ABSTRACT

Productivity, quality and flexibility are critical performance measures for manufacturing systems. This research incorporated the measures of productivity, quality and flexibility, to establish an integrated evaluation model for system performance. After confirmed the inputs of a manufacturing system and also the definitions of productivity, quality and flexibility, this research achieved the follow results: 1. By the viewpoint of costs, this research established integrated measures, includes productivity, quality and also flexibility. 2. By the viewpoint of costs, this research established individual measures includes labor productivity, material productivity, capital productivity, energy productivity, manufacture process quality, consequence quality, equipment flexibility, labor flexibility, products flexibility and market flexibility. 3. This research integrated the measures of productivity, quality, and flexibility to a system’s performance measure by the method of Analytical Hierarchy Process (AHP). This research also calculated the weights of the individual measures by AHP, to provide the manager to determine distributes of resources. 4. At last, this research established a complete performance evaluation model, also with an example is adopted to validate and illustrate the process and function of the performance evaluation model.

Keywords : Productivity ; Quality ; Flexibility ; Analytical Hierarchy ; Performance Evaluation ; Manufacturing System

Table of Contents

第一章 緒論………………………………………………………1
第二章 文獻探討………………………………………………12
第三章 整合性績效評估模式………………………………………37
第四章 生產力指標之衡量…………47
第五章 品質指標之衡量……………………………………59
第六章 彎性指標之衡量……………………………………70
第七章 分析層級程序法及權重之決定…………………………80
第八章 個案研究……………………………………………………97
第九章 結論與建議………………………………………125

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