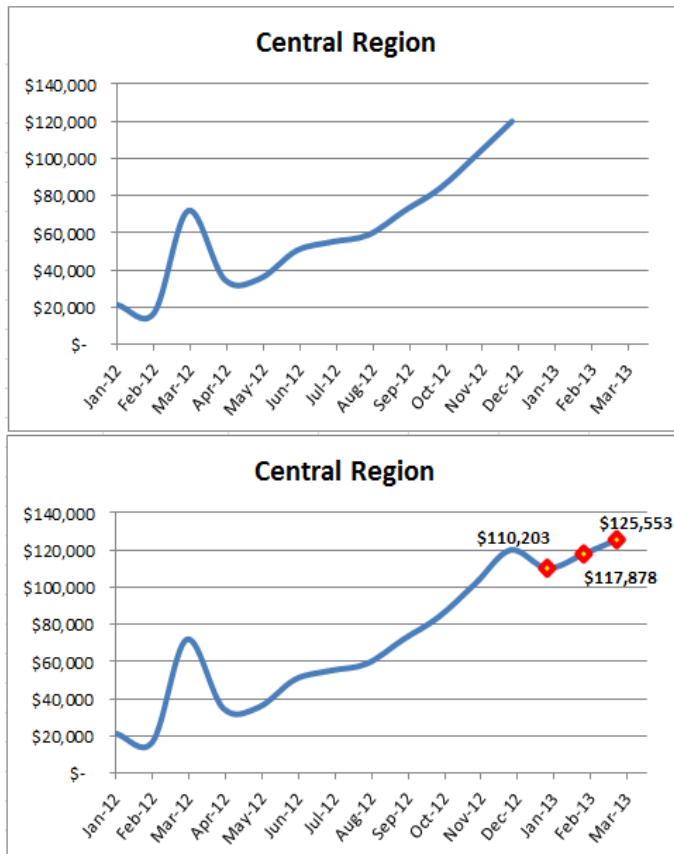|	
Principal Amount invested:	RM 100,000.00
Amount earned based on varying interest rates above:	RM 133,279.95
Percentage realised:	33.28%

Calculation is done based on previous values provided. The more previous values provided will help companies forecast future values more accurately. In other words, if the company has only the last 2 weeks of figures and wants to forecast the next six months ahead, this will not be accurate.

Depicting future values graphically

Let us look at a graphical presentation of forecasting future values. The top image in the next illustration shows the sales figures for the last 12 months. Based on this, can we forecast the sales figures for the next 3 months? Yes, by using the same function above to forecast the future interest earned. The future values calculated by Excel are based on the pattern of previous data. In the bottom image, note that the value drops for the month of January 2013, before rising for the months of February and March. Note that the original figures show an uptrend followed by a dip before it rises again.

Excel uses a conservative approach in its calculations, and tends to follow the previous pattern. This is the reason why more previous data reflects a more accurate future forecast. Banks, insurance and stock broking companies have been using a more complex mechanism to calculate future values. However, the above describes a simple method to forecast future values quickly and fairly accurately (based on historical data). Decision making becomes simplified. Many companies, especially those in finance, marketing, and production, are applying these methods to forecast their future values as a guide to prepare for the unexpected.

What-if analysis

Let us now focus on a classic what-if analysis. Many executives and managers are always looking into means and ways of making quick decisions when bosses raise the question "What if …….". Fortunately for most who are familiar with Excel's offerings, this can be worked out fairly quickly by using a built-in feature (not a function!). In the Salesmen report below, the company has given a mandate to the sales force to produce an average sales figure of RM25000.

Salesmen Report

	RM
Quarter 1	25,500
Quarter 2	19,700
Quarter 3	23,600
Quarter 4	
Average Sales per Quarter	

Question:
What should the value of Quarter 4 be if
Average Sales per Quarter is RM25000?

Now comes the what-if analysis. How much of sales is required in Quarter 4 to get an Average Sales per Quarter of RM25000? Excel performs the calculation and calculates the Sales for Quarter 4 to be RM31200, to get the expected average figure raised. If employees are able to perform these calculations quickly and accurately, decisions can be made almost instantaneously.

Selecting data from multiple options

Besides performing calculations based on Excel's built-in functions, another great feature it offers is the ability to have multiple options within a single cell. Human Resources personnel love this! Look at the illustration below. Based on the three departments i.e. Sales, Finance, and HR, the listing of the department personnel names are in the respective columns of E, F, and G. The user has the option of clicking on the drop down arrow to select any department from cell A2. By doing this, the user can select the respective department's personnel name as in cell B3.

Multiple options within a single cell

	A	B	C	D	E	F	G
1	**Dept**	**Name**		**Dept**	**Sales**	**Finance**	**HR**
2	Finance	F3		Sales	S1	F1	HR1
3	F1			Finance	S2	F2	HR2
4	F2 / F3			HR	S3	F3	HR3
5	F4				S4	F4	
6					S5		

	A	B	C	D	E	F	G
1	**Dept**	**Name**		**Dept**	**Sales**	**Finance**	**HR**
2	Sales	F3		Sales	S1	F1	HR1
	Sales			Finance	S2	F2	HR2
	Finance / HR			HR	S3	F3	HR3
5					S4	F4	
6					S5		

Name does not exist in Dept –
thus highlighted in red!

Upon selecting the personnel's name based on the respective department (cells A2 and B3 in the top illustration), should the user change to a different department's name (cell B2 in the bottom illustration), the personnel's name is highlighted in red to illustrate that personnel does not belong to the respective department.

The above is a classic situation where Excel alert's the user that placing personnel from a different department is incorrect. Productivity is enhanced and decisions made quicker.

Understanding loan repayment calculations

Finally, most of us who have housing loans are often wondering why as we keep paying our repayments, the amount owing the bank does not reduce much. Well, the following calculations done in Excel based on financial functions will help anyone understand how much of the repayment goes towards interest and the principal amount.

Loan Amortization Table

Loan Data				
Original Principal	$ 200,000			
Loan Term (Years)	30			
Annual Interest Rate	6.75%			
Payments per Year	12			
Payment Amount	$ 1,297.20			

Month	Payment	Interest	Principal	Balance
0				$200,000.00
1	$ 1,297.20	$ 1,125.00	$ 172.20	$199,827.80
2	$ 1,297.20	$ 1,124.03	$ 173.16	$199,654.64
3	$ 1,297.20	$ 1,123.06	$ 174.14	$199,480.50
4	$ 1,297.20	$ 1,122.08	$ 175.12	$199,305.38
5	$ 1,297.20	$ 1,121.09	$ 176.10	$199,129.28
6	$ 1,297.20	$ 1,120.10	$ 177.00	$198,952.18

Monthly Payment   **Interest Payment**   **Principal Payment**

Based on the above scenario, a loan of $200000 has been taken. Monthly repayment has been calculated as $1297.20. For the first month, $1125 is paid as interest and only $172.20 gets offset from the principal amount. That is one of the reasons why many complain that despite paying for years, they still owe the bank a hefty figure!

The examples illustrated above is a snapshot of what the author covers in some of his 2-days training sessions. Having been a corporate trainer for the last 14 years, Palani specializes in training participants how best to perform data analysis from company's raw data and concluding from the information gathered by harnessing Excel's built-in functions and features. A HRDF certified trainer and author of 51 books to-date on various software applications, Palani is passionate on what Excel can do, and how best to present data in different formats. More information is covered in his website www.avimursolutions.com. He can be reached at palani@avimursolutions.com