



APDIO - Associação Portuguesa de Investigação Operacional

Livro de Resumos

Universidade de Aveiro

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Um modelo tri-objetivo para redesenho da rede de uma cadeia de abastecimento de bancos alimentares

Margarida Vaz Pato, Carlos Martins, Teresa Melo

Resumo. O problema abordado nesta apresentação refere-se ao redesenho da rede multinível de uma cadeia de abastecimento de bancos alimentares. As decisões envolvidas incluem abertura e encerramento de bancos alimentares, bem como escolha das respetivas capacidades de armazenamento e de transporte ao longo de um horizonte de planeamento multi-período. Selecionam-se as novas instituições beneficiárias a apoiar pela cadeia de bancos, determina-se a afetação de todas as instituições apoiadas a algum dos bancos e distribuem-se os produtos alimentares doados pelas instituições. Admite-se fluxo multi-produto dos doadores para os bancos, entre bancos da rede e dos bancos para as instituições. Admite-se também que as doações são insuficientes para satisfazer a procura das instituições. Tendo em vista a sustentabilidade da operação são considerados três objetivos: minimização do custo operativo da rede de bancos alimentares; minimização dos impactos ambientais do desperdício alimentar e das emissões de CO₂; e maximização dos benefícios sociais gerados através do apoio às instituições e do trabalho voluntário criado. Será apresentado um modelo de otimização tri-objetivo linear inteiro misto, bem como resultados computacionais obtidos a partir de instâncias representativas da rede gerida pela Federação Portuguesa de Bancos Alimentares.

Sessão W4: Logistics Allocation Problems

5 de Setembro, Quarta-feira, 16:30 - 18:20

Sala: 23.3.10

Moderador: José Soeiro Ferreira

Layout Optimization for a real world stock warehouse - The non-food sector

Maria Alice Trindade, Maria Rosário Alves Moreira, Paulo Sérgio Amaral de Sousa

Resumo. Retail industry sector is becoming increasingly competitive. As a result, led by pressures for reducing costs, improving quality and responsiveness created by the global competition, companies are seeking to squeeze inefficiencies out of their supply chains. Consequently, to optimize a company's operations sector, have become a permanent concern. This paper emerges as

a way to improve the internal layout of the non-food sector zone of the north warehouse region of a Portuguese Food Retailer company.

At a first stage, we manage to collect information about the non-food stock processes throughout informal interviews, non-participant observation and data about the items in stock and its locations. At a second stage, we redesign the layout of the non-food stock section of the warehouse by formulating a mathematical programming model that classifies the stock and helps us to distinguish the warehouse products between slow and fast movers, having as main criteria their own turnover. This classification will be further used to access the optimal location for the items on warehouse and the improvement of the pickers' productivity while building the pallets for the stores.

The manufacturer's pallet loading problem with stability and complexity constraints – A case study

Galrão Ramos, Elsa Silva, Pedro Lopes, Pedro Ribeiro

Resumo. The manufacturer's pallet loading problem is frequently addressed by reducing the three-dimensional problem to a two-dimensional one, since usually boxes can only rotate about a vertical axis. However, this means that practical additional constraints such as stability or complexity, are not taken into consideration when determining the two dimensional layout arrangement, limiting the applicability of such solutions in practice. This work presents a flexible heuristic algorithm that enforces stability constraints based on criteria defined by the user while addressing complexity constraints that emerge from the automated robot packing. The algorithm was developed as part of the AdaptPack project which developed a framework focused on the design and development of new highly flexible modular robotic packaging and palletizing systems. The algorithm was tested using a large set of real world instances from an industrial company, and the results were compared to the current solutions of the company and were also validated by the company.

The container loading problem in a shoes manufacturer

Manuel V.C. Vieira

Resumo. In this talks we describe a real life application of a container loading problem for a shoes manufacturer. Shoe boxes are packed in several cardboard boxes with variable dimensions. We present a MINLP model which decides how to pack the shoe boxes and the size of cardboard boxes. This container loading problem is classified as an open dimension problem, with three open dimensions. We approximate the MINLP model with a MILP and we compare it by using BARON on the nonlinear model and we run CPLEX