

Cost Effectiveness Analysis for Capitalizing Unit-Level Ship Inventories



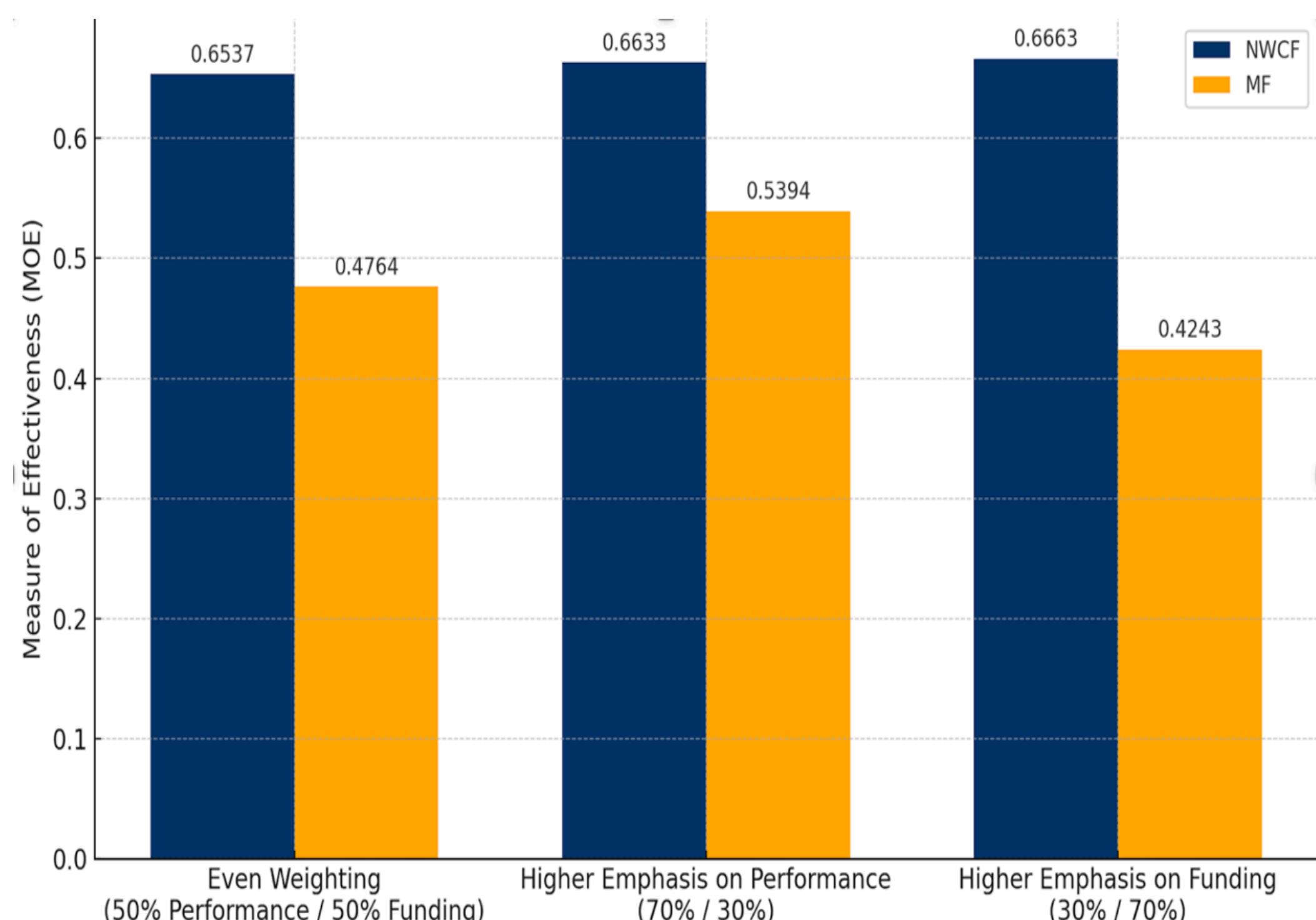
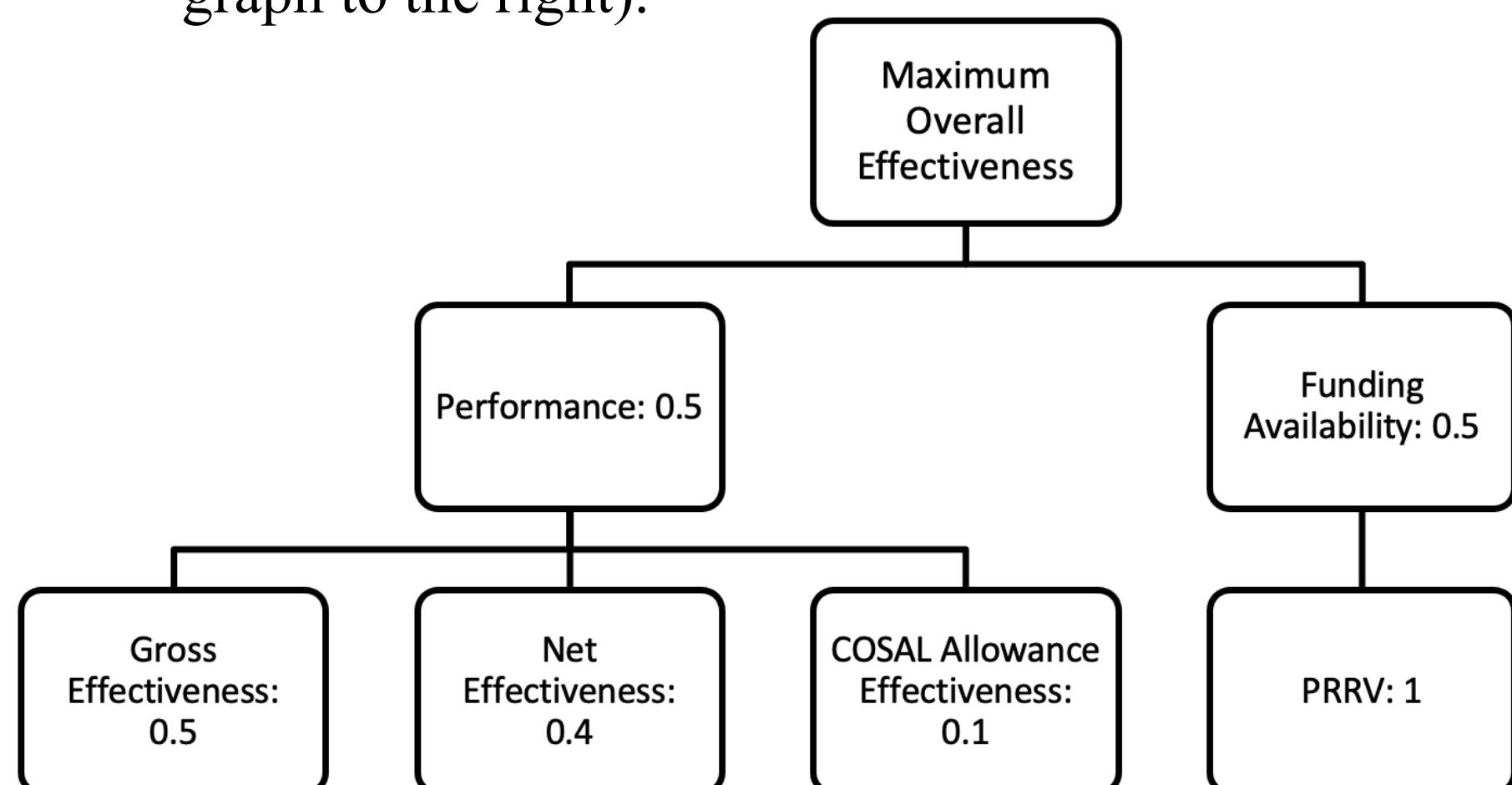
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Abstract

Some U.S. Navy ships operate under NWCF others are mission funded. This thesis evaluated the feasibility, cost implications, and operational impacts of transitioning Navy ship inventories from mission-funds to the Navy Working Capital Fund. It built upon prior research by expanding the data set and incorporating updated logistics performance metrics. Using a Multi-Objective Decision-Making(MODM) framework, the study analyzes 30 months of supply effectiveness data, inventory valuation, and manning data. In addition to quantitative analysis, this thesis also incorporated qualitative analysis of procedural, policy, and cultural factors that influenced transition feasibility. The analysis included a cost estimate for inventory capitalization, an assessment of system compatibility, and a phased implementation aligned with the Optimized Fleet Response Plan. The findings showed that NWCF platforms consistently outperformed mission-funded counterparts in terms of supply responsiveness and funding availability, particularly during periods of high operational demand. The projected annual transition cost was modest, with no major system or procurement disruptions identified. By combining quantitative and qualitative insights, this study provides a data-driven framework for Navy leadership to evaluate a potential enterprise-wide transition of unit-level ship inventory funding to the NWCF model.

Methods

- Used a MODM approach to evaluate cost-effectiveness by combining quantitative metrics and qualitative factors.
- Assessed benefits through Measures of Effectiveness, calculated transition costs and qualitative implications of transition, along with a proposed implementation plan.
- Data Sources: Pulled 30 months of data from CMP for performance and funding metrics, inventory valuation information from FIMARS for 117 ships, and FLTMPS manning data for active CGs.
- Metrics: Weighted GE, NE, AE, and PRRV based on operational relevance (as displayed below), and we ran sensitivity analysis for varied priorities (as displayed in graph to the right).

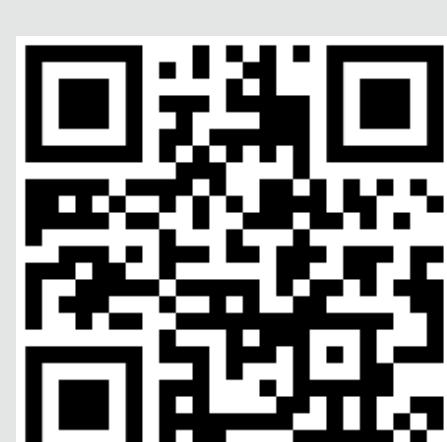


Results & Impact

- MODM framework MOE analysis showed that NWCF provides a +17.73% improvement in effectiveness, with a score of 0.6537 compared to MF's 0.4764.
- Implementation costs are limited to \$405K annually at NWSS for inventory management personnel. Inventory capitalization and systems upgrade costs are \$0 due to the administrative nature of the transfer to NAVSUP.
- Implementation is feasible in five phases, contingent on stakeholder alignment and mindset.
- Findings show NWCF platforms consistently outperform mission-funded counterparts in supply responsiveness and funding availability.

Future Research

- Expand the time horizon (5–10 years) to improve fiscal accuracy and trend analysis.
- Incorporate additional metrics, such as Part Allowance Effectiveness and DEF-to-RO analysis, when applicable to both funding models.
- Review inventory policy, focusing on Return to Service options to mitigate pushback against capitalization.
- Examine institutional resistance, change management, and personnel adaptation to better address cultural barriers during high-impact transitions.



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