A Case Study of the Implementation of Commercial Warehouse Automation Processes and Technology in the Navy Exchange Command West Coast Distribution Center

NAVAL POSTGRADUATE SCHOOL

Abstract

- This study evaluates how commercially available automation technologies could improve operational performance at the Navy Exchange Service Command West Coast Distribution Center in Chino, California. Using quantitative warehouse data, process mapping, and industry benchmarking, the study identifies gaps between current operations and commercially achievable performance. The analysis shows that clearer performance metrics are essential for shaping future automation acquisitions and ensuring that technology investments support workload reduction, accuracy improvements, and readiness goals. The findings help align operational performance with structured acquisition practices.
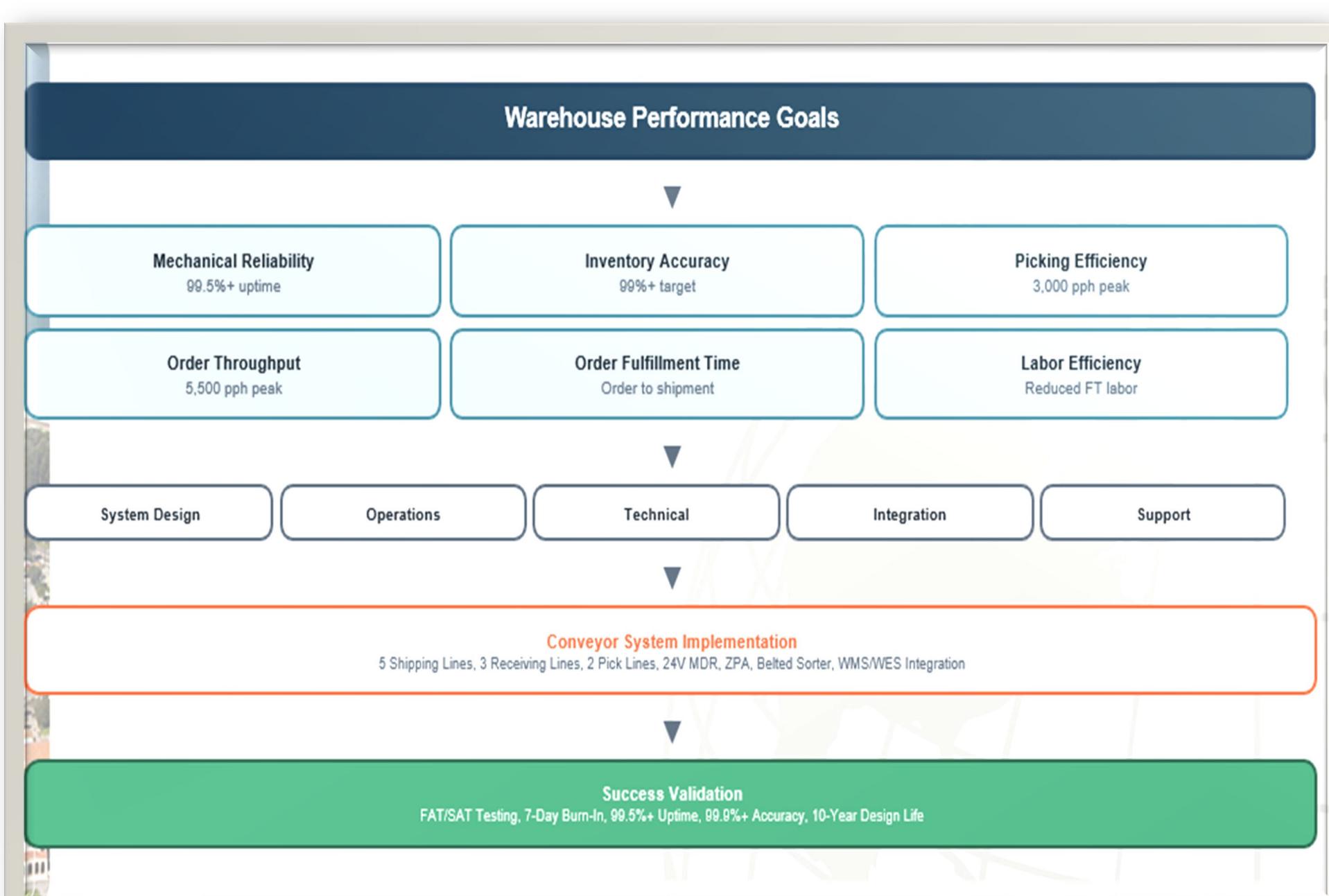
Methods

- This study combined four approaches to understand WCDC operations and identify automation gaps. Site observations captured real task times and bottlenecks. Process maps showed where automation reduced touch points and where manual work still dominated. Internal reports and system exports provided data on throughput, accuracy, and labor distribution. Benchmarking against commercial warehouses highlighted achievable performance levels and informed realistic targets for future acquisition metrics.

Results & Impact

- Key findings point to clear opportunities for performance improvement. Automated loading consistently cut handling time compared to manual work. Process maps show that automation reduces touch points but still depends on manual scanning and palletization, creating delays that future systems could target. Data gaps remain a major barrier, limiting NEXCOM's ability to measure gains or quantify workload reductions. Benchmarking shows that commercial facilities achieve higher throughput and rely on stronger labor tracking, revealing a capability gap that can guide requirement setting.
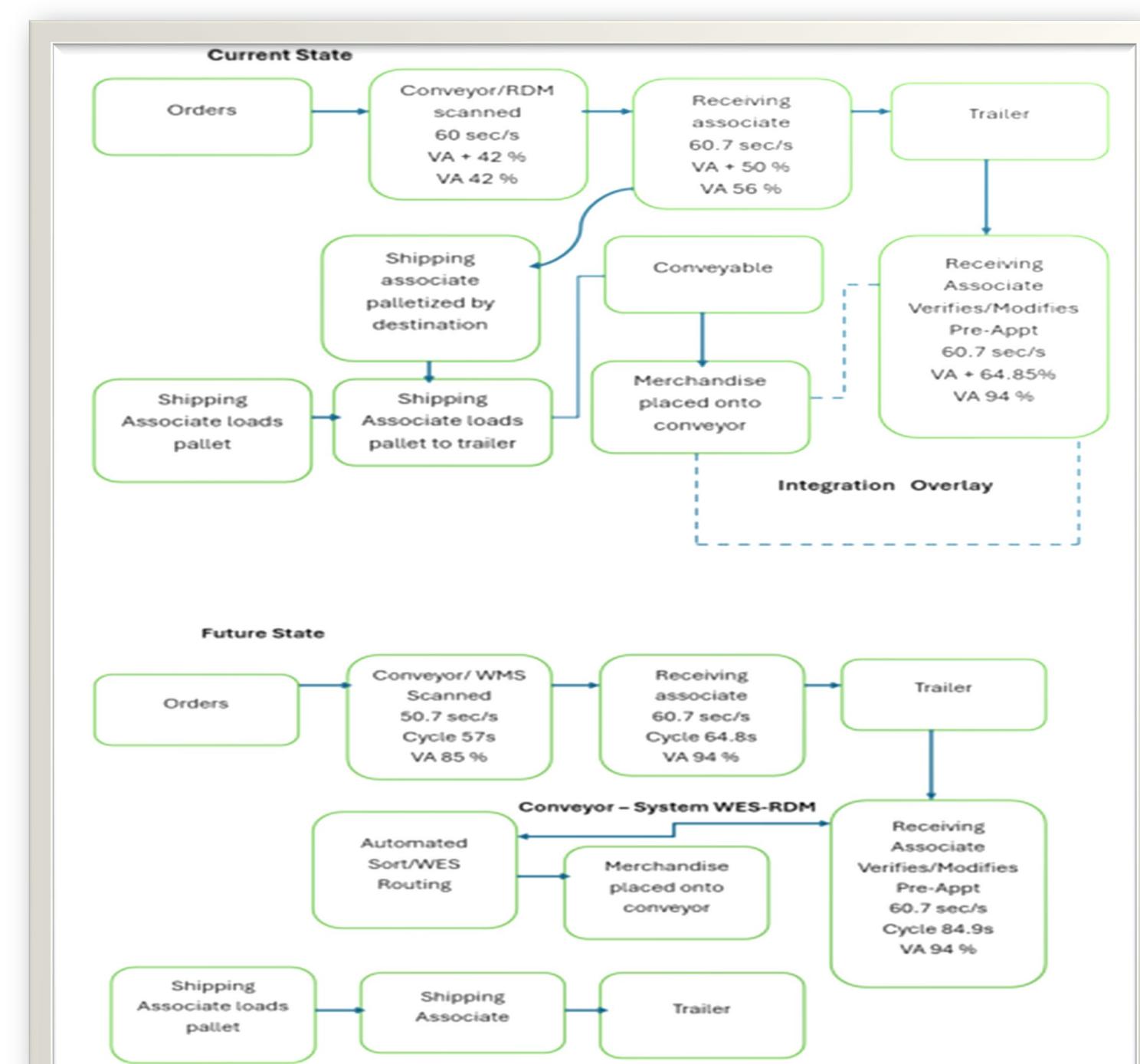
Future Research

- Future analysis should focus on defining measurable performance requirements linked to throughput, accuracy, and touch point reduction. Additional work should evaluate labor management tools, deeper WMS integration, and automation options for pallet building. Comparing performance across other NEXCOM distribution centers would help identify scalable solutions and refine acquisition thresholds.
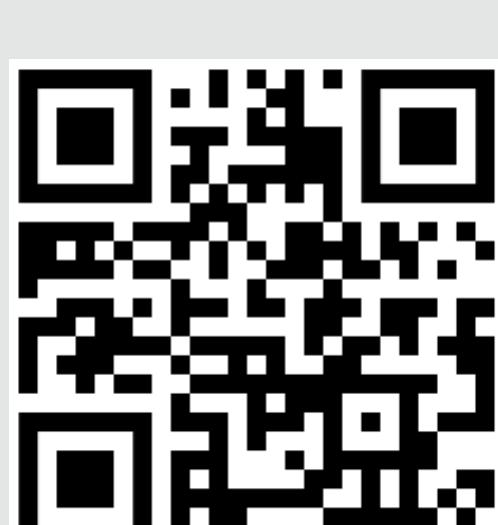
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