

A model for supply chain design considering the cost of quality

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Recent studies have shown that the cost of quality (COQ) is of more strategic and economic importance than previously conceived. Whereas previous works have applied COQ as an internal performance measure within companies, the purpose of this paper is to present a model for supply chain design that computes the COQ as a global performance measure for the entire supply chain. In addition, rather than assume an exogenously given COQ curve, our model computes COQ in terms of internal operational decisions such as the error rate at inspection and fraction defective at manufacturing. The model can be used to design a logistic route that achieves a minimum total cost while maintaining an overall quality level and to evaluate the impact of investment in quality to increase overall profits. The behaviour of the model is illustrated with numerical examples that show how the COQ function changes depending on various parameters. © 2012 Elsevier Inc.

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