

Developing and Training a Mathematical Model for Optimizing a Given Interior Space of a Supermarket

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Retailers are crucial in supply chains, acting as the bridge between consumers and resources. However, there is limited analytic-based literature on block design in grocery stores. This paper employs an algorithmic approach with optimization techniques to efficiently design the interior space of a provided supermarket. The objective is to create an analytical method for handling design issues without relying on human-centered approaches. Using data from supermarket store arrangements, the paper showcases efficient space utilization by aligning item measurements with customer needs. Decision variables offer decision makers a precise collection of non-dominated designs. Previous studies demonstrate the effectiveness of this approach in analytically designing a data-driven structure for supermarket block layouts. The model identifies layouts that maximize space utilization while meeting industry standards. Although primarily focused on Asian retailers, the approach is generally applicable due to the similarity of grocery store layouts worldwide. The method and results are easily translatable for other retailers.

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