

A Sustainable Stochastic Imperfect Production Model with Carbon Emission Cost

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ABSTRACT

Strategies are upgrading worldwide to improve the quality of a product. All over the world sustainability has become a big challenge for an organization. To implement green substance in inventory is a big issue to be considered. Sustainability is a process in which industry do not do any settlement with environment and social resources, with proper balancing of profit. Carbon emission is exhalation of carbon that emit in an environment due to various reasons like transportation, deteriorate items in the warehouse, keeping inventory in the warehouse, fuel emission, disposal of deteriorated items etc. This paper aims to provide an imperfect production model with carbon emission cost. It deals with deteriorated items and stock dependent demand. In this model, shortages are allowed with partial backlogging. The authentication of a model is proved by a numerical exemplification with the help of sensitivity analysis through Mathematica 12.0 software. The variation of different parameters on optimum result are being tested through graphical representation and further discussed in detail.

Keywords: Sustainability, carbon emission cost, stock dependent demand, imperfect production, partial backlogging