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

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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 t 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.

Besides, models have also been developed for a capital equipment when its availability becomes the main criterion.

For group replacement, models have been developed without discounting on the assumption that the length of time involved is relatively short and effect of discounting correspondingly minor.