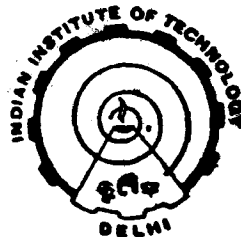


MODELLING AND ANALYSIS OF INVENTORY SYSTEMS UNDER INFLATION AND STOCK DEPENDENT CONSUMPTION

By
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Thesis submitted to the
Indian Institute of Technology, Delhi
for the Award of the Degree of
DOCTOR OF PHILOSOPHY

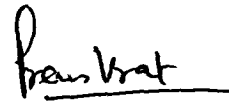


CENTRE FOR MANAGEMENT STUDIES
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CERTIFICATE

The thesis entitled 'Modelling and Analysis of Inventory Systems under Inflation and Stock Dependent Consumption' by Mr. Rakesh Gupta to the Indian Institute of Technology, Delhi, for the award of the degree of Doctor of Philosophy, is a record of bonafide research work carried out by him. He has worked under my guidance and supervision and has fulfilled the requirements for the submission of this thesis, which has attained the standard required for a Ph.D. degree of this Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.



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ABSTRACT

The main emphasis of the thesis is to develop a methodology for modelling and analysis of Inventory Management (IM) aspects under initial stock dependent consumption rate with different functional relationships, inflationary price behaviour and for perishable products.

Initially, the study introduces the subject, presents an overview of the problem of IM and brings out the relevance and advantages of the research problem. A comprehensive review of the literature is reported and inherent limitations of such models are brought out.

In first phase an attempt has been made to give new dimension to inventory management aspects. Firstly an inventory model under inflationary price behaviour with constraint system has been developed and extended to variable rate of inflation. It also provides inventory model with quantity discounts for a deterministic demand rate without permitting shortages. Second phase of the study presents inventory models for stock dependent consumption rate under different functional relationships. Inventory models for the determination of EOQ where backlogging is allowed, with continuous and discrete quantity discounts and multi item constraint system are also developed.

(ii)

In phase third two models are developed for perishable products, one under quantity discounts without shortages and second is the integrated model for perishable products with initial stock dependent consumption rate.

Lastly a sensitivity analysis of inventory models developed is dealt with. A empirical study with ratio analysis of inventory situation of three different indian industries is presented with a view to highlight the impact of the various situational parameter on inventory system.

An extensive bibliography on the subject is included at the end. A substantive portion of this research study has been published by the author.

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