Preface

Real option analysis, involves use of discounted cash flow technique like Net Present Value, supported by Black Scholes model or use of other models like Binomial model etc. Black Scholes model has limitations, related to its application for valuation of real options. Black Scholes model is applicable to financial options, where strike price remains fixed, over a defined time period, for the given option. Real options are witness to changes in the given variables over a period of time, due to factors, either controllable or uncontrollable.

After going through Research paper on “Real Option Valuation of a Pharmaceutical Company”, by Ashok Banerjee published in Vikalpa, Volume 28, No. 2, April-June 2003, it was identified that static Discounted Cash flow model fails to capture value of real options. Real options model using Black Scholes significantly improves valuation. Traditional DCF method could hardly explain around 39% of market capitalisation of the company. Cash flow model fails to capture future values related to growth from joint venture initiatives, possible growth from drug discovery initiatives etc. This paper identified need for having compound option model that can capture value of future investments like R & D due to different stages of clinical trials like Phase I, II, III for development of a drug molecule.

Based on research project by Carlos Trejo, titled “Real Options: Understanding the Basic concepts” September 2000, for MABM degree, there was comparison between discounted cash flow and real option valuation methodologies in the context of strategic capital budgeting decisions like remote sensing technologies. Application of remote sensing technologies in agriculture is a very sound business proposition. However, it should be clear that such high technologies are characterized as: i) involving large research investments in research and development, ii) some sunk costs that cannot be recovered if the project is abandoned (irreversibility), iii) a high degree of uncertainty in the returns to these investments (risk), iv) significant time lags between investing and realization of a return, v) some leeway in the timing of the investment (i.e. atleast some of the investment may be deferred until more information is available).

The essential question is what valuation analysis tool to use in order i) to evaluate such a highly uncertain investment (but highly profitable if successful) and ii) to communicate this
value to investors in a disciplined and unbeatable way. Real options valuation is particularly important for high technology companies because due to their high investment costs.

There is need for a model that can capture changes in variable values, related to real assets and can be applicable for different time periods, to give an accurate value of the given situation and should be comparable to the expectations of the decision makers.

This study is directed towards case studies, with application of models and situational variables, so that impact of factors can be understood and thereby, model can be developed with its applicability to various situations.