

عنوان مقاله:

An integrated multi-stage allocation types of collection centers and vehicle routing for electronic waste system in urban areas

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خلاصه مقاله:

With the advancement of technology in today's world, electronic devices such as mobile phones, computers, tablets and laptops have become a common and consumable commodity for all human beings in all countries. In the manufacture of all these products, a large amount of plastics and metals are used, some of the metals in which such as mercury, cadmium and lead are very harmful to the environment and human health, as well as metals such as gold, silver and copper in them. It makes the process of collecting and separating them more important than before. As a result, electronic waste management includes two very important steps of collecting and disassembling their components. This paper develops an integrated multi-stage allocation and routing of vehicles to collect electronic waste from urban demand points considering the robotic separation sequence planning and the type of collection centers. The aims are: to minimize the cost of housing electronic waste collection centers, minimizing the amount of pollution and carbon footprint by robots and finally, minimizing the cost of disassembling products. Also, in most of the previous researches, the issue of non-uniformity of electronic waste collection centers in the city has not been considered, while in this paper considers this issue. In the continuation of this study, a numerical example on a small scale with the help of GAMS software is solved and finally the numerical results are provided along with sensitivity analysis.

کلمات کلیدی:

Electronic waste, Electronic waste management system, Vehicle routing, Disassembling sequence scheduling problem

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