Chapter 34
Defense Supply Chain Operations:
Analytical Architectures for Enterprise Transformation

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ABSTRACT

This chapter explains the origination, evolution, emerging results, and potential long-term impacts of one particularly daunting enterprise transformation effort within the US Department of Defense. It offers a unique case study for a multi-disciplinary endeavor referred to as the project to Transform US Army Supply Chains (TASC Project). The TASC project pursued comprehensive and creative applications using a variety of Operations Research methods, advanced analytics, and management innovation to improve tactical, operational, and strategic decision making for the military's global sustainment enterprise. This chapter may be of interest to those confronting supply chain and other complex enterprise transformation challenges: national security officials; aerospace, defense, and industrial professionals; university graduate students and professors of engineering systems, operations research, and management. The strategy described herein offers potential solutions broadly applicable to other public institutions and government bureaucracies as well.

INTRODUCTION

To address persisting issues and better understand seemingly intractable logistics challenges, the US Army established the project to Transform Army Supply Chains (TASC). This chapter describes the origination, evolution, outcomes and benefits derived from the TASC Project. Contributions from Operations Research (OR), strategic planning, and management innovation are emphasized. This chapter should be of interest to national security officials confronted with complex supply chains or other enterprise trans-

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formation challenges, including senior managers in the Department of Homeland Security as well as the Department of Defense. Others that may benefit include commercial aerospace, defense, and industrial professionals, business and engineering school graduate students and faculty in Systems Engineering, Operations Research, and Management programs, and professors in our war colleges and command and staff colleges. The transformational strategy described herein offers a conceptual framework to confront paralyzing conditions and resolve perplexing dilemmas currently faced by other public institutions and government bureaucracies as well.

THE DEFENSE SUSTAINMENT ENTERPRISE

The US Army's global logistics operation is a central component of an even larger Department of Defense (DoD) sustainment enterprise. This vast and complex system consists of ten major classes of supply with highly variable product flows, considerable maintenance and supply infrastructure, internationally dispersed transportation assets, several commands and management agencies, countless vendors, suppliers, and major aviation and ground combat system manufacturers. All of this supports thousands of "customers" in the form of tactical organizations performing home-based training and deployed units conducting combat missions and supporting our international allies around the globe.

These defense supply chains are not only complex in scope but truly massive in scale, including 22 maintenance and repair depots, 3 arsenals, 14 national inventory control points, 22 regional and international distribution centers, over 80 major air and sea transportation ports, 18 million annual requisitions for 5 million different part numbers procured from more than 100,000 suppliers all managed until recently by 2,000 legacy information systems. Employing over two million government and industry personnel working in acquisition and sustainment, DoD estimates that maintenance and supply operations annually consume over $200 billion. The US defense logistics enterprise is global in scope, enormous in scale, and unsurpassed in complexity.

Nonetheless, effectively integrating production planning, maintenance operations, inventory systems, and distribution policies has been a persisting challenge for the defense sustainment enterprise. Although DoD typically justifies its Operations and Maintenance (O&M) budget request to the Congress by citing military readiness for mission requirements, neither DoD nor the Congressional Budget Office has been able to establish a well-defined linkage between resource funding levels and the resulting readiness of military forces. For nearly three decades the Government Accountability Office (GAO) has attributed these deficiencies to poor demand forecasting, ineffective inventory management, and inadequate strategic planning. Furthermore, the promise for improved performance attributed to extremely large investments in "IT solutions" in the form of enterprise resource planning (ERP) systems installed in recent years has not yet been fully realized.

BACKGROUND AND CONTEXT

During late Summer 2002, the Commanding Generals for US Army Aviation and Missile Command (AMCOM) and Army Materiel Command (AMC) initiated an ambitious effort to improve logistics operations in order to better relate resource investment levels to current readiness and future capabilities. Several factors influenced their decision at that time. The GAO "hi-risk list" for federal agencies had