Optimal Storage Layout And Order Picking For Warehousing

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Abstract—In this paper, issues of storage layout and order picking operations problems for warehousing are addressed using optimization techniques. The aim of this study is to develop a dynamic planning system applied for storage layout and order-picking operations problems. The planning system considers dynamic nature of customer order demand, configuration of picking area, and interactive human-machine interface. Heuristic-based optimization technique is utilized to design the planning system. To analyze the dynamic nature of customer order demand, similarity measures among types of items are defined using the entry-order-quantity rule. Based on the characteristics of customer order demand and the configuration of picking area, a zero-one quadratic generalized assignment model is developed. A heuristic procedure is devised to find near-optimal solutions to this problem and coded using Borland C++ computer language. An industrial size application is performed to demonstrate this approach. Results indicate that the developed planning system can be promising for dealing with storage layout and order picking operations problems for warehousing.

Keywords—Warehousing, 0-1 quadratic generalized assignment model, stock location

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