



Research School for Operations
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Data-driven warehouse optimization – A focus on maverick picking

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Order picking is recognized as the most expensive warehouse operation, especially for picker-to-parts systems in which order pickers travel through the warehouse to collect products following a planned route. In practice, order pickers often deviate from their planned route, leading to what is called maverick picking. An important phenomenon that causes maverick picking is picker blocking. Here, an order picker cannot reach its next destination because another order picker is blocking the path, leading to deviations from the route (e.g., waiting times, alternative paths). Existing literature has indicated the detrimental effect of picker blocking, and maverick picking in general, on operational performance. Yet, literature lacks a quantitative assessment of these aspects' prevalence in practice and a quantitative analysis of the underlying causes. At the same time, individual order picker data is readily available in many warehouses. This project aims to improve warehousing research by using an innovative data-driven approach. First, a methodology is proposed for analyzing historical data to quantify the prevalence of route deviations and to find patterns that cause them. This will allow to analyze the real-life impact of maverick picking. Second, novel, improved order picking planning models considering these new insights will be proposed.