

**Replacement of Equipment under conditions of Price Change
and/or Finite Period of Use**

**Sanjay Kumar Bhattacharyya
Indian Institute of Management Calcutta
1985**

Thesis Advisory Committee:

Prof. Bani K. Sinha (thesis supervisor), Indian Institute of Management Calcutta

Prof. M. N. Pal, Indian Institute of Management Calcutta

Prof. Shyamal K. Ghosh, Indian Institute of Management Calcutta

Thesis Summary

The thesis deals with a few 'like for like' individual replacement models for a capital equipment and group replacement models for low cost identical items. In both the cases it has been assumed that the equipment will be intended for a relatively short period of use and subject to change in its acquisition costs. Here it is argued that a firm should review its replacement policy at regular intervals instead of deciding upon a strategy based on an infinite planning horizon. Moreover, the models to be used for this purpose should also include the change in acquisition costs of an equipment. With these arguments economic replacement models have been developed for both individual and group replacement of equipment.

In the case of the capital equipment it has been assumed that purchase prices, operating costs, salvage values at different points of time follow linear trends. Optimum replacement interval has then been found out by minimising total costs incurred over its finite period of use. Models are discussed at two levels, one where discounting is not taken into account and the other where it is considered. Time variable is also taken either as discrete or continuous depending on the simplicity involved in presenting the models.