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Analyzing Slow-Moving Inventory within NAVSUP NWCF-SM: A Decision-Support Dashboard for Global Inventory Positioning

December 2025

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Prepared for the Naval Postgraduate School, Monterey, CA 93943.

ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF ACQUISITION, FINANCE AND MANPPOWER
NAVAL POSTGRADUATE SCHOOL

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ABSTRACT

The Navy Working Capital Fund–Supply Management (NWCF–SM) maintains secondary inventory across a global network, yet oversight reviews continue to identify high-value material that remains inactive at one location while the identical National Item Identification Number (NIIN) shows sustained demand elsewhere. This study examines whether NIIN–plant stock positioning is frequently misaligned with observed demand and whether a repeatable NIIN-level analytic view can identify the largest concentrations of slow-moving inventory. Using Navy Enterprise Resource Planning (ERP) data accessed through Advana, NIIN–plant positions with positive unrestricted on-hand quantity were classified as slow movers when no issues occurred in the most recent three fiscal years and cumulative five-year issues were less than or equal to 20 percent of on-hand quantity. Within an unrestricted portfolio valued at just under $50 billion, approximately $24 billion meets the slow-moving or low-velocity criteria. This exposure is highly concentrated: the Defense Logistics Agency, Commander, Pacific Fleet, and United States Fleet Forces Command together account for roughly 82 percent of slow value, and fewer than ten locations hold the majority of slow dollars and units. The primary deliverable is a filterable Tableau dashboard that enables consistent cross-plant velocity comparisons, highlights geographic demand mismatches, and supports audit readiness by providing NIIN-level evidence for targeted review.

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LIST OF ACRONYMS AND ABBREVIATIONS

Advana	advanced analytics platform for DoD data
AOR	accumulated operating result
API	application programming interface
BSO	Budget Submitting Office
BW	Business Warehouse
CIMIP	Comprehensive Inventory Management Improvement Plan
COG	cognizance symbol
COGS	cost of goods sold
COMPACFLT	Commander, U.S. Pacific Fleet
CONUS	continental United States
CUI	controlled unclassified information
CWT	customer wait time
DLA	Defense Logistics Agency
DoD	Department of Defense
DoD OIG	Department of Defense Office of Inspector General
DoDI	Department of Defense instruction
DON	Department of the Navy
ERP	enterprise resource planning
ETL	extract, transform, load
FLC	Fleet Logistics Center
FSC	federal supply class
FY	fiscal year
GAO	Government Accountability Office
GI	goods issue
GUI	graphical user interface
IG	inspector general
IT	information technology
ITR	inventory turnover rate
Jupiter	Advana Jupiter analytics and data environment
LV	low velocity

MEOU	material held as excess, obsolete, and unserviceable
MHFFU	material held in reserve for future use
MHFR	material held for repair
MHFU	material held for use
MSEG	material document segment
MV	mover
NAVAIR	Naval Air Systems Command
Navy ERP	Navy Enterprise Resource Planning system
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NAVSUP P-723	NAVSUP P-723 inventory management manual
NAVSUP WSS	Naval Supply Systems Command Weapon Systems Support
NIIN	national item identification number
NRV	net realizable value
NOR	net operating result
NPS	Naval Postgraduate School
NSN	national stock number
NSY	naval shipyard
NWCF	Navy Working Capital Fund
NWCF-SM	Navy Working Capital Fund – Supply Management
OIG	Office of Inspector General
OM&S	operating materials and supplies
OPNAV	Office of the Chief of Naval Operations
RDBMS	relational database management system
RFI	ready for issue
RQ	research question
SAP	Systems, Applications, and Products in Data Processing
SECNAV	Secretary of the Navy
SECNAVINST	Secretary of the Navy instruction
SM	slow mover
SMA	supply material availability
SMIC	special material identification code

SPAWAR	Space and Naval Warfare Systems Command
SQL	structured query language
SYSCOM	systems command
TRF	Trident Refit Facility
TYCOM	type commander
UCR	unit cost ratio
USFF	U.S. Fleet Forces Command
USS	United States Ship
VI	velocity index
WERKS	plant code (SAP field for plant/location)
WIOM-ERP	Wholesale Inventory Optimization Model – ERP
WSC	weapon system code
WSS	Weapon Systems Support
ZDI	zero-demand item

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I. INTRODUCTION

The Department of the Navy (DON) maintains one of the largest and most complex inventories in the federal government. This system must sustain thousands of weapon systems and operational units deployed worldwide. Under the Navy Working Capital Fund–Supply Management (NWCF-SM), Naval Supply Systems Command (NAVSUP) acquires, warehouses, and positions billions of dollars in materiel to preserve fleet readiness and ensure timely logistical support. Audit reports and internal assessments, however, repeatedly demonstrate that holdings frequently fail to correspond with actual consumption patterns. Specific sites retain substantial quantities of material that have remained unissued for years, while identical items experience steady demand elsewhere. These slow-moving stocks consume valuable storage capacity, elevate financial carrying costs, generate audit exceptions, and obscure genuine readiness requirements. As the Department pursues full financial statement auditability, the ability to detect such imbalances and establish clear, enterprise-wide inventory visibility has become an imperative for both operational effectiveness and financial accountability.

Even within a supply network of this scale, determining whether stock is correctly positioned remains difficult. Global fleet disposition, shifting operational priorities, and divergent maintenance cycles across weapon systems routinely produce situations in which the same item is surplus at one site yet critically short at another. Static reports and conventional inventory reviews rarely reveal these discrepancies, particularly when demand is intermittent or geographically concentrated. Managers are thus frequently left without a reliable basis for distinguishing material that remains vital for future readiness from stock that merely occupies warehouse capacity without contributing to operational requirements.

A. BACKGROUND

A persistent obstacle to effective oversight remains the substantial volume of slow-moving inventory, material that lingers on shelves for years with little or no issues recorded. Although infrequent demand is expected for certain long-life, low-failure

components, prolonged inactivity at specific sites frequently signals a more fundamental disconnect between storage locations and actual operational requirements. Existing reporting tools rarely expose these geographic disparities, because demand for the same National Item Identification Number (NIIN) can vary dramatically from one plant to another. Managers, therefore, lack the consolidated perspective required to determine whether a given item, though presently dormant, retains legitimate future value or represents misplaced or excess stock.

The Navy Working Capital Fund–Supply Management (NWCF–SM) activity group operates as a revolving fund that must recover its costs over time rather than generate profit, with enterprise financial health measured by whether it breaks even through metrics such as Unit Cost Ratio (UCR), Net Operating Result (NOR), Accumulated Operating Result (AOR), and cash balance targets. At the inventory level, however, the fund is judged less by how much materiel sits on the shelf and more by how effectively that materiel turns in response to real demand policy expectations around turnover, zero-demand stock, and excess holdings all revolve around the same question: is the inventory actually being used, or is working capital tied up in dormant stocks that no longer support fleet requirements? From a logistics management standpoint, NAVSUP must continually balance readiness requirements against warehouse capacity, audit compliance, and responsible use of Working Capital Fund resources in determining both inventory levels and stockage locations. Current visibility tools and business processes, however, do not reliably reveal when holdings at a given site have drifted out of alignment with actual demand, nor do they readily expose instances in which the same NIIN moves briskly in one region while remaining dormant for years in another limitations that impair the ability to maintain properly sized inventories, identify potential excess or mispositioned material, and satisfy audit requirements for accurate valuation and accountability in an environment of growing Navy ERP dependence and steadily increasing scrutiny from the Government Accountability Office and internal audit organizations.

From a logistics management standpoint, NAVSUP must continually weigh readiness requirements against warehouse capacity, audit compliance, and the responsible

use of Working Capital Fund resources to determine both inventory levels and stockage locations. Current visibility tools and business processes, however, do not reliably reveal when holdings at a given site have drifted out of alignment with actual demand, nor do they readily expose instances in which the same NIIN moves briskly in one region while remaining dormant for years in another. Such limitations impair the ability to maintain appropriately sized inventories, to identify potential excess or mispositioned material, and to satisfy audit requirements for accurate valuation and accountability. With growing dependence on Navy ERP and steadily increasing scrutiny from the Government Accountability Office and internal audit organizations, the absence of a consolidated perspective on slow-moving and low-velocity items has emerged as a significant barrier to effective enterprise-level inventory control. Addressing this deficiency is essential to sustaining operational readiness, strengthening financial reporting, and supporting better-informed decisions on materiel positioning across the global supply chain.

Proper stock positioning within NAVSUP's global supply chain directly affects fleet operations, audit compliance, and the prudent stewardship of Working Capital Fund resources. Slow-moving items, those that linger in storage for years with little or no corresponding demand, nevertheless occupy warehouse space, immobilize capital, increase the likelihood of obsolescence or depreciation, and complicate audit examinations. Internal assessments have repeatedly documented such material across numerous sites, including National Item Identification Numbers (NIINs) that have recorded no requisition activity for three to five years, and, in some instances, considerably longer. Compounding the issue, the geographic distribution of these stocks often fails to align with the locations of supported weapon systems or active maintenance activities, resulting in holdings that contribute little to operational readiness. The absence of a unified analytical capability to examine NIIN-level movement history, consumption rates, and cross-location demand patterns produces significant deficiencies in supply-chain visibility. As a result, the Navy continues to retain excess or poorly positioned inventory, imposing unnecessary financial burdens, elevating audit risk, and impairing the supply system's capacity to respond promptly to fleet requirements.

B. PROBLEM STATEMENT

The Navy Working Capital Fund–Supply Management (NWCF–SM) accounts for billions of dollars of repair parts and consumables distributed across depots, shipyards, fleet warehouses, and afloat units. Despite this investment, NAVSUP lacks an integrated way to determine, at the NIIN–plant level, where inventory is actively turning versus where it has gone dormant for years. Existing reports tend to summarize balances and movements in aggregate, obscuring the difference between items that are truly supporting demand and items that simply occupy space and working capital. This visibility gap directly affects both operational readiness and the financial efficiency expected of a working capital fund.

These visibility shortfalls have direct operational and financial consequences. Excess or misaligned stock consumes warehouse space, ties up Working Capital Fund dollars, increases the risk of obsolescence or impairment, and creates discrepancies that complicate audit verification. Ongoing oversight by the Government Accountability Office, along with repeated audit findings, has heightened calls for greater financial transparency and stricter inventory controls, particularly regarding existence, valuation, and materiel positioning. The main challenge is reliably distinguishing legitimately slow-moving items, such as long-life, low-failure components, from stock that is simply excess or incorrectly positioned. Without this distinction, efforts to optimize holdings while maintaining fleet readiness continue to struggle.

Although Navy ERP contains large amounts of transactional data, NAVSUP still lacks an integrated analytical capability that quickly reveals differences in NIIN usage across locations or flags evident misalignments between stock positioning and demand. Managers are therefore deprived of the consolidated evidence needed to decide whether current holdings are properly situated, if consumption patterns have changed, or where capital is tied up in idle or slow-moving inventory. The main issue this study addresses is the ongoing lack of a practical, unified method that enables the systematic identification of slow-moving items across the global supply chain and directly compares their distribution with requisition activity. Only by filling this analytical gap can significant

progress be achieved in enhancing audit compliance, enforcing disciplined financial management, and making informed decisions about inventory placement.

C. PURPOSE OF THE STUDY

This study examines whether slow-moving National Item Identification Numbers (NIINs) within NAVSUP NWCF–SM are positioned appropriately across the global plant structure, given how they are actually being used. Using Navy ERP data accessed through the Advana Jupiter environment, the research develops a classification scheme that labels each NIIN–plant pair as either a slow mover or a mover and further distinguishes between NIINs that are slow at every location where they are held and those that are slow at one plant but active at others. The analysis focuses on whether current inventory positioning aligns with observed demand patterns and weapon-system support requirements, without prescribing specific redistribution or disposal actions.

The primary deliverable is an interactive Tableau dashboard that applies this classification to a comprehensive snapshot of NWCF–SM inventory and makes the results explorable at multiple levels of detail. The dashboard is designed as a decision-support and internal-control tool: it aggregates NIIN–plant slow-mover status, plant-level ratios, and basic velocity indicators in a form that item managers, plant custodians, and headquarters staff can use to identify potential misalignments, support audit walkthroughs, and inform future initiatives in predictive analytics and strategic stock repositioning.

D. RESEARCH QUESTIONS

1. This study revolves around four research questions designed to strengthen NAVSUP's ability to identify and understand slow-moving, low-velocity inventory. The questions cover identifying dormant stocks, cross-location comparisons of demand velocity, detecting positioning imbalances from an audit perspective, and the practical benefits an interactive dashboard can provide to supply-chain personnel.

2. How can NAVSUP NWCF–SM identify slow-moving inventory across global plant locations using available Navy ERP data?

3. For NIINs held at more than one plant, how do demand velocity and usage patterns differ across locations and weapon-system groupings, particularly when the same NIIN is slow at some sites but active at others?

4. At the plant and BSO portfolio level, where do inventory holdings appear significantly out of proportion to recent demand, and how do those imbalances translate into audit-relevant risk in terms of existence, completeness, and valuation?

5. How can a decision-support dashboard improve enterprise-level visibility into slow-moving inventory by providing plant-level ratios, such as slow-mover share, five-year zero-demand share, and a simple velocity index that helps managers grade inventory efficiency and explore potential supply-demand mismatches?

Rather than prescribe redistribution or disposal actions, these questions seek to expose existing blind spots in material movement and stock alignment. In doing so, they provide the analytical grounding for a dashboard that reveals mismatches, surfaces underutilized holdings, and equips managers and auditors with clearer, more actionable insight across the global supply chain.

E. SIGNIFICANCE OF THE STUDY

The research has direct operational and financial effects on NAVSUP and the wider Department of the Navy. Preliminary analysis of the NWCF–SM portfolio indicates that NAVSUP manages a system dominated by low-velocity, long-life items rather than a classic high-turn retail inventory. In such an environment, the central issue is not simply whether an item is "slow" in the abstract, but whether its slowness is justified and whether it is positioned correctly to support fleet requirements. Making that distinction in a transparent, repeatable way matters for both readiness and the stewardship of working capital.

Beyond these institutional effects, the work fills a practical gap in the Navy's inventory-management toolkit. The thesis distinguishes between slow movers that are slow everywhere they are held and those that are slow at one plant but active at others, pointing to different management actions, deeper requirements, and retention review for the former, and potential redistribution or pack-up redesign for the latter. By implementing these classifications in a Tableau dashboard tied directly to Navy ERP data, the study provides NAVSUP with a reusable internal-controls mechanism rather than a one-time analysis. The dashboard can be refreshed periodically to support ongoing audit readiness, to document systematic review of dormant stocks, and to give leaders a consistent set of metrics for discussing inventory efficiency across plants and BSOs.

F. SCOPE AND LIMITATIONS

The analysis rests entirely on periodic Navy ERP extracts accessed through Advana Jupiter and is confined to the fields available in those views at the time of collection. The study focuses on Navy-owned stock recorded as "unrestricted," which serves as the practical proxy for inventory that ties up working capital and is generally available for issue. Unrestricted status in ERP, however, is not identical to a pure ready-for-issue (RFI) or Condition A population; some balances classified as unrestricted may include material in intermediate repair, awaiting test, or otherwise in transition while still valued as available for financial-reporting purposes. Because the extract did not provide consistent, enterprise-wide detail sufficient to reclassify by precise condition code, the slow-mover and dormancy flags apply to the unrestricted population as recorded in ERP, not to an idealized RFI-only subset.

A second set of constraints stems from the inherent diversity of NAVSUP's global network. Demand patterns, storage limits, maintenance duties, and readiness goals differ significantly across plant codes and weapon-system communities. No single study can account for every local operating procedure or site-specific reason for keeping low-usage items, and this work does not attempt to do so. Likewise, material condition coding, especially the difference between serviceable (Condition A) and unserviceable-repairable (Condition F) stocks, varies enough in practice that the dashboard's slow-mover counts might sometimes overstate or understate the real number of issuable dormant materials.

Several analytical boundaries were deliberately established. The research does not include probabilistic forecasting or intermittent-demand models; although predictive extensions show promise, they were beyond the current project's time and resource limits. Transportation costs, shipping inefficiencies, and formal cost-benefit analyses are also excluded; movement frequency is shown, but financial implications must be inferred by the user and verified separately. Lastly, the study offers no policy recommendations on consolidation, redistribution, or disposal; identifying apparent excess or misalignment is only for diagnostic purposes, with final decisions left to operational authorities and existing governance processes.

Despite these acknowledged limitations, the resulting dashboard substantially advances NAVSUP's ability to detect slow-moving items, compare cross-plant demand velocity, and present a coherent, data-driven picture of stock positioning, capabilities that support audit preparation and inventory rationalization in ways previously unavailable within standard ERP reporting tools.

G. DEFINITIONS OF KEY TERMS

- **Advana and Jupiter** refer to the Department of Defense's enterprise analytics ecosystem and its NAVSUP-specific environment, respectively. Advana aggregates data from authoritative sources, including Navy ERP. The Jupiter workspace within Advana supplied the inventory, demand, financial, and audit datasets analyzed in this study.
- **Audit readiness** denotes the Department of the Navy's capacity to substantiate inventory values, stock records, and materiel accountability in accordance with financial statement audit standards. Unjustified slow-moving or misaligned stocks can impair audit outcomes by overstating asset values or weakening existence and completeness assertions.
- **Condition codes** are single-letter designators that classify materiel condition. Condition A indicates serviceable, issuable stock; Condition F denotes unserviceable but repairable items requiring depot or intermediate-level

maintenance before reissue. Variations in the application of condition codes across activities can affect whether an item is counted as a slow mover.

- **Demand velocity** (or throughput) measures the frequency with which a National Item Identification Number (NIIN) is issued over a defined period. High-velocity items exhibit regular requisitions; low-velocity items show little or no activity.
- A **slow-moving item** is defined in this study at the NIIN–plant level. A NIIN–plant position with positive unrestricted on-hand quantity is classified as a slow mover when its observed demand over the last five fiscal years is very small relative to what is being held. In practical terms, slow movers are NIIN–plant pairs that, over the most recent five fiscal years, have recorded no issues in at least the most recent three fiscal years or whose cumulative five-year issues are small enough that the on-hand balance appears out of proportion to recent usage.
- **Low-velocity item** refers to NIIN–plant pairs whose cumulative external issues over the past five fiscal years remain very small relative to their current unrestricted on-hand balance. In this study, low-velocity slow movers are positions where five-year issues are less than or equal to a modest fraction of the on-hand quantity, indicating that the stock is turning only slowly, even if it has not gone completely dormant. Some long-life, low-failure components and business-case spares may legitimately exhibit such patterns.
- **Mover** describes NIIN–plant pairs whose observed demand is reasonably aligned with the on-hand balances they carry. Movers have positive unrestricted on-hand quantity but do not meet the slow-mover criteria above; in practice, they show at least some recent issue activity and a five-year issue total that represents a more substantial fraction of current stock. The term is used purely as an analytical label within this study and does not represent an official NAVSUP or Department of Defense category.

- **Material movement history** comprises the transactional record of issues, receipts, shipments, transfers, and repair actions. These data distinguish proper dormancy from location-specific inactivity.
- **NAVSUP NWCF–SM** is the Navy Working Capital Fund–Supply Management activity responsible for procuring, storing, and distributing repair parts and consumables across the global logistics network.
- The **National Item Identification Number (NIIN)** serves as the unique nine-digit identifier for each distinct item in the federal supply catalog. It forms the primary unit of analysis in this research.
- **Navy Enterprise Resource Planning (Navy ERP)** is the authoritative system for procurement, inventory accounting, and financial management, supplying the master data, stock balances, movement records, and plant-level information used throughout the study.
- **Plant codes** identify specific storage sites, warehouses, or maintenance activities within Navy ERP, enabling geographic comparison of slow-mover concentrations.
- **Requisition activity** constitutes the formal demand signal generated by operating units and provides the basis for differentiating high-demand from slow-moving items.
- The **Tableau dashboard** is the interactive visualization tool developed in this research, offering filters, charts, maps, and drill-down capabilities for end-user exploration.
- **Weapon System Codes (WSC)** link individual NIINs to the specific ships, aircraft, submarines, or platforms they support, permitting demand and positioning analysis in the context of operational readiness requirements.

H. ORGANIZATION OF THE THESIS

This thesis is organized into six chapters that progress from problem definition through analysis to actionable recommendations.

Chapter I frames the persistent challenge of slow-moving and dormant inventory within the Navy Working Capital Fund–Supply Management (NWCF–SM) activity group, explains why plant-level visibility into actual use versus non-use is critical for both readiness and financial stewardship, presents the four research questions, and defines key terms.

Chapter II reviews the relevant academic literature, DoD and Department of the Navy policy, prior audit findings, and Naval Postgraduate School research on inventory turnover, zero-demand stock, and excess holdings, establishing the conceptual and regulatory foundation for the study.

Chapter III details the methodology: the Navy ERP data extracted via Advana Jupiter, the NIIN–plant-level slow-mover and low-velocity classification rules, the derivation of plant-level ratios and velocity indicators, and the design and structure of the interactive Tableau dashboard.

Chapter IV presents the analytical findings, organized around the four research questions. It reveals how slow-moving inventory is distributed across BSOs and plants, how sharply the same NIIN can differ in demand velocity by location, where the clearest imbalances between position and usage appear, and how the dashboard-enabled views make these patterns visible and explorable.

Chapter V synthesizes the operational, financial, audit, and positioning implications of those findings, while candidly acknowledging the study's limitations in data scope, condition-code granularity, and deliberate avoidance of prescriptive solutions.

Chapter VI translates the insights into action: practical recommendations for immediate dashboard deployment and use, strategic adjustments to enterprise inventory management, and a focused agenda for future research in redistribution modeling, excess-versus-insurance differentiation, optimization integration, and broader application across defense portfolios.

This structure offers a clear, data-informed progression from longstanding operational and audit challenges to a practical decision-support capability that NAVSUP personnel can use right away.

I. SUMMARY

Chapter I has identified the main problem facing NAVSUP NWCF–SM: the ongoing difficulty in obtaining a comprehensive, enterprise-wide view of slow-moving and low-velocity inventory across a globally dispersed network. While some amount of rarely issued materials is unavoidable, due to the long service life of naval platforms and the low failure rates of many components, a large part of dormant stocks results from geographic mismatches between storage locations and actual fleet demand. These misalignments not only use up valuable warehouse space and inflate reported asset values but also complicate financial statement audits and obscure actual readiness needs.

In response, the research develops an interactive decision-support dashboard based on Navy ERP data accessed via Advana Jupiter. The tool enables users to identify slow-moving NIINs, compare demand velocity across plants and weapon systems, and highlight apparent positioning imbalances. Four research questions guide the effort, focusing on identification methods, cross-location comparisons, misalignment patterns relevant to audits, and how an analytical dashboard can provide practical insights for managers. Boundaries were deliberately drawn: the work improves diagnostic visibility without suggesting redistribution, disposal, or formal optimization, and it considers limitations arising from data availability, condition-code variability, and the exclusion of predictive or cost-modeling techniques.

Chapter II examines the relevant literature, including academic studies of intermittent demand, DoD audit findings, previous Naval Postgraduate School research, and industry approaches to slow-mover management, to lay the theoretical and empirical groundwork for the methodology outlined in Chapter III.

II. LITERATURE REVIEW

This chapter reviews the literature on slow-moving inventory in large, complex supply systems and places NAVSUP's NWCF–SM challenges squarely within that context.

A. INTRODUCTION

For more than two decades, the Department of the Navy has grappled with the same fundamental tension: how much inventory is enough to guarantee readiness without locking up excessive working capital in stock that rarely moves. GAO reports in 2003, 2009, and 2015, along with repeated DoD IG audits, have documented the same recurring weaknesses: poor demand forecasting, over-conservative stock levels, and sluggish disposition of excess (GAO, 2003, 2009, 2015; DoDIG, 2014). The result is a supply system that is structurally slow-heavy, carrying large pools of material that sit for years with little or no demand.

Navy-specific research tells the same story. A long line of Naval Postgraduate School theses, Burton (2005) on depot-level repairables, McNulty and Mourning (2012) and Oswald (2013) on excess and redistribution, Hague and Arash (2020) and Kalvig (2023) on intermittent demand and mixed-velocity patterns, confirm that these problems persist despite new systems and policy fixes. In parallel, the broader operations-research and supply-chain literature has wrestled with slow-moving and intermittent-demand items in commercial settings, offering forecasting methods, safety-stock models, and multi-echelon optimization frameworks that are powerful in theory but hard to apply in a readiness-driven environment (Graves, 1999; Graves & Willems, 2002; Kourentzes, 2013).

DoD and Navy policy formalize the same concerns from a governance angle. The Comprehensive Inventory Management Improvement Plan (CIMIP) explicitly called out slow-moving and zero-demand stocks as systemic weaknesses (DoD, 2010). SECNAVINST 5200.44 mandates visibility, turnover, and timely identification of excess and unserviceable material as prerequisites for both readiness and auditability (SECNAV,

2019, 2022). NWCF budget submissions frame the activity as a readiness enabler that must maintain cash solvency and stable unit costs while meeting fleet demand (Department of the Navy, 2025).

This chapter situates the present study at the intersection of audit findings, formal policy, and analytical work on intermittent demand and strategic positioning. It sets the stage for the four research questions: where slow-moving inventory actually lives, how the same NIIN can behave radically differently across locations, where inventory position and demand are most out of step, and how a simple dashboard can finally make those patterns visible to managers and auditors alike.

B. NAVY INVENTORY MANAGEMENT AND THE NWCF–SM ENVIRONMENT

The Navy Working Capital Fund–Supply Management activity group is not funded by annual appropriations; it is a true revolving fund. NAVSUP buys, stores, and issues material, then recovers its costs (and only its costs) when customers requisition that material. Cash comes in, cash goes out, and the fund is expected to break even over time while delivering stable prices and uninterrupted support to the fleet (Department of the Navy, 2025). That simple mechanism creates the central tension that has defined NWCF–SM for decades: readiness demands deep, responsive stocks, especially for long-lead-time and critical items, while financial discipline demands that working capital not sit idle in slow-moving or dormant inventory.

GAO and DoD IG have hammered that tension for twenty years. Their reports repeatedly find billions of dollars tied up in material that rarely or never moves, even as the Navy struggles to balance cash, unit-cost stability, and readiness requirements (GAO, 2003, 2009, 2015; DoDIG, 2014). SECNAVINST 5200.44 and the broader DoD OM&S framework formalize the same expectations from a governance perspective: inventory must turn at reasonable rates, excess and unserviceable material must be identified and disposed of promptly, and operating materials and supplies must be valid, properly classified, and auditable (SECNAV, 2019, 2022; DoD, 2017).

Yet almost all of the official metrics, turnover ratios, NOR/AOR, cash operating ranges, and Operating Materials and Supplies (OM&S) category totals, are calculated at the aggregate or business-area level. They tell leadership how the portfolio is performing overall, but they do not reveal which specific NIINs at which specific plants are driving the slow-turn numbers, nor do they show when the same part is burning through issues at one location while sitting untouched at another.

That gap between high-level financial and policy expectations and item-level reality is exactly where this study lives. By measuring velocity and dormancy at the NIIN–plant level and linking those patterns back to readiness, financial, and audit objectives, the analysis in the following chapters gives NAVSUP a far more granular view of how its inventory actually behaves inside the NWCF–SM and OM&S framework and where the biggest questions about position, value, and risk truly lie.

C. HISTORICAL AND SYSTEMIC CHALLENGES IN NAVY INVENTORY MANAGEMENT

The problem is not new, and it has not gone away. For more than twenty years, the Government Accountability Office has returned the same basic finding: the Navy holds billions of dollars in secondary inventory that has not moved in years, often while identical items are in short supply elsewhere (GAO, 2003, 2008, 2015). These reports describe stocks that exceed documented requirements, lack current retention rationales, or show no recorded demand over extended periods, even as the Navy continues to procure additional quantities (GAO, 2003, 2008, 2015).

1. The Persistence of Slow-Moving and Excess Inventory

Department-level initiatives have repeatedly tried to address this pattern. The Department of Defense's Comprehensive Inventory Management Improvement Plan (CIMIP) established specific goals to reduce on-hand and on-order excess and to identify inventory with no demand over multi-year windows, explicitly calling out long-duration zero-demand items as a focus area for review and potential disposal (Department of Defense [DoD], 2010). At the same time, DoD inventory policy and implementing guidance emphasize that items with no demand for five or more years should be

subjected to heightened scrutiny and, when no valid requirement remains, processed as excess in accordance with retention and disposal rules (DoD, 2016).

The Navy has featured prominently in subsequent oversight. A 2014 DoD Office of Inspector General report on Navy "zero-demand" items found that the Navy was paying millions of dollars per year in storage charges to the Defense Logistics Agency for material that had experienced no recorded demand in at least five years and lacked a defensible requirement (DoD Office of Inspector General [DoD OIG], 2014). Follow-on work in 2017 identified tens of thousands of unique items with no demand in roughly 4.5 years, valued at nearly $100 million, and concluded that the Navy did not have consistent, enforceable procedures to review and reduce that population (DoD OIG, 2017). At the wholesale level, DLA has reported large dollar reductions in such zero-demand stocks by systematically targeting items with long inactivity windows and no validated retention rationale, demonstrating that significant reductions are possible when long-dormant items are made visible and subjected to structured review (DoD, 2010).

The persistence of these findings is underscored by recent oversight actions. In 2024, the DoD OIG announced a new project to evaluate NAVSUP's management of items with no demand for at least five years, explicitly tying its objectives to DoD Manual 4140.01 requirements for reviewing and disposing of long-dormant stock (DoD OIG, 2024a, 2024b). The need for still another review signals that slow-moving and zero-demand items are not a transient anomaly; they are a recurring structural feature of Navy secondary inventory. Naval Postgraduate School research over the same period reaches the same conclusion. Theses by Burton (2005), Oswald (2013), Hague (2020), and Kalvig (2023) all document persistent pools of excess, dormant, or misaligned stock that survive multiple reform efforts, largely because no practical, enterprise-wide view exists to connect NIIN-level behavior across plants.

2. Structural Causes of Slow-Moving Inventory

Several features of Navy logistics make large pockets of slow-moving inventory almost inevitable.

Long procurement lead times, often two to five years for critical repairables, force planners to buy well ahead of need. A single forecast miss leaves the choice between accepting a readiness gap or ordering quantities that later sit for years (GAO, 2007, 2008). Readiness standards and mishap-avoidance imperatives tilt that decision heavily toward over-buying and against aggressive disposal, especially for safety-critical or platform-unique items (Burton, 2005; Hague, 2020). In practice, the system rewards having too much and punishes being short, even when actual demand has shifted or dried up.

The multi-echelon structure spreads the problem further. Stock lives across wholesale depots, Weapon Systems Support activities, fleet logistics centers, shipyards, and afloat units, each with its own demand history and storage constraints. Coordination across those echelons is limited, and most reviews stay inside individual activities rather than looking enterprise-wide (GAO, 2015; DoD, 2010). The result: the same NIIN can sit untouched for a decade in one warehouse while generating steady requisitions at another, with no routine mechanism to connect the two pictures (McNulty et al., 2012; Kalvig, 2023).

Demand itself is the third culprit. Many parts for long-life platforms exhibit classic intermittent demand, rare, unpredictable failures separated by years of silence. Forecasting research has long shown that such items can have long stretches of zero issues even when they remain legitimate requirements (Croston, 1972; Syntetos & Boylan, 2005; Gardner, 1987). Navy-specific work confirms that life cycle extensions for aging ships and aircraft only amplify this effect, creating a structural baseline of slow movers that simple “no issues in X years” rules cannot safely eliminate (Hague, 2020; Kalvig, 2023).

Finally, governance and retention rules add friction. Categories like economic retention, contingency retention, and potential reutilization are designed to keep material that might still have value, but items enter those categories far more easily than they leave (GAO, 2008, 2015; Oswald, 2013). Inconsistent condition coding and incomplete documentation of weapon-system ties or future-use justifications make it even harder to

separate deliberate insurance stock from true excess (Ellis & Walsh, 2021; Amposta, 2021).

Taken together, these factors, long lead times, readiness-driven conservatism, fragmented echelons, intermittent demand, and sticky retention rules explain why slow-moving inventory has survived every audit and reform effort for two decades. They also make clear why any workable solution must operate at the NIIN–plant level and explicitly account for both geography and real usage patterns.

D. THE CRITICAL DICHOTOMY: LEGITIMATE VERSUS PROBLEMATIC SLOW MOVERS

This is the distinction the literature refuses to let us ignore: not all slow-moving inventory is waste.

Some of it is deliberate, necessary insurance. Long-life, low-failure components on aging platforms routinely exhibit years of silence followed by a single critical failure. War-reserve stocks, safety-critical spares, obsolescence-protection buys, and long-lead items procured ahead of planned maintenance all belong in this category. For these parts, extended periods of zero demand are not a symptom of poor management; they are the expected behavior of prudent risk mitigation in a warfighting logistics system (Croston, 1972; Syntetos & Boylan, 2005; Hague, 2020; Kalvig, 2023). DoD and Navy policy explicitly recognize this reality by allowing material held in reserve for future use and economic/contingency retention categories (DoD, 2016; SECNAV, 2019).

Other slow movers, however, are genuine problems. They are obsolete items with no remaining weapon-system ties, stocks that have recorded no demand anywhere in the enterprise for a decade or more, or quantities far beyond any reasonable requirement. GAO and DoD IG have spent twenty years documenting exactly this material that drives unnecessary storage costs, forces write-downs, and earns recurring audit criticism (GAO, 2015; DoD OIG, 2014, 2017). NPS research adds the geographic twist: the same NIIN can be legitimately slow at one plant (because it is deliberate insurance) while clearly excess at another where identical stock sits dead despite proven demand elsewhere (McNulty et al., 2012; Oswald 2013; Hague 2020).

The dichotomy is operationally decisive. Disposing of the first category risks a readiness gap no one can afford. Failing to act on the second category wastes working capital, warehouse space, and political credibility. Until NAVSUP can separate the two at scale, it will continue carrying and paying for both.

That separation is precisely what the remainder of this thesis sets out to enable.

E. PREDICTIVE MODELS, INTERMITTENT DEMAND, AND STRATEGIC INVENTORY PLACEMENT

1. Intermittent-Demand Forecasting Theory

Much of the Navy's slow-mover problem is not mismanagement; it is mathematics.

Many repair parts exhibit classic intermittent demand: rare, unpredictable failures separated by years of silence. Croston (1972) was the first to treat demand size and inter-arrival time as separate processes, and the Syntetos–Boylan Approximation later corrected Croston's systematic over-forecasting bias (Syntetos & Boylan, 2005). More recent work has refined these approaches further, showing that dynamic safety-stock policies can keep risk low without overreacting to the inherent lumpiness of low-frequency demand (Fan et al., 2025).

The practical takeaway is blunt: a part that has not moved in five years is not automatically excess. It may simply be waiting for the next failure on a 30-year-old airframe or hull. Traditional turnover metrics assume steady consumption and misclassify these items every time. A blanket "no issues in three years = dispose" rule would be operationally reckless in a system built around long-life, low-failure platforms.

2. Optimization Models and Their Navy Limits

Early attempts to optimize Navy wholesale inventory leaned hard on classic operations-research tools. Gardner's 1987 top-down model, built when the Navy was still running legacy systems, proved that rigorous optimization could cut both inventory and workload without hurting readiness **if** the data were solid and the constraints realistic.

Thirty-five years later, the data are vastly better, but the constraints are just as unforgiving: multi-year procurement lead times, unpredictable repair cycles, and readiness imperatives that override cost considerations every time. Hague (2020) ran modern wholesale optimization models against real Navy data and found they still buckle under extreme intermittency and geographic spread. The math can spit out a theoretical minimum stock level; it cannot tell a commander whether that level is safe for a specific NIIN supporting a deploying carrier.

Most optimization frameworks also quietly assume things NAVSUP does not yet have at scale: clean, enterprise-wide demand history, reliable lead-time estimates, and clear item segmentation. Until those basics are in place, the models remain powerful in theory and fragile in practice.

That is why this thesis treats predictive and optimization approaches as valuable conceptual guidance rather than immediate solutions. The first order of business is the visibility layer, which those models implicitly require the ability to see, at the NIIN–plant level, what is actually moving and what is not. Only then do the elegant equations have a fighting chance.

3. Strategic Placement in Long-Life-Cycle Systems

Graves and Willems have spent decades refining guaranteed-service models for supply chains with long, uncertain lead times and aging assets (Graves & Willems, 2002, 2008). Their core insight is simple but brutal for the Navy: when you keep ships and aircraft in service ten or twenty years beyond their original design life, as the Navy does, the failure patterns of their components drift in ways no initial provisioning plan ever foresaw. Some parts that once turned slowly now barely move at all, yet remain impossible to cut without accepting risk; others that were supposed to last forever suddenly start failing at accelerating rates once they blow past their design life.

Their models can tell you, in theory, how safety stock should be distributed across a network to meet a given service level at minimum cost. But every one of those models quietly assumes the enterprise already knows three things the Navy still struggles to see in one place:

- where every NIIN is physically stored,
- how it is actually moving (or not), and
- which nodes in the network are structurally slow versus structurally high-throughput

Until that foundational visibility exists, the elegant mathematics stays theoretical.

This thesis treats Graves and str's work as the north-star destination, the picture of what an optimized, long-life-cycle supply chain could look like, while focusing on the immediate prerequisite: building the NIIN–plant-level view of slow movers, fast movers, and cross-plant mismatches that any strategic placement model needs before it can even start.

F. NAVY-SPECIFIC FINDINGS

When the lens narrows to the Navy itself, the picture sharpens.

Burton (2005), Kalvig (2011), McNulty et al. (2012), and Oswald (2013) all document the same phenomenon: local item managers optimize for their own customers and risk profiles, carrying large pools of dormant stock justified as "insurance" against uncertain demand. Because they rarely see how the same NIIN is performing elsewhere, those decisions stay local, uncoordinated, and persistent. Slow-moving inventory is not an accidental by-product; it is a structural outcome of how the Navy has historically managed readiness risk.

Policy has grown increasingly explicit about what is expected. SECNAVINST 5200.44 demands full visibility, near-perfect inventory validity, reasonable turnover, and prompt identification of excess, obsolete, and unserviceable material (DON, 2019). NAVSUP P-723 translates that into concrete standards for cycle counting and corrective action (NAVSUP, 2025). The DoD's Comprehensive Inventory Management Improvement Plan called out slow-moving and zero-demand items as a systemic weakness and directed the services to improve forecasting, stock positioning, and disposition (DoD, 2010).

Yet the gap between policy intent and daily execution remains wide. The tools and processes that exist still operate largely within individual activities. Managers can see their own slow stock, but not the enterprise picture that would reveal when the same NIIN is burning through issues three plants away. As a result, retention and disposition decisions stay ad hoc, and large dormant balances survive audit after audit.

This thesis is built to close that gap. By defining slow-moving and zero-movement behavior explicitly at the NIIN–plant level and placing it in an enterprise-wide view, the dashboard gives NAVSUP the missing link: a consistent, repeatable way to separate deliberate, policy-aligned risk holdings from positions that are far more likely to be true excess.

G. AUDIT FINDINGS AND THE FINANCIAL CONSEQUENCES OF SLOW-MOVING INVENTORY

1. Chronic Audit Weaknesses Tied to Dormant Stock

External oversight has been saying the same thing for more than twenty years, and the Navy keeps giving them the same ammunition.

GAO reports from 2003 through 2015 repeatedly call out billions of dollars in secondary inventory that exceed documented requirements, lack current retention rationales, or have recorded zero demand for years on end (GAO, 2003, 2009, 2015). DoD IG audits pile on: weak processes for reviewing five-plus-year zero-demand items, spotty documentation of weapon-system ties, and inconsistent tagging of excess or obsolete material (DoD OIG, 2014, 2017). Those findings flow straight into the Department of the Navy's financial statements as material weaknesses in existence, completeness, and valuation of operating materials and supplies, the same weaknesses that have earned repeated qualified opinions and disclaimers.

From an auditor's seat, long-dormant stock with no clear justification is not an operational curiosity; it is a control breakdown. When large balances sit for years with no usage history to support the recorded value, the Navy cannot prove the asset still exists, is complete, or is worth what the books claim. Until that proof improves, the audit outcomes will stay broken.

2. How Slow Movers Become Financial Liabilities

The mechanism is brutally simple.

Under DoD and SECNAV rules, operating materials and supplies are carried at full acquisition or moving-average cost as long as they are classified as held for use or reserve (DoD, 2017; DON, 2019). That means every slow-moving or zero-demand item on the shelf continues to tie up working capital, drive storage and handling costs, and sit in the cost base that NWCF–SM has to recover through sales, even if it hasn't moved in a decade.

Only when an item is finally tagged as Excess, Obsolete, and Unserviceable (MEOU) does its book value drop to net realizable value (often scrap or close to zero). The difference between the old cost and the new value is booked as a loss, a direct hit to the fund's Net Operating Result. Until that painful day arrives, the slow stock just keeps quietly inflating the Unit Cost Ratio and squeezing cash liquidity.

In short, unexamined slow movers bleed the fund from both directions: they lock up cash today and force write-downs tomorrow, all while delivering little or no readiness return. The longer they sit untouched, the more expensive they become.

H. VISIBILITY DEFICITS AS THE ROOT CAUSE

At its core, the audit problem is a visibility problem.

GAO and DoD IG have been saying it for years: Navy ERP captures every transaction, yet NAVSUP still lacks routine, enterprise-wide tools that show, for any given NIIN, where it has been dead for years and where it is moving (GAO, 2015; DoD OIG, 2014, 2017, 2024a). In a multi-echelon system, the same part can sit untouched at one plant while burning through issues at another, and no standard report ties the two pictures together. Local managers, therefore, make retention calls inside their own silo, and headquarters struggles to prove a consistent, systematic review process for long-dormant stock.

Auditors see the result: large populations of items with little or no demand, spotty justification, and no evidence of enterprise-level scrutiny. That combination is a textbook recipe for material weaknesses in existence, completeness, and valuation.

The audit community is no longer debating whether slow-moving and zero-demand items are a problem; it is asking whether the Navy can demonstrate a repeatable process for finding them, evaluating them, and resolving them. The remainder of this thesis argues that such a process begins with NIIN–plant-level visibility into slow movers, fast movers, and cross-plant mismatches, capabilities that standard ERP portals do not deliver out of the box, but that can be built from the same underlying data.

I. TECHNOLOGY, ERP IMPLEMENTATION, AND PERSISTENT VISIBILITY SHORTFALLS

1. The Promise and Reality of Navy ERP

Navy ERP was sold as the single, authoritative source of truth: one system to replace dozens of legacy stovepipes, enforce standard business rules, and finally give the Department clean, traceable records for every piece of operating material and supplies (Ellis & Walsh, 2021; DON, 2019). On paper, it delivers exactly what SECNAVINST 5200.44 and DoD financial regulations demand: every receipt, issue, transfer, and adjustment tied to a NIIN, stored in one place with consistent master data.

In practice, the view most users actually get is stubbornly local.

Standard screens, canned reports, and even many Business Warehouse extracts are built for processing an order, managing a warehouse, or reconciling an account, not for answering the question "How is this exact NIIN performing everywhere else we hold it?" A planner in Jacksonville can see every transaction at her plant in painful detail, but pulling the same picture for the same NIIN in Sigonella, Yokosuka, or Bahrain still takes custom queries, multiple exports, and a lot of manual stitching. Ellis & Walsh (2021) put it bluntly: the Navy has made huge strides in system consolidation and data standardization, but true enterprise-wide visibility, the kind that lets an item manager or auditor actually needs to spot slow-mover patterns at scale, remains out of reach for most working-level users.

The data are there. The easy way to see them across plants is not.

2. Data Quality and Process Gaps, not System Failure

The audits are consistent and brutal on this point: the core transaction engine of Navy ERP is not the weak link. The system captures what people put into it. The problem is what people put into it and what they fail to clean up afterward.

GAO and DoD IG reports hammer the same themes: incomplete requirement documentation, inconsistent condition coding, retention categories that become one-way doors, and zero-demand items that never get reviewed (GAO, 2015; DoD OIG, 2014, 2017). Ellis and Walsh (2021) put it bluntly: the Navy has built a capable system, but the processes and discipline required to keep it clean at enterprise scale have not kept pace.

SECNAVINST 5200.44, OPNAV guidance, and NAVSUP P-723 all demand rigorous classification, routine validation of low- or no-demand holdings, and causative research when discrepancies appear (DON, 2019; OPNAV, 2022; NAVSUP, 2025). Yet year after year, the audits find serviceable stock that hasn't moved in a decade, material still coded as "held for use" when it should have been MEOU long ago, and zero-demand NIINs that slipped through the cracks.

Navy ERP is not failing to record reality; it is faithfully recording the reality managers give it. Without stronger day-to-day processes and better tools to spotlight the worst offenders, the system simply becomes a very large, very accurate mirror of a very slow-moving problem.

3. The Missing Link: Enterprise-Wide Comparative Analytics

This is where the literature lands on one undeniable point: Navy ERP and platforms like Advana Jupiter have delivered unprecedented transaction detail, but they have not automatically given NAVSUP the comparative analytics needed to manage slow-moving inventory at enterprise scale (Ellis & Walsh, 2021; DoD, 2024). Item managers and auditors still cannot easily answer basic questions: Where else in the Navy is this exact part moving? Has this NIIN gone dormant everywhere, or just at my plant?

Is this slow-mover still supporting an active platform somewhere else, or is it obsolete across the board?

Naval Postgraduate School theses by McNulty et al. (2012), Kalvig (2023), and Ellis and Walsh (2021) all point to the same void. Data consolidation has improved availability, but it has not produced routine, NIIN–plant-level views that reveal how inventory is distributed and behaving across the network. Analysts are left building one-off datasets or custom tools, a time sink that does not scale to the full NWCF–SM portfolio.

From NAVSUP's standpoint, that missing link is exactly how slow-moving and zero-demand items slip through the cracks. This thesis is built to fill it: not with a new ERP system or process overhaul, but with a repeatable analytic layer that uses existing data to classify NIIN–plant positions as movers or slow movers, spot cross-plant mismatches, and summarize slow-mover exposure in plant-level ratios that managers and auditors can actually use.

4. Gaps in the Existing Literature

The literature on Navy inventory management, DoD supply chain performance, and intermittent-demand forecasting is rich, but it leaves several important gaps that this thesis is designed to address. First, neither GAO nor DoD IG reporting provides a systematic, NIIN–plant-level view of slow-moving inventory across NAVSUP NWCF–SM. Oversight products describe the scale of excess and long-dormant stocks and occasionally highlight specific examples, but they do so mostly at the service or major-command level (GAO, 2003, 2009, 2015; DoD OIG, 2014, 2017). They do not offer a reusable framework for classifying individual NIIN–plant positions as legitimate or problematic slow movers, nor do they provide practical tools that NAVSUP could adopt directly to monitor slow movers and zero-demand items on a recurring basis.

Second, the operations research and forecasting literature demonstrates how to optimize inventory in theory, particularly for intermittent demand and multi-echelon networks, but assumes a level of data quality and segmentation that NAVSUP does not yet consistently possess. Croston (1972), Syntetos and Boylan (2005), and Graves and

Willems (2002, 2008) show how to size safety stocks and position inventory under complex demand and lead-time patterns. Navy-specific applications such as those by Burton (2005), McNulty, Dillion, and Mourning (2012), Oswald (2013), and Hague (2020) illustrate how such models can reduce excess or improve stock positioning in selected portfolios. However, these studies tend to focus on specific weapon systems, categories of material, or optimization scenarios; they do not create an enterprise-wide, standardized language for identifying slow movers, movers, and cross-plant mismatches across the full NWCF–SM population.

Third, the ERP and digitization literature largely addresses implementation, data governance, and audit readiness at a process level rather than the specific analytic needs of slow-mover management. Studies such as Ellis and Walsh (2021) and Amposta (2021) document how Navy ERP and related initiatives have improved financial control, standardization, and transaction traceability. Yet they stop short of specifying the NIIN–plant-level analytics needed to detect when stock is slow at one plant, active at another, or dormant everywhere, and how those patterns should be summarized for leadership and auditors. The "last mile" between raw ERP data and actionable, comparative slow-mover views remains underdeveloped in the literature.

Finally, there is a gap in how slow-moving inventory is connected explicitly to audit and working-capital-fund performance. Policy documents like SECNAVINST 5200.44 and DoD financial regulations discuss turnover, excess, and valuation; GAO and DoD OIG documents highlight material weaknesses tied to dormant and excess stock (DoD, 2017; DON, 2019; GAO, 2015; DoD OIG, 2014, 2017). But neither stream lays out practical metrics that NAVSUP can use to monitor slow movers in ways that are clearly traceable to those expectations. No existing work offers a simple set of NIIN–plant-level indicators, such as multi-year zero-demand flags, low-velocity thresholds, and plant-level ratios, that can be used to support both operational decisions and audit narratives. Addressing this measurement and visibility gap is the central purpose of the present study.

J. LITERATURE REVIEW SUMMARY

The literature and policy record tell a remarkably consistent story.

DoD and Navy policy demand visible, valid, and efficiently managed operating materials and supplies. Turnover, proper classification of excess and obsolete stock, and accurate financial reporting are not nice-to-haves; they are the backbone of working-capital-fund stewardship and auditability (DoD, 2017; DON, 2019; NAVSUP, 2025). Yet for more than two decades, GAO and DoD IG have documented billions of dollars in slow-moving, zero-demand, and excess Navy secondary inventory that refuses to go away despite repeated reform efforts (GAO, 2003, 2009, 2015; DoD OIG, 2014, 2017, 2024a). The tension between readiness and efficiency is real, and slow-moving items sit squarely in the middle.

Intermittent-demand theory explains why some slowness is inevitable in long-life weapon systems (Croston, 1972; Syntetos & Boylan, 2005; Graves & Willems, 2002, 2008; Hague, 2020; Kalvig, 2023). Navy-specific research shows how local optimization and limited cross-plant visibility turn that inevitable slowness into systemic misalignment, the same NIIN dormant in one place while burning through issues somewhere else (Burton, 2005; McNulty et al., 2012; Oswald, 2013; Kalvig, 2023). ERP and audit-readiness initiatives have delivered vastly better data, but they have not yet produced routine, NIIN–plant-level views that let managers see those patterns without building a custom study every time (Ellis & Walsh, 2021; Amposta, 2021).

The gap is clear: NAVSUP lacks a practical, repeatable way to separate legitimate slow stock from true excess at the NIIN–plant level and express the difference in metrics that line up directly with policy and audit expectations.

Chapter III closes that gap. It defines concrete slow-mover and zero-movement rules using multi-year issue history and unrestricted on-hand balances, builds plant-level exposure ratios, and implements the whole thing in a Tableau dashboard fed by Navy ERP data through Advana. What has been a recurring audit headache and a persistent operational blind spot finally gets turned into something NAVSUP can see, measure, and act on.

III. METHODOLOGY

A. INTRODUCTION

We set out to answer four questions the literature and audit community have been asking for two decades without ever getting a clear, repeatable answer: Where exactly are NAVSUP's slow-moving and zero-demand stocks? How big is the exposure? Which holdings are truly dormant everywhere versus merely quiet at one location? And how can that information be put in front of managers and auditors in a form they can actually use?

The approach is deliberately pragmatic. Instead of building another forecasting model or optimization run, the study takes the Navy's own authoritative ERP data (accessed through Advana Jupiter) and turns it into straightforward NIIN–plant-level visibility into slow movers, fast movers, and pure zero-demand items.

Because Navy ERP does not provide cost-of-goods-sold or average inventory at the plant level, the analysis uses multi-year issue history and current unrestricted on-hand balances as the practical proxy for "use versus non-use." The rest of this chapter walks through exactly how that is done: the data sources and environment, the classification rules, the variables selected and why, and the structure of the Tableau dashboard that puts the results in the hands of the people who need them.

B. DATA SOURCES AND ANALYTICAL ENVIRONMENT

Everything in this study comes from one place: Navy ERP, the Navy's authoritative system of record for financial and supply transactions, and the accountable property system of record for operating materials and supplies. Rather than querying the live operational system, the research uses extracts made available through the Advana/ Jupiter environment, which hosts curated views of Navy ERP tables and allows analysts to run Structured query language (SQL) and export results without affecting day-to-day operations. All analyses in this chapter are based on a static snapshot taken in FY 2025; later chapters clearly identify the snapshot date when reporting results.

Getting clean access to the data was initially challenging, but the goal was simple: assemble a file that, for each NIIN–plant position, would contain the current unrestricted on-hand quantity, basic valuation information, and a five-year record of issues. The final extract retained only those positions with a positive unrestricted on-hand balance, so the analysis focuses on stock that is still recorded as owned and available in Navy ERP. In practice, "unrestricted quantity" is intended to approximate condition A, ready-for-issue (RFI) material, but because the extract was built at the valuation level rather than the individual serial-number or repair-order level, it is possible that some items awaiting repair or condition-code cleanup remain in the file. That nuance is treated as a limitation in the scope discussion and in Chapter VI.

The variables used are few and deliberately simple: NIIN, plant code (WERKS), unrestricted quantity, five-year issue counts, standard price/extended value, and selected master-data fields (COG, SMIC, BSO) for context. No predictive columns are added; all slow-mover flags and ratios are calculated in the analytic layer.

SQL in Jupiter pulls and reshapes the tables into a flat file that drops straight into Tableau. Keeping the layers separate, Navy ERP as the source of truth, Jupiter as the extraction sandbox, and Tableau as the presentation layer means any NAVSUP analyst can refresh the dashboard with a new snapshot in minutes without touching the live system or commissioning custom code.

Because the extract does not include cost-of-goods-sold or average inventory by plant, textbook turnover rates are not calculated. Instead, the study uses five-year issue quantities and current unrestricted balances to build a practical velocity index and slow-mover flags that capture the same intent as policy turnover metrics while staying fully implementable with the data NAVSUP actually has.

C. IDENTIFICATION OF SLOW-MOVING INVENTORY

The Navy has never settled on one official, enterprise-wide definition of a slow-moving item at the NIIN–plant level. Policy and audits talk about low turnover, extended no-demand periods, and excess/obsolete classifications, but they stop short of giving NAVSUP a single, repeatable rule it can run every quarter.

This study fills that gap with a rule-set that is simple, defensible, and directly tied to the fields Navy ERP actually provides. A NIIN–plant position is classified as a **slow mover** when it meets **either** of these conditions:

1. **Three-year inactivity** – zero recorded issues in the most recent three fiscal years, while still carrying a positive unrestricted on-hand quantity.
2. **Low-velocity**– over the full five-year window, cumulative issues at that plant are ≤ 20 percent of the current unrestricted on-hand quantity.

Using an **OR** keeps the flag encompassing: the position can be either recently dead **OR** chronically low-velocity to qualify.

Within the slow-mover population, a stricter subset is tagged as **zero movers**: no recorded issues in any of the five fiscal years, yet still positive unrestricted quantity on hand. These are the closest match in the data to the "zero-demand" items DoD policy and IG audits routinely call out for heightened review.

Everything else is classified as a mover.

At the NIIN level, the study then separates:

- **Pure slow NIINs** – slow at every plant where they are held (potential dormant pool of parts, review for retention reasoning).
- **Mismatch slow NIINs** – slow at one or more plants but actively moving at least one other (positioning concerns).

Finally, the same logic rolls up into four plant-level ratios used throughout the results:

- Percentage of NIIN–plant positions flagged as slow
- Percentage of on-hand units and value that are slow
- Percentage of units and value that are zero-movement
- Simple velocity index = five-year issues ÷ current unrestricted quantity

These ratios are not textbook turnover rates (we lack cost-of-goods-sold by plant), but they are practical, audit-aligned diagnostics built from the data NAVSUP actually

has. They give every plant and BSO an honest, comparable grade on how heavily its portfolio leans toward slow and dormant stock.

D. VARIABLES, DATA SOURCES, AND JUSTIFICATION

Every extra field adds complexity, invites data-quality headaches, and risks pulling focus away from the core question: which NIIN–plant positions are genuinely slow or dormant.

Core classification variables

- **NIIN** – the unique key that lets us compare the same part across every plant.
- **NIIN Items-** is the distinct quantity count of individual units
- **Plant code** – the geographic anchor that reveals mismatches (slow here, moving there).
- **Unrestricted on-hand quantity** – the stock base we measure velocity against.
- **Five-year cumulative issues** – the only number needed for both the three-year inactivity test and the "≤ 20 percent of on-hand" low-velocity check.
- **Standard price / extended value** – turns units into dollars so leadership and auditors can see exactly how much working capital is tied up.

Context variables (the "why does this matter?" layer)

- **BSO** – Budget Submitting Office
- **COG, Valuation type, and material group / FSC** – tells consumable from repairable and flags functional area (avionics, hydraulics, etc.).
- **Plant Code** – code to identify the plant by name
- **SMIC** – special material identification code

- **Snapshot date and fiscal-year issue buckets** – keep the time windows honest and transparent.

We intentionally omitted detailed procurement history, repair-cycle data, and obligation amounts. Those fields are valuable for optimization or cost modeling, but they are outside the scope of this thesis. By staying lean, the classification stays transparent, the dashboard stays fast, and any NAVSUP analyst can refresh it with the next quarterly extract without needing expert guidance and support.

The purpose was to be easy to use, concise, and unbreakable. No calculated fields in Jupiter, no joined tables that stop working every time someone changes a view, no clever ratios that no one understands six months later.

E. DASHBOARD STRUCTURE AND ANALYTICAL LOGIC

The dashboard was created to quickly and easily highlight low-velocity, low-demand items at the NIIN-plant level. In Figure 1 below, you can view the Enterprise View.

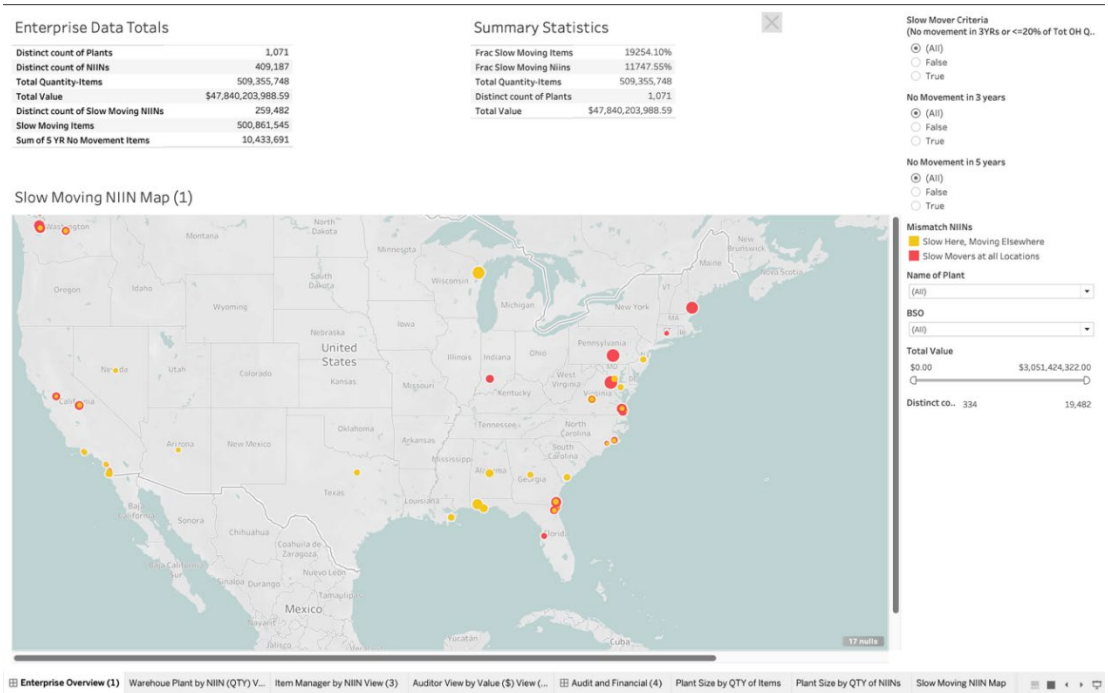

Figure 1. Enterprise Overview

You open the dashboard, and this is what you see first: a single page that can inform potential positioning problems.

Top Left: Enterprise-Wide Counts

- Distinct count of Plants
- Distinct count of NIINs
- Total Count of Unit-Items
- Total dollar value of all stock
- Total dollar value of slow-moving stock
- Distinct count slow-moving NIINs
- Distinct count of slow-moving items

Top Right: Summary Statistics

- Fraction of Slow-moving Items
- Fraction of Slow-moving NIIN (Units)
- Total Quantity-Items
- Distinct Count of Plants
- Total Value

Bottom half: a global map with every major plant as a sized, colored bubble. The size of the bubble indicates the overall percentage of slow movers relative to the total quantity. The larger the bubble, the larger the ratio of slow vs. fast. Yellow bubble means it has more mismatches (a slow mover that moves elsewhere), NIINS, and Red means more Pure Slow movers (has no demand anywhere). Some plants will have both red and yellow bubbles at the same plant, which means that the plant carries both mismatch NIINs and Pure Slow NIINs. The size comparison still works the same. Hover over any Plant, and you instantly see it with more details: BSO, Plant Name, slow NIINS/item count, and percent of total quantity of NIINs that are slow movers.

Top right: Click and select that plant individually, and everything else on the dashboard filters to that Plant only. You will see it is carrying $M total slow movers, fraction of total slow mover NIINS and Items, along with total plant size by Item count. In 10 seconds, you already know where to start.

Far Right: This is where you will find even more ways to filter down the population. You can filter the slow mover criteria: On/Off, No movement in 3 years, On/Off, No movement in 5 years, On/Off. You can search and filter by Plant Name or BSO. You can select to see only Mismatch or only Pure Slow movers. Finally, there are sliders you can set parameters to only view above or below a certain value threshold, or the distinct slow NIIN quantity count.

In the next view, Figure 2, we see the warehouse-specific view showing slow-moving NIIN total by volume.

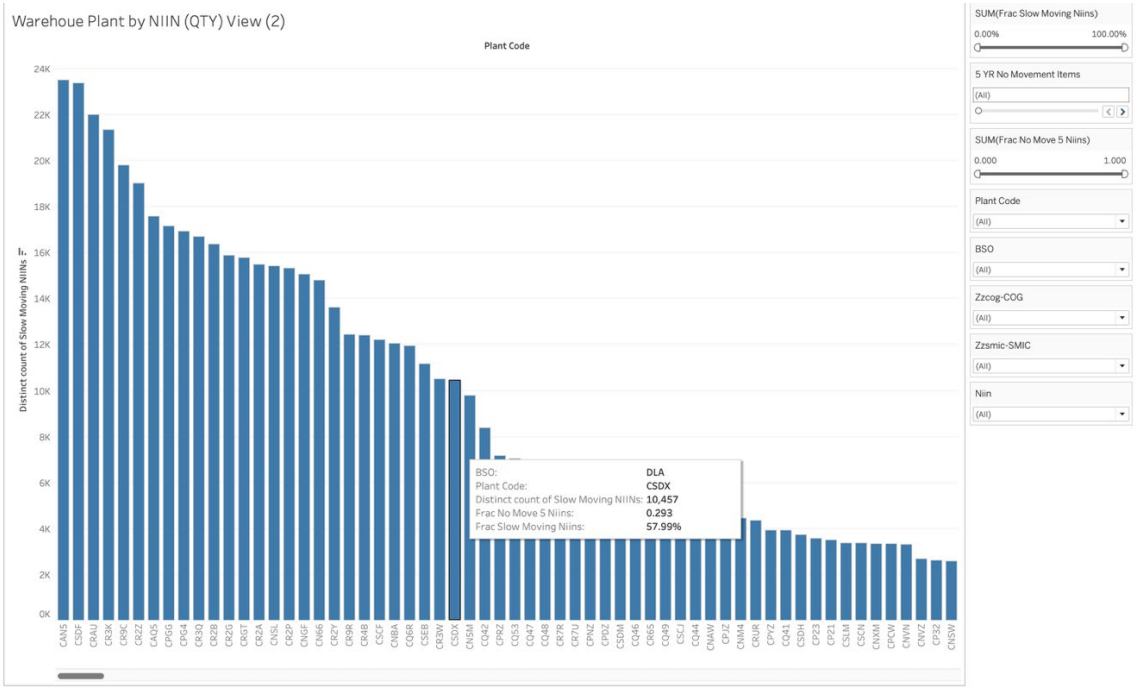

Figure 2. Warehouse Plant View

This is where the geographic Cross-Plant Comparison by size and percentages of slow and 5-year non-moving NIINs

Right side: global filters

- Sum (fraction overall of Slow-moving NIINs)
- 5 Year Inactivity Qty Slider
- Sum (fraction overall of No movement in 5yrs)
- Plant Code Dropdown
- BSO Dropdown
- COG Dropdown
- SMIC Dropdown
- NIIN Search Dropdown

Center: A quantity-sorted bar chart showing the largest distinct count of slow-moving NIINs.

The third view, Figure 3, shows a sorted list of slow-moving items, displaying the total enterprise-wide held quantity for the slow-moving NIINs. The bars are colored and sized by Plant Code. The larger the section in the bar graph, the larger the quantity of items. -NIIN-plant Detail-COG-SMIC

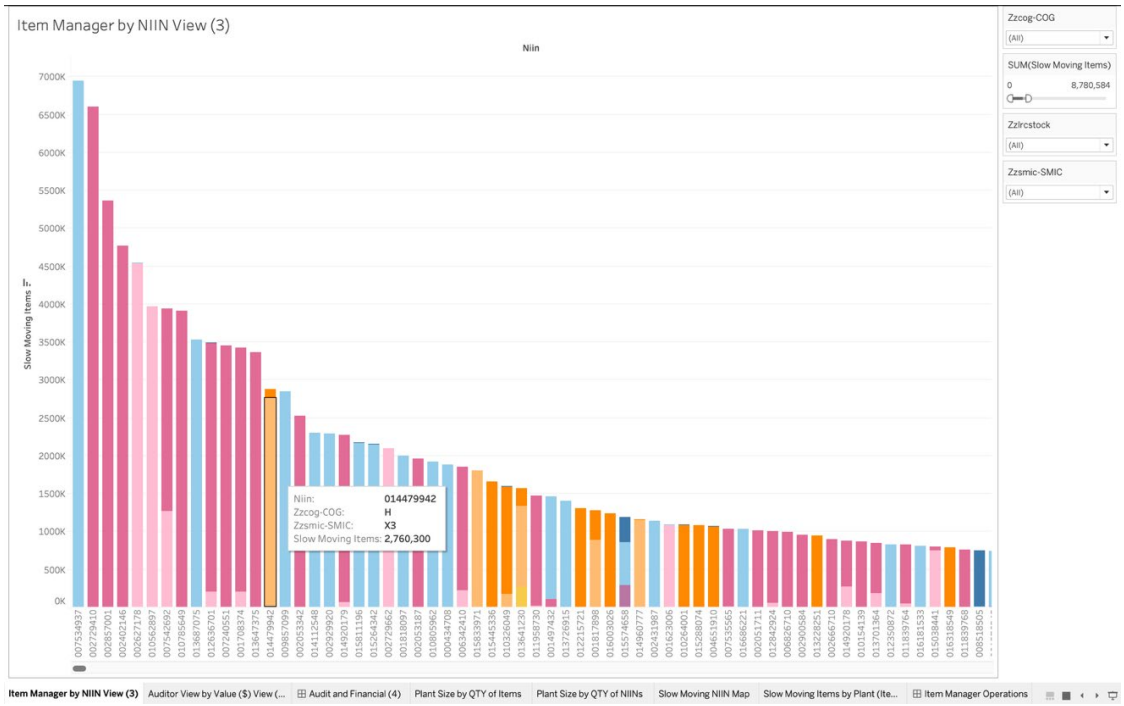

Figure 3. Item Manager Operational View

Right side: global filters

- Sum (fraction overall of Slow-moving NIINs)
- SMIC Dropdown
- NIIN Search Dropdown

Center: Bar chart showing the same NIIN across every plant that holds it sorted by Slow moving Items quantity.

The last view, Figure 4, shows a side-by-side Plant comparison of the total values for slow movers. It shows slow movers, valuation exposure, and audit risk.

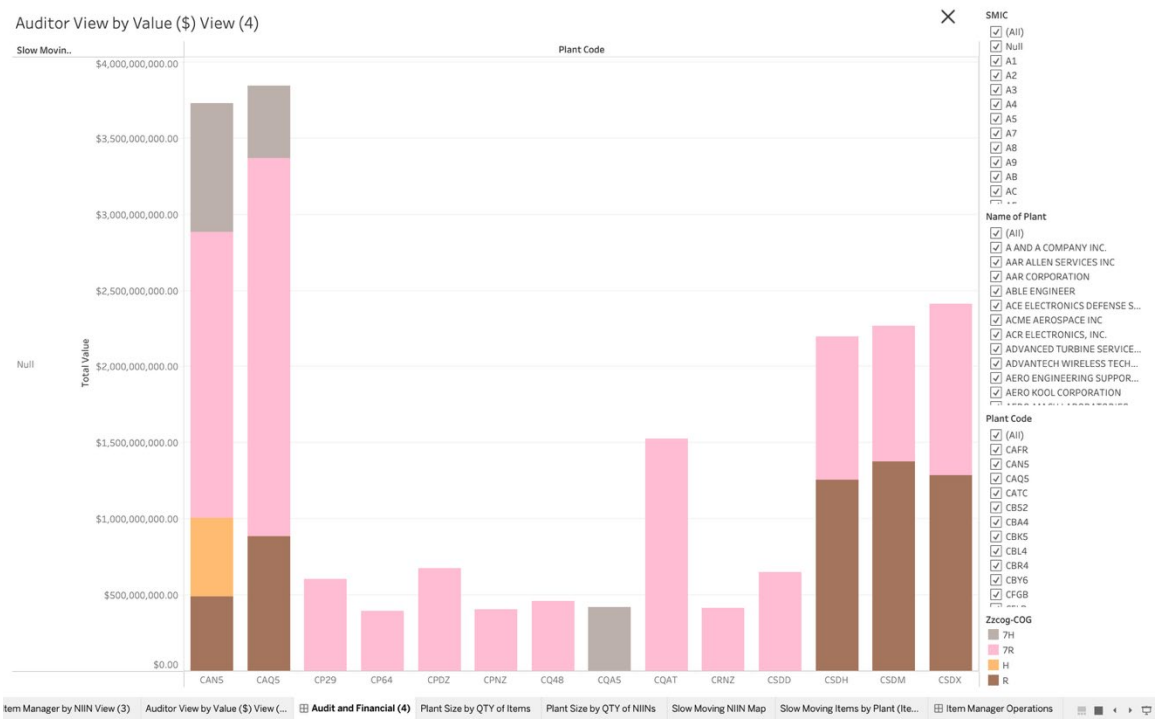

Figure 4. Audit and Financial Compliance View

Right side: global filters

- SMIC Select
- Name Of Plants Select
- Plant Code
- Cog Legend

F. DASHBOARD USE CASES AND DECISION-SUPPORT APPLICATIONS

The dashboard is designed to serve multiple NAVSUP stakeholders: item managers, auditors, comptrollers, warehouse officers, and fleet support teams by presenting the same underlying ERP data through different lenses. Its utility lies in rapid, repeatable, enterprise-wide visibility rather than in prescriptive outputs. The following examples illustrate typical applications.

1. Audit Preparation and Financial Statement Support Applications

During annual financial statement audits or material weakness remediation efforts, teams must identify and justify inventory that has not moved for several years. Using the global filters, analysts can instantly isolate all serviceable items above a chosen dollar threshold that have shown no movement in the past five (or ten) years. The resulting view provides total quantities, dollar values, plant locations, condition codes, and weapon-system associations. This allows audit teams to prepare focused samples and supporting documentation orders of magnitude faster than with standard ERP reports, while giving auditors an independent, reproducible tool to validate the Navy's assertions.

2. Geographic Misalignment and Stock-Positioning Review

Fleet basing changes, platform homeport shifts, or maintenance realignments frequently leave stock stranded in locations no longer aligned with demand. By selecting a specific SMIC or COG (or group of codes) and examining the cross-plant comparison view, supply officers can identify NIINs that exhibit high demand velocity in one region yet remain dormant in others. For example, a repairable component supporting an aircraft squadron that recently relocated from CONUS to a forward location may experience frequent issues at the new site. At the same time, large quantities remain untouched at the former intermediate-level maintenance activity. This visibility supports deliberate assessment of potential redistribution or retention decisions.

3. Warehouse Utilization and Local Inventory Rationalization

Storage capacity is a persistent constraint at many NAVSUP activities. Warehouse managers can filter to their specific plant, apply a multi-year inactivity threshold, and sort by physical volume or condition code. A potential result is the rapid identification of parts tied to platforms no longer supported locally or fleet wide. The dashboard supplies an objective, data-backed priority list that can inform storage-reclamation efforts, induction planning, or excess-material reviews without requiring manual compilation of transactional histories.

These applications and undoubtedly others that will emerge once the dashboard is fielded share a common foundation: they transform a question that once required weeks of fragmented reporting into an answer available in seconds. The tool remains strictly diagnostic and non-prescriptive, consistent with the methodological boundaries established earlier. Yet, it equips NAVSUP personnel with an enterprise context that standard ERP outputs have never provided.

G. ETHICAL CONSIDERATIONS

All data used was controlled unclassified information (CUI). Access was granted under DON data-use agreements and research oversight from the Naval Postgraduate School Institutional Review Board (IRB #25-NPS-041). No personally identifiable information was used. Results are aggregated to protect operational security. Compliance with DoDI 5000.87 and SECNAV M-5210.1 data-retention standards was maintained.

IV. ANALYSIS AND FINDINGS

A. INTRODUCTION TO FINDINGS

This chapter shows what the data actually says when finally forcing Navy ERP to answer the question it has never been asked in one place: "Which parts are sitting dead at one plant while the same NIIN is moving somewhere else, and how much money is tied up in the mismatch?"

Using the NIIN–plant file and the slow-mover logic laid out in Chapter III, the dashboard surfaces clear, repeatable patterns in stock positioning, demand velocity, and geographic alignment across the entire NWCF–SM portfolio. The focus stays diagnostic: where the slow-moving and low-velocity items are concentrated, how they differ by location, owning organization, and weapon system, and which holdings stand out as the clearest candidates for closer review. No predictions, no cost models, no policy recommendations, just the facts the system has always had, finally laid out so a human can see them in seconds instead of weeks.

The discussion in this chapter follows the four research questions that anchor the study. First, it describes the overall slow-mover landscape: how much of the portfolio, in both units and dollars, is classified as slow and which BSOs and plants carry most of that exposure. It then turns to NIINs that behave differently across locations, highlighting cases that are fast at some plants and slow at others. The next chapter looks at where inventory levels appear out of step with recent demand, and it closes by showing how the dashboard helps managers and auditors see these patterns without having to work directly in the raw ERP data.

B. FINDINGS FOR RESEARCH QUESTION 1 – ENTERPRISE SLOW-MOVER LANDSCAPE

The first research question asks how NAVSUP NWCF–SM can use available Navy ERP data to see where slow-moving inventory sits across the enterprise. Once the slow-mover rules are applied at the NIIN–plant level, the dashboard lays out a clear picture of which parts of the system hold stock that rarely move. It shows, at a glance,

how much of the portfolio is tagged as slow in both quantity and dollar terms, and how that slow share breaks out by BSO and by individual plant. This view turns what would otherwise be a large, opaque set of records into a map of where dormant or low-velocity stocks are concentrated.

The full extract puts the total unrestricted NWCF–SM portfolio at just under $50 billion. When the slow-mover rule is applied (no issues in the last three years **OR** five-year issues ≤ 20 percent of on-hand quantity), roughly $24 billion is flagged as slow or low-velocity.

Roll the numbers up by owning BSO, and the concentration is obvious:

- DLA continues to dominate with a total of $21.3 billion, including $3.3 billion in slow exposure, by far the largest dollar amount.
- COMPACFLT carries $3.1 billion total, of which about $690 million meets the slow/low-velocity definition.
- USFF is right behind at $2.6 billion total and $640 million slow.
- NAVSUP proper sits at $5.6 billion total with roughly $430 million slow.
- The Marine Corps, with $2.9 billion total, has only $94 million flagged, the cleanest ratio of the major players.

Taken together, DLA plus the two fleet commands (COMPACFLT and USFF) account for about 82 percent of the entire $24 billion in slow-moving and low-velocity value that the dashboard can see. Add NAVSEA, and the four organizations cover more than 86 percent of the problem.

When the dashboard rolls the slow-mover flags up to the individual plant level, the concentration is stark.

By sheer unit count, five sites stand out:

- Portsmouth Naval Shipyard's wholesale storage activity in Kittery, Maine leads with roughly three million slow-moving or low-velocity units, about 15 percent of everything stored there.

- Two forward-deployed aircraft carriers (USS John C. Stennis and USS George Washington) each carry between two and three million dormant units.
- A supply tender (USS Frank Cable) holds a similar volume.
- The Trident submarine logistics site at Bangor, Washington rounds out the top five with roughly the same amount.
- Shift to dollar value, and the picture pivots to the big DLA distribution centers:
- DLA Distribution New Cumberland, PA holds the single largest block close to $670 million in slow-moving value.
- DLA Distribution San Joaquin, CA follows with about $500 million.
- The three major DLA Navy-supported sites, Norfolk, Jacksonville, and San Diego, each clock in between $250 million and $350 million of slow stock.

Put simply: whether you measure by units or by dollars, the slow-mover problem is not evenly spread across hundreds of warehouses. Fewer than ten locations, three massive DLA depots, two naval shipyard/submarine logistics sites, two carriers, and one tender carry the overwhelming majority of both the physical units and the dollar exposure. The dashboard puts all of this on one screen, instantly showing where the slow-mover burden actually lives. No standard ERP report has ever made this obvious.

Across these views, what stands out is that slow movers show up in different ways depending on who owns the stock and where it sits. At the BSO level, DLA carries the largest slow dollar value simply because it owns the largest share of the overall portfolio, while COMPACFLT and USFF have higher slow-value fractions relative to their total holdings. At the plant level, major depots such as CAN5 (DLA New Cumberland) and CAQ5 (DLA San Joaquin) emerge as the primary anchors for slow value, whereas locations like CNVZ (NSY WSS PORTSNH), CR3Q (USS JOHN C STENNIS), CR7U (USS FRANK CABLE), CR2G (USS GEORGE WASHINGTON),

and CN66 (SEA PS TRF BANGOR TRIDNTLL ARP in Silverdale) stand out for the sheer number of slow units they store. The dashboard makes these distinctions visible in a way that simple enterprise totals would miss, showing not just how much slow inventory exists, but how that burden divides between depots, ships, and shore activities.

C. FINDINGS FOR RESEARCH QUESTION 2 – CROSS-LOCATION AND PLATFORM VELOCITY COMPARISONS

Research Question 2 asks how the same NIIN can exhibit radically different throughput and velocity depending on the plant where it is stored and the units it supports.

With the slow-mover and low-velocity flags applied at the NIIN–plant level, the dashboard isolates every NIIN held at two or more locations and ranks them by the spread in their demand behavior. The results are unambiguous: thousands of NIINs show high turnover at one plant while remaining essentially dormant at others. In hundreds of cases, the contrast is stark; an item issuing 30–50 times per year at one site has recorded zero issues in the past five years at another site holding identical stock. Other NIINs display steady but modest velocity everywhere except a single forward plant, where issues spike dramatically.

These differences are not random. They consistently align with operational realities: forward DLA sites and fleet activities routinely show higher throughput on the same NIINs than large CONUS depots, and plants tied to specific weapon-system communities frequently move parts that are slow elsewhere. The dashboard, therefore, provides an enterprise-wide view of demand velocity at the individual NIIN level, revealing patterns that plant-level reports alone cannot expose.

No judgment is rendered on whether the observed differences are intentional (e.g., deliberate positioning based on business-case analysis, transportation-cost considerations, or readiness requirements) or unintentional, or a mix of both. The tool simply makes the disparity visible and quantifiable, giving item managers and leadership the factual baseline needed for any subsequent review.

The dashboard's most eye-opening view is the one that finds every NIIN stocked at two or more plants and then shows how it behaves at each one.

The result is almost 50,000 NIINs that are fast-moving in at least one location and slow (or dead) everywhere else. The same exact part can be issuing dozens of times a year at one site while it hasn't budged in half a decade at another.

These aren't fringe items. They cluster heavily in the COGs that keep the fleet running:

- COG 9B (DLA-managed consumables) accounts for the biggest chunk by far.
- The next tier is packed with Navy-managed repairables and critical consumables: 7R, 1H, 7H, and 3B.

Because those portfolios cover the lion's share of depot-level repairables and high-priority consumables, velocity swings inside the same NIIN are impossible to ignore. One plant is clearly supporting real maintenance demand while another is just providing expensive shelf space. The dashboard lines them up side-by-side, so the contrast hits you immediately, with no digging through separate reports required.

In almost every mixed-behavior case, the velocity split follows the real-world laydown of platforms and maintenance.

Parts with SMIC codes tied to aviation or specific ship classes almost always move fastest at the plants that directly support those platforms. A repairable for an F/A-18 squadron, for example, will issue dozens of times a year at (CR3Q – USS John C. Stennis or CR2G – USS George Washington) while the exact same NIIN sits untouched for years at DLA Distribution New Cumberland (CAN5) or San Joaquin (CAQ5). The pattern repeats across hundreds of NIINs: high throughput where the air wing or battle group actually operates, near-zero throughput at the big CONUS distribution centers.

The dashboard doesn't try to explain why the split exists (lead-time buffering, wholesale positioning strategy, or simple misalignment). It simply proves the split is real and widespread. Once you see the same part moving briskly in one column and dead in

the next, the old question “Is this part even needed anymore?” is replaced by a sharper one: “Why are we keeping so much of it in places where it never moves?”

That single shift in perspective, from “is the part excess?” to “is the positioning excess?,” “can we lower the allowance level?” is the biggest operational insight the dashboard delivers.

Another pattern jumps out when the dashboard is viewed through an internal-controls and risk lens.

Filter to NIINs that are fast-moving in at least one plant, and the slow holdings at other sites stop looking like mysterious dead stock. They’re proven parts: items with real, ongoing demand somewhere in the system. That single fact changes the risk profile completely. A NIIN that is slow everywhere might be a legitimate long-life, low-failure component. But a NIIN that is burning through issues at one plant while sitting untouched at another raises a clear positioning question, not a demand question.

That distinction gives NAVSUP a powerful internal benchmarking tool built straight from its own data. If one plant or BSO is carrying large on-hand balances of parts that other sites are turning over steadily, the dashboard lights it up immediately. No external standards, no theoretical models: just the enterprise’s own throughput history showing where the same-NIIN inventory is consistently out of step. From an internal controls and risk perspective, those are exactly the holdings that deserve the next level of review.

Taken together, these cross-location patterns finally let NAVSUP talk about throughput and velocity the way it always should have: comparatively, not just locally.

Instead of asking “Is this part slow or fast at my plant?” the dashboard answers “How fast is this exact NIIN moving everywhere else we stock it?” The contrast is immediate. Some plants and BSOs consistently turn the same items that other sites let sit for years. Others keep almost nothing on the shelf for parts that their sister activities burn through every month.

That side-by-side view creates real internal benchmarking, built from nothing but the enterprise's own data. No outside standards required: if one organization is moving material in step with actual fleet consumption while another is carrying large balances of the identical NIINs, the gap is obvious. From an internal-controls and risk-assessment standpoint, those gaps are exactly where the next hard questions start, even though this study deliberately stops short of saying how much stock should move or where it should land.

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D. FINDINGS FOR RESEARCH QUESTION 3 – IMBALANCES BETWEEN INVENTORY POSITION, USAGE, AND DEMAND

Research Question 3 is the audit question in disguise: where does the on-hand inventory look seriously out of line with recent demand, and what does that mismatch mean from an audit-readiness standpoint?

The dashboard answers it bluntly. The NWCF–SM portfolio is nowhere near uniform. Some plants and BSOs operate like high-velocity pipelines; most of their stock turns fast enough that only a thin slice ever lights up as slow or low-velocity. Others

behave more like long-term warehouses: a large fraction of what they carry hasn't moved in years and shows no sign of moving anytime soon.

We are not calling any individual NIIN excess here (that's a separate fight with separate rules), but the patterns are impossible to miss:

- A handful of sites, mostly large DLA distribution centers and certain Navy depot activities, carry the majority of both the unit count and the dollar value, flagged as slow.
- Forward fleet logistics sites and carrier-specific plants, by contrast, show dramatically lower slow-mover percentages even though they support the same weapon systems.
- Certain COGs (especially 9B consumables and several aviation repairable COGs) have huge slow balances at wholesale depots, while the same items turn steadily at operational locations.

From an audit perspective, these are the exact places the auditors will go first: large dollar or unit holdings with little or no recent usage history to justify the recorded value. The dashboard doesn't settle the debate; it simply puts the debate on one screen so NAVSUP can see in advance exactly where the hard questions are going to land.

V. CONCLUSION AND IMPLICATIONS

A. CHAPTER OVERVIEW

This chapter steps back from the plant codes and dollar totals of Chapter 4 and asks the mechanics of the dashboard to ask the bigger question: what do these patterns actually mean for NAVSUP and the Navy Working Capital Fund–Supply Management enterprise?

The discussion is deliberately synthetic rather than additive. Each of the next four subsections returns to one of the original research questions and distills the clearest, most consistent findings the dashboard produced: where the slow-moving and dormant inventory is concentrated, how sharply demand velocity differs for the same NIIN across locations, which plants and BSOs carry structurally slow portfolios, and how the tool itself changes the visibility conversation. From those findings, the chapter draws direct implications for fleet readiness, financial stewardship, audit performance, and stock-positioning strategy, with particular emphasis on how large pockets of long-dormant stock sit inside an enterprise that already has demanding turnover and visibility expectations.

The final sections acknowledge the study's boundaries, the limitations of single-snapshot ERP data, the deliberate choice of three- and five-year slow-mover thresholds, and the decision to remain strictly diagnostic rather than prescriptive before offering practical recommendations and a focused agenda for follow-on work in Chapter 6.

B. SYNTHESIS OF FINDINGS BY RESEARCH QUESTION

1. Revisiting Research Question 1 – Identifying Slow-Moving Inventory Across the Enterprise

The first research question was straightforward: Can existing Navy ERP data tell NAVSUP where its slow-moving inventory actually lives? The answer is now yes, and the picture is sharper than most people would expect.

Once the slow-mover flags are applied at the NIIN–plant level, slow and low-velocity stock is clearly not a fringe problem. It shows up in every major BSO and dominates many of the largest plants. DLA carries the biggest absolute dollar burden simply because it owns the largest slice of the portfolio, but the fleet commands (COMPACFLT and USFF) have higher slow percentages relative to their total holdings. NAVSUP and NAVSEA sit in the middle with meaningful but smaller exposures, while the Marine Corps portfolio stands out as remarkably clean under the same rules.

At the plant level, the concentration is even starker. A handful of high-volume sites, the big DLA distribution centers, certain NAVSUP shore activities, and several carrier and submarine logistics plants account for the overwhelming majority of both dormant units and dormant dollars. Slow-moving inventory is therefore neither rare nor evenly distributed; it is heavily concentrated by owner and by location.

That finding alone answers RQ1. It provides NAVSUP with another tool that can see its slow-mover exposure not as vague anecdotes or one-off reports, but as a consistent, repeatable map across every BSO and every plant. That map immediately supports more informed throughput and velocity conversations and gives leadership an objective baseline for benchmarking one organization against another.

2. Revisiting Research Question 2 – Cross-Location Demand Velocity Differences

The second research question asked the most operationally revealing question of the study: why does the exact same NIIN turn over dozens of times a year at one plant and sit untouched for half a decade at another?

The dashboard's answer is unequivocal: because that is exactly what is happening, and it is happening at scale.

More than 72,000 NIINs, a large fraction of the multi-plant population, are moving at least one location and are slow (or completely dormant) everywhere else they are stocked. These are not marginal or obsolete parts; they cluster overwhelmingly in the COGs and SMIC families that keep carriers, air wings, and submarines operational: 9B

consumables, 7R and 7H repairables, 1H and 3B critical items. In other words, the very portfolios that drive fleet readiness.

The pattern is consistent and unsurprising once you see it: the same repairable will issue steadily at the carrier or forward logistics site that supports the platform, while identical stock at a large CONUS DLA depot or wholesale shore activity shows little or no movement. Demand is clearly present; it is just not present where most of the inventory is parked.

That single observation turns every mixed-velocity NIIN into an internal benchmark. Plants and BSOs that move material in line with actual fleet consumption now have hard evidence; those carrying large quantities of parts the enterprise is actively using elsewhere have equally hard evidence. From a throughput and velocity perspective, the question is no longer "Is this part needed?" (the higher demand site already proved it is) but "Why are we keeping so much of it where it never moves?"

Research Question 2 is therefore answered decisively: the same NIIN routinely exhibits dramatically different demand velocity across locations, and the dashboard makes that reality visible, quantifiable, and impossible to ignore.

3. Research Question 3 – Portfolio-Level Imbalances and Audit-Relevant Risk

Research Question 3 asked where the biggest gaps appear between inventory position, actual usage, and demand, and what those gaps mean from an audit-readiness perspective.

The answer is now unmistakable: the NWCF–SM portfolio is split into two very different worlds.

A handful of plants, mostly large wholesale depots, certain NAVSUP shore activities, and several carrier and submarine logistics sites carry inventories that are structurally slow. In many of these locations, the majority (and sometimes 90 percent or more) of on-hand units and dollars sit in NIIN–plant positions that meet the slow-mover rule or have recorded zero movement in the last five years. At the opposite extreme are

sites that operate like true high-throughput pipelines: almost every NIIN they hold has been issued at least a few times in the five-year window.

Roll those patterns up to the BSO level and the same divide appears: some owners have far higher fractions of their total value locked in low-velocity or dormant stock than others.

From an audit and internal-control standpoint, these are the exact places the spotlight will fall. Large, long-standing balances with little or no usage history, especially when identical NIINs are moving steadily elsewhere, are the classic triggers for existence, completeness, and valuation questions. The dashboard does not decide whether those holdings are justified; it simply makes them impossible to miss, showing precisely which plants, BSOs, and COG families carry the heaviest audit-relevant risk.

Research Question 3 is therefore answered: the most significant imbalances are highly concentrated, not diffuse, and the dashboard surfaces them in a form that directly supports both readiness discussions and audit defense.

4. Research Question 4 – Dashboard-Enabled Enterprise Visibility

The fourth research question was the most practical of the four: Can a straightforward decision-support dashboard actually give NAVSUP the enterprise-level visibility that standard ERP reports have never delivered? The answer is yes, and the difference is dramatic.

The dashboard's core contribution is not a clever new algorithm; it is the disciplined organization of existing Navy ERP data so that slow-moving and dormant stock can be seen, filtered, and interrogated in seconds instead of weeks. Users start at the full-portfolio view and then move smoothly (with the exact same slow-mover and zero-movement definitions carried forward at every step) through BSO totals, individual plants, and finally the precise NIIN–plant records driving any number that looks off. Throughput and velocity can be compared side-by-side across owners and locations. Benchmarking becomes automatic: slow and dormant shares line up cleanly across portfolios without anyone having to write a new query. Internal controls and audit

readiness get the same treatment: one-click triage: isolate high-value, long-dormant holdings, export the backing data, and walk into the next review already knowing where the tough questions will land.

In short, the dashboard turns a once-a-year research exercise into a living, repeatable capability. Every time a new ERP extract is loaded, the same filters, rules, and views are ready to run again. That is the step-change in enterprise visibility that the fourth research question set out to test, and the tool delivers it.

C. IMPLICATIONS FOR NAVSUP NWCF–SM

The patterns uncovered in Chapter 4 are not academic curiosities; they strike at the core of how NAVSUP manages the NWCF–SM portfolio.

First, they reveal that slow-moving and long-dormant stocks are not evenly distributed; they are heavily concentrated in specific BSOs, plants, and item families. More importantly, thousands of NIINs with proven, ongoing demand in one location sit essentially unused in another. That reality is bigger than simple inventory statistics.

It affects readiness. Even though a certain level of deliberate "slow" stock is unavoidable and necessary in a warfighting logistics system, large quantities of parts actively consumed elsewhere in the enterprise could be poorly positioned for the next contingency.

It affects financial stewardship. Billions of working-capital dollars are tied up in holdings that turn rarely or not at all. Some of that is intentional insurance against long lead times and surge requirements; some of it almost certainly is not. Distinguishing between the two has been nearly impossible without the cross-location visibility the dashboard now provides.

Finally, it affects audit outcomes and public accountability. Large, long-standing balances with little or no recent usage history remain the single most common trigger for material weaknesses in existence, completeness, and valuation. DoD, SECNAV, and NAVSUP policies have long accepted the need to carry low-velocity stock for mission-critical systems, but they still demand evidence that the recorded value is supportable.

The dashboard does not eliminate the exposure; it simply makes the exposure visible, traceable, and concentrated enough to address systematically rather than reactively.

In short, the findings reframe slow-moving inventory from an inevitable cost of doing business into a set of specific, measurable positioning and valuation choices that NAVSUP can now see clearly.

1. Readiness and Support to the Fleet

From a readiness perspective, the dashboard's biggest contribution is not labeling slow inventory as "bad"; it is showing exactly where slow and dormant stock do and do not align with how the fleet actually uses parts.

A certain amount of deliberately slow stock is baked into any warfighting logistics system. No one wants to be the commander who saved a few million dollars by not carrying the one more radar waveguide that fails during a seven-month deployment. Many of the items the dashboard flags as slow or zero-movement are almost certainly legitimate insurance for low-probability, high-consequence failures on long-life platforms.

At the same time, the mixed-velocity patterns uncovered in Chapter 4 tell a different story. When the exact same NIIN is issuing dozens of times a year at one carrier or regional support site while sitting untouched for half a decade at another, the demand signal is no longer in doubt; only the positioning is. Those cases create real readiness risk in both directions: the high-throughput site could face a sudden gap if a surge demand hits, while the low-throughput site is carrying stock that might have prevented that gap if it had been somewhere else.

The dashboard does not decide which slow holdings are appropriate buffers and which are misplaced. It simply makes the split visible at scale, so fleet TYCOMs, NAVSUP, and the operational commanders can ask the right question sooner: "Are we holding the right parts in the right places for the threats we actually expect?" That question has always existed; the tool finally gives leadership the data to answer it before a shortage or a missed sortie proves the point the hard way.

2. Financial Stewardship, Liquidity, and Carrying Cost

Financially, the dashboard puts a bright spotlight on how much NWCF working capital is locked in inventory that rarely, or never, moves.

Billions of dollars sit in NIIN–plant positions that have recorded little or no issues in five years. Some of that is deliberate insurance stock, and no one is suggesting the Navy stop carrying critical long-lead-time items. But the mixed-velocity patterns make the opportunity cost painfully clear: when the same NIIN is turning steadily at one site while large balances sit untouched at another, cash that could be recovered through sales is instead parked in low-turnover warehouses, still drawing storage, handling, and management overhead.

Those dormant dollars are far less "liquid" than stock that cycles through the fund regularly. They slow the revolving-fund mechanism that NWCF–SM depends on and leave less headroom for new buys when budgets tighten. The dashboard does not run the full carrying-cost math, but it instantly shows where the biggest pockets of tied-up capital live and which of them are sitting next to plants where identical parts are moving every month.

In short, the tool gives NAVSUP leadership a fact-based way to see exactly where financial stewardship and readiness requirements collide, and where a disciplined cost–benefit review would yield the highest return. That visibility alone is a major step toward tighter alignment between the money invested in inventory and the readiness it is supposed to deliver.

3. Audit Outcomes, Internal Controls, and Public Accountability

From an audit and internal-control standpoint, the patterns in Chapter 4 map almost perfectly onto the risk areas that SECNAV, OPNAV, and DoD have flagged for years.

Large on-hand balances with little or no recent usage history are the classic trigger for auditor questions about the existence, completeness, and valuation of operating materials and supplies. The dashboard does not replace NAVSUP P-723 or any

other inventory-integrity instruction, but it gives leadership a powerful triage tool: it instantly shows which plants, BSOs, and COG families have the heaviest concentration of slow- and zero-movement stock, exactly where the next audit sample is almost certain to land.

Because every high-level exposure number drills straight down to the underlying NIIN–plant records, the same views can drive pre-audit document pulls, focused cycle counts, or management reviews of the most questionable balances. Effort no longer has to be spread evenly across $48 billion of inventory; it can be aimed precisely where the risk is highest.

In that sense, the dashboard strengthens public accountability not by declaring any specific holding improper, but by proving that NAVSUP can see its own risk profile clearly, quantify it in dollars and units, and trace every exposure line back to the source data. That transparency auditors have been asking for has been delivered in a form they can verify themselves.

4. Stock Positioning Strategy and Budget Execution

The findings also force a hard look at stock-positioning strategy and how NAVSUP executes under budget pressure.

The mixed-velocity NIINs and the handful of structurally slow plants make one thing obvious: some sites are functioning as long-term holding pens (whether by design or drift) while others act as true throughput nodes. That split is not automatically wrong war-reserve material, surge buffers, and long-lead-time insurance stocks often belong in big depots or regional hubs, but it is no longer invisible. When the dashboard shows the same part moving steadily at forward fleet sites while millions of dollars of it sit untouched at a CONUS wholesale center, the positioning choice becomes explicit and measurable.

Under tightening budgets, reality matters more than ever. Blanket “cut 10 percent of inventory” directives waste time and political capital. The dashboard instead points straight to the specific NIIN–plant–plant–BSO combinations where the largest low-

velocity exposure lives, giving leadership a prioritized menu for deeper review. Some of those holdings will prove to be essential risk mitigation; others will not. Either way, the conversation can now be grounded in data rather than anecdote, and it can happen before the next round of budget drills forces blunt, across-the-board cuts that hit the wrong places.

In a resource-constrained environment, the ability to see and act on where working capital is actually earning its keep versus where it is simply occupying warehouse space is the difference between smart stewardship and swinging a blind axe.

D. STUDY LIMITATIONS

This study stands on one large, frozen Navy ERP extract pulled through Advana Jupiter in 2025. That choice kept the analysis consistent and repeatable, but it also set hard boundaries.

The dashboard only sees what made it into that extract. Local spreadsheets, manual pier-side issues, legacy-system records, or anything that never got recorded in ERP are invisible. The results, therefore, reflect the official financial-reporting picture exactly what auditors test, but not every last transaction that happened in the real world.

Movement is measured solely by recorded goods issues. Receipts, repair inductions, or internal warehouse moves do not reset the clock. A part received yesterday and immediately sent to depot repair will still appear dormant until it is finally issued to the fleet. That is intentional for valuation purposes, but it means some "slow" holdings are legitimately in the pipeline.

The dollar values come from the single valuation field in the extract; they are consistent for internal comparison but not reconciled to the official deemed-cost baseline used for financial statements. The extract also captures only NIIN–plant records with positive unrestricted quantity on the snapshot date, so the fastest-turning items that happened to be at or near zero on hand are excluded. Condition codes are mixed together in the "unrestricted" bucket, so some balances include both serviceable and unserviceable

material still relevant for capital exposure and warehouse space, but less precise for immediate readiness assessment.

Policy roles and intended uses are not distinguished. War-reserve stocks, safety levels, economic-retention items, and routine operating material all look the same if they haven't moved. Some of those balances are deliberate insurance; others may be obsolete. The dashboard highlights the exposure without trying to separate the two.

Weapon-system linkage is partial. SMIC and WSC fields tie many NIINs to platforms, but coverage is incomplete, and the study does not pull in configuration files, allowance tables, or war-reserve requirements. The results, therefore, flag where inventory behavior looks unusual, large quiet balances or sharp velocity splits rather than pronounce any holding justified or unjustified.

Finally, the analysis is deliberately diagnostic, not prescriptive. It stops at visibility and pattern identification. No redistribution plans, no disposal recommendations, no cost–benefit models, no optimization runs. Those steps belong to follow-on work.

These limitations are real, yet they do not undermine the central contribution: for the first time, NAVSUP has a repeatable, enterprise-wide lens on its slow-moving and dormant inventory built entirely from its own authoritative data accurate enough to drive serious conversation and focused follow-up.

E. CHAPTER SUMMARY

This chapter has taken the raw patterns from Chapter IV and asked the harder question: what do they actually mean for NAVSUP and the NWCF–SM enterprise?

The answer is not that slow or dormant inventory is automatically waste waiting to be cut. A certain amount is deliberate, necessary insurance in a warfighting logistics system. What the dashboard makes unmistakable, however, is how unevenly that slow stock is distributed: heavily concentrated in a handful of BSOs, depots, and COG families, and often sitting quietly at one plant while the identical NIIN is moving steadily somewhere else. Those splits matter for readiness (parts may not be where the next

failure occurs), for financial stewardship (billions of working-capital dollars are tied up in low-turnover holdings), and for audit outcomes (large, long-dormant balances remain the single biggest driver of material weaknesses).

The dashboard itself is deliberately diagnostic. It turns ERP data into repeatable, enterprise-wide views that make throughput comparisons, internal benchmarking, and risk discussions possible in minutes instead of months, but it stops short of telling anyone what to do. The limitations spelled out in Chapter V reinforce that boundary: one frozen extract, one set of thresholds, partial visibility into condition codes and policy categories, and no attempt to separate legitimate insurance from true excess.

Chapter VI moves from diagnosis to action. It offers concrete, implementable recommendations for how NAVSUP can operationalize these insights and lays out a focused research agenda that carries the work forward into policy, optimization, and life cycle management.

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VI. RECOMMENDATIONS AND FUTURE RESEARCH

A. CHAPTER OVERVIEW

This final chapter moves from analytical insight to practical application.

The dashboard and definitions of slow-moving inventory developed in this research were not designed to replace existing enterprise systems or serve as a prescriptive tool for optimization. Instead, they provide a structured method for analyzing current Navy ERP data, revealing, in a uniform manner across the enterprise, concentrations of slow and dormant stock, variations in the behavior of identical NIINs across sites, and instances of misalignment between inventory placement and actual demand.

The Navy Department operates one of the federal government's most extensive and intricate inventory systems, a network that must keep thousands of weapon systems and operating units running around the world. Through the Navy Working Capital Fund–Supply Management (NWCF–SM), Naval Supply Systems Command (NAVSUP) buys, stores, and places billions in materiel to maintain fleet readiness and provide support on time. Yet audit reports and internal evaluations keep revealing the same pattern: holdings often do not match real usage. Some locations hold on to large amounts of material that has not been issued in years, even as the same items see steady demand at other sites. These slow-moving stocks take up precious warehouse space, drive up carrying costs, spark audit problems, and mask what the fleet truly needs. As the Department works toward full financial statement auditability, spotting these mismatches and gaining a solid, enterprise-wide view of inventory has turned into a key requirement for operational strength and financial discipline.

The chapter concludes with a focused research agenda that extends beyond the scope of this thesis, including redistribution modeling, integration of transportation costs, formal cost–benefit analysis, linkage to existing optimization tools, and closer alignment with allowance and war-reserve policy. The objective is to use the visibility established

here as a foundation for more informed, evidence-based decisions regarding inventory positioning and the working capital required to support it.

B. PRACTICAL RECOMMENDATIONS FOR NAVSUP

1. Deploy the Dashboard as a Diagnostic Aid, Not a New System

The most immediate value NAVSUP can extract from this work is to place the dashboard in the hands of personnel who already manage slow-moving inventory and to allow them to apply it within their existing workflows.

The dashboard and slow-mover definitions developed in this study were not intended to become a new enterprise system or a prescriptive optimization engine. Rather, they provide a disciplined way of examining existing Navy ERP data that makes visible, in a consistent and enterprise-wide manner, where slow and dormant inventory is concentrated, how the same NIIN can exhibit markedly different behavior across locations, and where stock positioning is most misaligned with observed demand.

The workbook requires minimal training because its filters mirror those already familiar to Advana users, and it can be accessed on any workstation equipped with Tableau Reader. Making the extract broadly available and encouraging periodic refreshes, for instance, quarterly, keep the tool current with minimal effort. Even limited adoption can deliver real benefits, including fewer unanticipated audit findings, more consistent answers to senior-leader questions about slow inventory, and a lower risk of procuring material already held in quantity elsewhere in the enterprise.

Adoption requires no extensive process redesign. Making the file available on a shared drive, orienting a small group of experienced users to the routine refresh procedures, and permitting the dashboard to be applied as needed is sufficient for the tool to demonstrate its practical value in supporting purchasing discipline and audit preparation.

2. Establish Standard Slow-Mover and Dormancy Reporting

A second, equally practical step is to formalize the slow-mover and dormancy logic as a standard, documented reporting convention across NAVSUP, even if specific thresholds are refined over time.

At present, slow and no-movement inventory typically surfaces only through one-off studies, audit responses, or ad hoc data pulls. There is no shared, repeatable definition consistently applied across BSOs, plants, and analytic teams.

NAVSUP could adopt the rules used in this study, three-year zero movement or five-year low velocity less than or equal to 20 percent of on-hand quantity or a refined variant, as the official slow-stock designation for routine reporting. Documenting the logic in the Advana data dictionary, embedding it in recurring Jupiter extracts, and making the calculated fields available to dashboards and scorecards would support consistent enterprise use.

The benefit of a shared definition is consistent enterprise reporting. When senior leaders, comptrollers, or auditors ask where slow inventory resides and how much is held, organizations can respond with the same figures, plants, and COGs. This consistency enables meaningful benchmarking, reduces friction during audit preparation, and provides plants with a stable reference point for internal assessment.

This approach is not intended to impose arbitrary performance targets. Rather, it provides the enterprise with a shared analytical language for a widely recognized issue. Once established, the same views on slow and dormant inventory by BSO, plant, COG, and platform can be refreshed on a recurring basis and distributed to stakeholders who require them for oversight and decision support.

3. Target the Highest-Risk Segments for Focused Review

The dashboard's primary value is not in flagging every slow NIIN–plant record, but in enabling NAVSUP to focus quickly on those holdings with the greatest potential impact.

Rather than attempting to review the entire slow-mover population, leadership can generate a short, defensible list of high-priority records:

- five-year zero-movement or very low-velocity
- sorted by dollar value
- filtered to plants or BSOs that already carry a heavy, slow inventory

This approach typically surfaces a few hundred records that account for a substantial share of the $24 billion exposure. These holdings are the most likely to contribute to future material weaknesses, consume significant warehouse space, and tie up large amounts of working capital.

These records are not automatically marked for disposal, as some may serve as legitimate war-reserve or insurance stock. However, they are the most promising areas for targeted review, offering valuable insights. Involving local item managers, platform engineers, war-reserve planners, and allowance teams in examining these records enhances the dashboard's quantitative indicators, such as movement history, condition code, COG, and weapon-system association, with expert judgment that clarifies the underlying reasons.

Conducting this type of review once or twice per year on the top 200–300 records establishes a disciplined, repeatable process for distinguishing confirmed readiness insurance from recoverable working capital, while avoiding disproportionate effort on low-dollar, low-risk lines with limited enterprise impact.

4. Add a Quick Cross-Plant Check Before New Buys

One of the most preventable sources of inefficiency highlighted by the dashboard is the purchase of material that the Navy already holds in quantity at other locations.

A recurring pattern is visible across the data: an item may experience steady issues at one plant while significant quantities of the same NIIN remain inactive at another. In many cases, the buyer initiating a new requisition lacks visibility into those balances because they reside under different plant codes or BSOs.

A low-friction mitigation is to conduct a brief cross-plant review before releasing new purchase requisitions for high-dollar or long-lead-time NIINs, displaying on-hand balances and five-year movement history across all holding locations.

- If the part is moving steadily at the demand location, additional procurement is appropriate.
- If large quantities of the same part are inactive elsewhere, a brief pause allows consideration of redistribution or drawdown before initiating a new buy.

This review does not require a formal optimization study. It may consist of a brief review of dashboard outputs, limited coordination with the holding location, and a straightforward go/no-go decision. Applied selectively to high-impact mixed-velocity NIINs, this step can reduce unnecessary procurement while preserving timely replenishment for critical items.

The current check uses data already maintained by NAVSUP and can be implemented with minimal extra effort. Making it a standard step for specific COGs or dollar thresholds embeds the dashboard into routine decision-making, helping to prevent unnecessary overbuying.

C. STRATEGIC RECOMMENDATIONS FOR ENTERPRISE INVENTORY MANAGEMENT

1. Match Stockage Roles to Actual Fleet Laydown and Maintenance Reality

At the strategic level, the dashboard indicates that the Navy's current stock-positioning map does not always align with the present distribution of the fleet and its maintenance workload.

Some plants and BSOs mainly act as pass-through pipelines, with most holdings showing regular movement. Others serve as long-term storage, with 80–90 percent or more of their portfolios classified as slow or dormant. This difference is not necessarily negative; war-reserve materials, surge buffers, and insurance spares for critical, long-lead items inherently need storage capacity.

The relevant question is whether current concentration reflects deliberate design or is the residual effect of decisions made under earlier fleet basing, squadron distribution, and depot workload assumptions.

Applying the same dashboard views periodically, such as following significant fleet-basing modifications or on a biennial basis, would enable NAVSUP and the systems commands to compare slow-mover shares and velocity trends with current fleet distribution, scheduled maintenance activities, and TYCOM priorities. When a facility that previously supported substantial operational demand now retains large quantities of dormant stock while forward sites continue to utilize the same items, this misalignment indicates a necessity to reevaluate the plant's function. The aim is not to indiscriminately reduce storage capacity but to verify that locations with the highest slow-mover burdens remain suitable and to adjust stockage or redistribution strategies accordingly.

2. Pair Velocity Patterns with Forward-Looking Demand Drivers

The dashboard's backward-looking velocity flags are much more informative than the Navy's forward-looking demand outlook.

Slow and zero-movement holdings indicate where inventory activity has been limited. Demand forecasts, planned depot inductions, platform service-life extensions, and TYCOM readiness drivers indicate where activity is expected to increase. When considered together, these perspectives allow the slow-mover population to be segmented: inventory that is dormant today but aligned with a documented upcoming requirement may represent legitimate insurance, while inventory that is dormant with no credible demand signal on the horizon warrants closer review.

The dashboard does not need to function as a forecasting engine. Rather, incorporating an additional filter layer that references maintenance schedules and requirement forecasts already produced by NAVSUP would enhance its usefulness. With that linkage, slow-mover exposure shifts from a purely historical observation to a relevant input for positioning, budgeting, and readiness decisions informed by both past behavior and planned future activity.

3. Implement Light-Touch Automated Alerts

Over time, NAVSUP could evolve from manual dashboard reviews to light-touch automated alerts that identify emerging dormancy before it becomes entrenched. Potential triggers include:

- NIIN–plant records that have just crossed the three-year no-movement threshold
- Plants whose slow-mover value share has risen more than a set percentage point since the last cycle
- The top 50 newly dormant NIINs by dollar value in the latest extract
- NIINs that have flipped from fast-moving to zero-movement at a specific plant

These alerts would provide notifications rather than prescribe action. They keep the same velocity/dormancy logic used in this study, so no new policy is required, and they preserve flexibility for legitimate insurance stock. The result is earlier visibility into emerging slow-mover accumulation, allowing attention while exposure remains relatively limited.

4. Strengthen NAVSUP–SYSCOM Coordination on Platform Life cycle Changes

The observed velocity differences and concentrations of dormant inventory also point to coordination challenges between NAVSUP and the systems commands

Many of the largest slow-mover clusters sit in COGs and SMIC families tied to specific platforms. When a configuration change, service-life extension, or retirement quietly kills demand for a set of NIINs, the engineering and allowance communities update their tech manuals and requirements, but the wholesale inventory sitting in warehouses often doesn't get a prompt change until much later.

The dashboard highlights these clusters by identifying large balances of NIINs that once supported active configurations but now exhibit little or no movement. This visibility offers a valuable foundation for recurring, structured coordination between

NAVSUP and the relevant systems commands, such as NAVSEA, NAVAIR, and SPAWAR:

- Which dormant items remain tied to configurations the fleet is phasing out?
- Which items are still required to support legacy platforms that will remain in service?
- What is the current disposition or retention guidance?

Making this discussion a regular agenda item, like a quarterly review of the top slow-mover NIIN families, would ensure inventory decisions align with current engineering guidance and help prevent platform or mission changes from leading to long-term inactive holdings.

D. FUTURE RESEARCH DIRECTIONS

1. Redistribution Feasibility and Cost–Benefit Modeling

The dashboard appropriately stops at diagnosis; however, a logical next step is to move from identifying where slow stock resides to evaluating the potential effects of redistribution.

Future research should use formal redistribution and consolidation models for the highest-exposure slow-mover segments identified here. Combining the NIIN–plant slow list with transportation lanes, handling costs, and stock-out risk factors will enable analysis of several important questions:

- How much inventory could be safely consolidated to fewer locations without degrading readiness?
- What transportation and handling savings or costs would result for the top 200–300 candidates?
- Where are the break-even points for the largest dollar exposures?

Such an analysis would provide quantitative estimates of return on investment for consolidation proposals and translate the diagnostic outputs of this thesis into actionable policy options.

2. Distinguishing Legitimate Insurance from True Excess

The dashboard identifies slow and dormant stock, but it does not distinguish between deliberate readiness insurance and inventory that represents true excess or obsolescence.

Future research could address this limitation by integrating velocity and dormancy indicators with additional contextual data, including platform status, decommissioning schedules, configuration baselines, allowance tables, war-reserve requirements, and shelf-life constraints. Incorporating these factors would enable more nuanced classification of slow-moving holdings, distinguishing critical spares required to support active platforms from tail-end items associated with phased drawdowns or systems no longer in service. The result would be a prioritized framework for disposition planning, catalog maintenance, and financial write-downs that focuses attention on inventory most likely to be obsolete while preserving slow-moving stock that continues to serve a defined readiness function. Such an approach would also provide audit and oversight stakeholders with clearer insight not only into the scale of slow inventory but also into the operational role it plays within the broader support enterprise.

3. Integrating Velocity Signals into Optimization and Sourcing Rules

The velocity and dormancy patterns identified in this study represent a natural extension of the Navy's existing inventory optimization and sourcing tools. Future research could examine how slow-mover indicators might be incorporated into models such as WIOM-ERP to bias sourcing decisions toward drawing down existing low-velocity balances before initiating new procurements, or to adjust plant priority logic when fulfilling requisitions across multiple locations. Rather than replacing established optimization frameworks, these signals could serve as supplemental constraints or decision modifiers that reflect observed inventory behavior. Simulation-based testing could assess the effects of such rule adjustments on fill rates, backorders, transportation costs, and Navy Working

Capital Fund cash flow, allowing tradeoffs to be evaluated quantitatively. Integrating velocity awareness into sourcing logic would move the insights generated here beyond diagnosis and toward systematic, evidence-based refinement of inventory decision rules.

4. Predictive and Advanced Analytic Extensions

The analytical features developed in this study, including movement history, velocity and dormancy indicators, plant attributes, COG and SMIC groupings, and associated value and quantity data, provide a foundation for more advanced analytical approaches. Future research could explore the use of statistical or machine-learning methods to estimate the likelihood that newly provisioned NIIN–plant combinations will transition into long-term dormancy, enabling earlier identification of potential risk in the inventory life cycle. Such models would not replace managerial judgment but could support more informed initial buy quantities and retention decisions by highlighting patterns associated with eventual inactivity. Additional extensions could examine adaptive safety-stock policies that respond to observed velocity differences across locations, or clustering techniques that group items with similar demand behavior and support characteristics. These approaches would further extend the diagnostic framework presented here into predictive insights while preserving transparency and interpretability for decision-makers.

5. Broader Application and Comparative Analysis

The definitions and diagnostic framework for slow-movers created in this thesis are not exclusive to the single NWCF–SM extract studied here. Future studies could implement the same approach with other NAVSUP portfolios, additional Defense Logistics Agency inventories, or joint and inter-service supply chains, to see if similar patterns of slow or dormant stock appear. Comparing data across services or different commodity groups could reveal whether the level of inventory slowness identified here is unique to Navy support for long-lasting weapon systems or if it indicates a wider trend within defense logistics. This research could also explore how variations in allowance development, contracting strategies, or organizational structures affect the buildup and management of slow-moving inventory. Expanding the analysis this way would turn the

dashboard and method from a one-time tool into a versatile approach for understanding how readiness, risk, and efficiency are balanced within complex supply networks.

E. CHAPTER SUMMARY AND CONCLUSION

This chapter translates the dashboard's diagnostic findings into a set of practical considerations and longer-term research directions. The near-term recommendations emphasize modest but actionable steps: deploying the dashboard as a diagnostic aid rather than a new system, standardizing slow-mover definitions for consistent reporting, focusing review efforts on the highest-risk segments, and incorporating a brief cross-plant check before selected new procurements. Together, these actions are intended to improve visibility, support audit readiness, and reduce avoidable overbuying without constraining legitimate readiness-driven inventory decisions. The strategic recommendations extend this logic by encouraging NAVSUP to treat observed velocity patterns as outcomes of deliberate design choices, aligning plant roles with current fleet and maintenance realities, pairing historical movement data with forward-looking demand signals, enabling light-touch alerts to identify emerging dormancy, and strengthening coordination with systems commands as platforms transition through their life cycles.

The future research directions outlined in this chapter identify natural extensions of the work presented here, including feasibility analysis of redistribution, distinguishing readiness insurance from true excess, integrating velocity signals into optimization and sourcing rules, enhancing predictive analytics, and broadening application across defense supply chains. Collectively, these avenues point toward a more comprehensive understanding of how slow-moving inventory accumulates and how it can be managed deliberately rather than reactively. The core contribution of this thesis is not the introduction of a new system or policy prescription, but the demonstration of a repeatable, data-driven method for making slow and dormant inventory visible at the NIIN–plant level. By providing consistent enterprise-wide visibility into where inventory resides, how it behaves, and how it aligns with demand, the framework developed here establishes a foundation for informed decision-making about inventory positioning and the working capital required to sustain fleet readiness.

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