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An Economic Evaluation Model for Advanced Manufacturing Systems

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ABSTRACT

With traditional methods of cost accounting, substantial benefits of advanced manufacturing techniques go undetected. Current accounting measures are based on the mass production of a mature product with known characteristics and a stable technology. In particular, the traditional Investment decisions in manufacturing are often based on accounting data collected for the production setting as given, where the cost structure and the uncertainty (in demand, In actual costs, or in delivery times) are assumed exogenous to the model. Recent manufacturing experience suggests, however, that these assumptions – stable product and mass production – are not valid. In Introducing advanced manufacturing technology, the firm should consider all the benefits – Improvement in productivity, quality, and flexibility – offered by the new system. This paper addresses several related Issues by Incorporating these less obvious benefits Into the conventional net present value Index so that the long-term

manufacturing performance can be measured. To this end, we formulate a multistage Investment decision model that considers explicitly the nonconventional costs of quality, inventory, part waiting, equipment idle, and so forth. Finally, a case study is presented to demonstrate the application of the economic model developed in this paper.

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