

COMPARISON OF FLOWSHOP SCHEDULING ALGORITHMS

by 45

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## CHAPTER I

### INTRODUCTION

Scheduling is one of the critical problems in management. The scheduling problem may be classified into three categories: Production scheduling, Project scheduling and Job scheduling. This report is concerned with the job scheduling problem.

The job scheduling problem consists of processing  $J$  jobs on  $M$  machines such that a certain criterion is optimized. Some of the criteria are: (1) minimization of the total time required to process all jobs; (2) minimization of the total idle time on all the machines; (3) minimization of the time required for each machine, starting from the first job to the last job; and (4) maximization of the profit by meeting of due dates. However, the criterion considered in this report is that of minimizing the schedule time.

The job scheduling problem is of interest because of its diversity, complexity and magnitude. For example, consider a problem of six jobs to be processed on each of three different machines. The possible number of sequences is  $(J!)^M$  or  $(6!)^3 = 373,248,000$ . A complete enumeration of these sequences would require years on a high speed computer. Many of these sequences are technologically non-feasible. An exhaustive enumeration must consider all sequences to eliminate the non-feasible and then select the optimal sequence.