**NPV, IRR, SENSITIVITY ANALYSIS**

NPV or net present value is a discounted investment project viability analysis technique. In NPV method the sum of the project cash flows which are adjusted by dividing by the discount factor (1-r) n, r being the interest rate ie 0.2 for 20% and n the year or period of the cash flow is calculated. The initial investment amount is then deducted from the calculated sum of discounted cash flows to get the net present value of the project. Yhe project is undertaken if the NPV is positive or if it exceeds that of another mutually exclusive investment project.

IRR or the internal rate of return is also a discounted investment project viability analysis technique. In IRR method two NPV are calculated using two rates of interest (make sure one rate of interest yields a positive NPV and the other a negative NPV). The following formula is then applied.

IRR = ra + NPVa (rb – ra)

(NPVa – NPVb)

Where;

NPVa is the NPV using the lower discount rate

NPVb is the NPV using the higher discount rate

ra is the lower discount rate

rb  is the higher discount rate

IRR is the discount rate which yields a zero net present value for an investment project. Accept projects whose IRR is greater than the projected IRR or the project having the highest IRR.

Sensitivity analysis examines uncertainty of a model and how uncertainty in the output dependent variables in a model can be matched against uncertainty in the models input independent variables. It is done using Monte Carlo techniques for global sensitivity analysis and derivatives based on numerical analysis in local sensitivity analysis and excel management tools. Sensitivity analysis helps in decision making by understanding the effects of possible variability in the inputs to a model on the expected outputs.