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عنوان مقاله:

Performance Analysis of Remanufacturing System Considering Inspection & Grading Policies, Sourcing Policies and Resource Policies Under Multiple Quality Scenarios: Towards Environmental Sustainability

محل انتشار:

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خلاصه مقاله:

The aim of this study was to investigate the effect three factors (inspection & grading, sourcing policies and resource policies) on the cycle-time performance of a remanufacturing system under three different quality scenarios. The objectives were to analyse (i) the main effect of factors on the remanufacturing cycle-time under the given three quality scenarios, (ii) the interaction effect between these factors on the remanufacturing cycle-time under the given three quality scenarios; and (iii) the factors and corresponding levels that lead to shortest remanufacturing cycle-time. Simulation technique was used to model and simulate the remanufacturing system. Design of experiment method was used to design a mixed two-level and three-level full factorial for running the simulation experiments. Analysis of variance (ANOVA) was used to analyse the output results from the simulation experiments. The ANOVA results show all three factors have significant effect on the remanufacturing cycle-time, regardless of the quality scenarios. The ANOVA results also suggest that sourcing policies has the most predominant effect when the quality scenario is average. Despite the different quality scenarios, the interaction between sourcing policies and resource policies have significant effects on the remanufacturing cycle-time, with predominant effect when the quality scenario is average. The implications for remanufacturing industry are there must be (i) inspection & grading policies, (ii) sourcing policies and (iii) resource policies, as these factors affect the remanuafacturing cycle-time. This work is novel because it considers three factors simultaneously and carries out the research by using simulation, design of experiment and ANOVA.

کلمات کلیدی:

Remanufacturing, Used-Products, Simulation, Inspection, Grading

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