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Optimizing Major Weapons Systems Cost/Price Analysis and Contract Negotiations in the United States Air Force: A Case Study of Innovation and Change in Adopting ProPricer Government Edition

December 2024

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Prepared for the Naval Postgraduate School, Monterey, CA 93943

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ABSTRACT

A persistent communication gap between the defense sector and industry stems from divergent languages, risk perceptions, and objectives. These disparities often result in misjudged requirements, suboptimal cost analysis, extended negotiations, and delayed delivery of critical capabilities, compromising military readiness. This research investigates the adoption of ProPricer Government Edition (GE) at the Air Force Life Cycle Management Center (AFLCMC) at Eglin Air Force Base as a case study for innovation in defense acquisition processes. The case study evaluates ProPricer GE's impact on cost/price analysis, contracting workforce competency, and procurement acquisition lead times (PALT). Findings reveal significant improvements: enhanced transparency in cost analysis, standardized negotiation processes, and a reduction in PALT of up to 50%. ProPricer GE also accelerated workforce skill development and decision-making confidence among contracting professionals. However, challenges such as IT integration and resistance to change highlight the need for comprehensive planning and support. Recommendations include phased implementation, targeted training programs, and expanded adoption across acquisition centers to leverage ProPricer GE's potential for transforming defense contracting practices. This study underscores the value of standardized tools in fostering efficient, transparent, and collaborative acquisition processes, ultimately advancing national defense objectives.



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LIST OF ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFLCMC	Air Force Life Cycle Management Command
AWF	Acquisition Work Force
BOE	Basis of Estimate
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CMBOK	Contract Management Body of Knowledge
CMS	Contract Management Standard
DoD	Department of Defense
EDM	Eglin Direct Attack Division
FAR	Federal Acquisition Regulation
FPDS	Federal Procurement Data System
FY	Fiscal Year
GAO	Government Accountability Office
GE	Government Edition (referring to ProPricer Government Edition)
MSP	Multi-sided Platform
NAVSEA	Naval Sea Systems Command
NCMA	National Contract Management Association
NPS	Naval Postgraduate School
PALT	Procurement Acquisition Lead Time
PSC	Product and Service Code
RFP	Request for Proposals
WBS	Work Breakdown Structure



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I. INTRODUCTION

This chapter introduces the research topic and provides information that sets the foundation for research. First, a background of the research topic is provided. Next, the problem statement, purpose statement, and the purpose of the research are discussed. Research questions are presented. Then, the benefits and limitations of the research are identified. Last, the structure and organization of the report are outlined.

A. BACKGROUND

The acquisition process for defense major weapon systems is inherently complex, frequently resulting in cost overruns and delays in delivering critical capabilities, which is why the Government Accountability Office (GAO) has identified it as a high-risk area since 1990 (GAO, 2023). The program offices within the government, referred to as buyers, and the companies submitting proposals, referred to as sellers, follow different contracting processes within the contract life cycle. This divergence in the goals and procedures of buyers and sellers often leads to miscommunication and limited transparency in the contracting process. One area where these differences are evident is the source selection process. In this phase, the buyer's objective is securing the best value using one or more source selection methods (Federal Acquisition Regulation [FAR] 15.101, 2024), while the seller's objective is to "ensure its success and grow its value over the long term" (Lipton, 2020).

To achieve the buyer's objectives, the source selection team drafts a request for proposal (RFP) to detail the buyer's capability requirements and distributes the RFP to solicit proposals from sellers. Once proposals have been received, the team evaluates the proposals based on technical and cost/pricing criteria, engages in discussions with sellers to enhance value potential, and requests final proposals post-discussion. The RFP team then utilizes tools for comparative analysis of all final proposals, selects the best value option, and ultimately makes a decision on awarding the contract to the chosen seller(s) (Tenaglia, 2022). In alignment with the seller's objectives, the company's business development team monitors the System for Award Management website (SAM.gov) for posted RFPs. They scope the work by using tools to generate cost and pricing details to



submit an initial proposal. They participate in discussions and submit a final proposal for buyer evaluation (Federal Award Management Registration, 2024). Throughout the source selection process, buyers and sellers employ different tools tailored to best achieve their respective goals.

B. PROBLEM STATEMENT

The absence of shared tools contributes to communication challenges, reduced transparency, and difficulties in clarifying aspects of the contracting process. This issue is particularly pronounced in the areas of cost/price analysis and negotiations within the source selection phase. The disparities between buyer and seller processes lead to complications for both parties. This research aims to address the challenges arising in the cost/price analysis and negotiation segments of the source selection process.

C. PURPOSE STATEMENT

The purpose of this research is to investigate the source selection process within the contract life cycle, with a specific focus on cost/price analysis and negotiation in the Award phase. This study will explore how implementing a software tool could impact both buyers and sellers during contract negotiations. Specifically, our research will analyze the perceived effects of adopting ProPricer Government Edition (GE) at the Air Force Life Cycle Management Center (AFLCMC) Armament Directorate at Eglin Air Force Base (AFB). Key areas of examination include its potential influence on procurement acquisition lead time (PALT), enhancement of proposal comprehension, and improvement in contract management proficiency.

D. RESEARCH QUESTIONS

To fulfill this purpose, we have the following research questions:

- 1. What is the perceived impact on cost/price analysis and contract negotiations process from implementing ProPricer GE?
- 2. How has the implementation of ProPricer GE affected acquisition workforce (AWF) personnel competency in cost/price analysis and contract negotiations?
- 3. What is the perceived effect of the implementation of ProPricer GE on PALT?



4. What recommendations can we provide to AFLCMC Eglin AFB, the Air Force, and the Department of Defense (DoD) regarding adopting ProPricer GE to acquisition centers?

E. METHODOLOGY

This research uses a case study methodology to explore the perceptions of the impact that implementing ProPricer GE has on the acquisition workforce at AFLCMC Armament Directorate at Eglin AFB. The case study is comprised of surveys and interviews with government contracting personnel within the Direct Attack Branch at AFLCMC Armament Directorate Eglin AFB. The surveys and interviews to be distributed will be constructed using the theoretical background of the Auditability Theory and the National Contract Management Association (NCMA) Contract Management Standard (CMS). The survey asks questions regarding the perceived impacts on cost/price analysis, contract negotiation processes, contracting personnel competencies, and PALT. Further details of the methodology used in this research are presented in Chapter IV.

F. BENEFITS AND LIMITATIONS OF THE RESEARCH

This research is significant as the DoD depends on the contracting process to deliver essential capabilities to military forces at a fair and reasonable price. Acquisition centers could benefit from incorporating software tools into the source selection process, such as the adoption of ProPricer GE at AFLCMC Eglin AFB. This study analyzes survey and interview responses from contracting professionals experienced with software tool implementation, offering targeted recommendations based on these insights. Additionally, it suggests areas for further research, potentially contributing to improvements in the DoD acquisition process.

However, the case study approach used in this research has limitations. First, findings may have limited applicability to the broader acquisition workforce as the focus is solely on the AFLCMC Armament Directorate at Eglin AFB. Second, the study only considers the implementation of ProPricer GE, excluding other software tools. Finally, reliance on self-reported data from surveys and interviews may introduce bias into the findings.



G. OUTLINE OF THE REPORT

This report is structured into six chapters. Chapter I includes background information, the problem statement, the purpose statement, the research questions, the benefits of the research, and the limitations of the research. Chapter II introduces the theoretical basis on which the research is structured. A discussion of Auditability Theory is provided because of the emphasis on controls, processes, and personnel in governing DoD acquisitions. Chapter II also reviews the literature concerning contract management, source selection in the government contracting process, and software tools available for cost/price analysis and contract negotiations for government acquisitions. Chapter III examines the mission, organization, and contract execution profile for AFLCMC Eglin. Chapter IV introduces the case study methodology used to obtain and analyze the data. Chapter V presents the findings of the research, a discussion of the findings, and recommendations based on the findings. Chapter VI summarizes the background information, problem statement, and purpose statement. Chapter VI concludes with answers to the research questions, recommendations to the Air Force and DoD for improving cost/price analysis and contract negotiations, and recommended areas for further research.

H. SUMMARY

This chapter served as an introduction to the research topic, establishing the foundational context for the study. It began with an overview of the background relevant to the research subject. Subsequently, the chapter discussed the problem statement, the purpose statement, and the overarching objectives of the research. The research questions guiding the inquiry were then presented, followed by a brief description of the methodology employed to address these questions. Additionally, the chapter identified the anticipated benefits of the study alongside its potential limitations. Finally, the chapter concluded by outlining the structure and organization of the report. The next chapter provides the theoretical foundation and literature review for our research.



II. LITERATURE REVIEW

This chapter discusses the theoretical foundation that forms the basis of the research. It begins with an overview of Auditability Theory, then discusses the *Contract Management Standard*, and considers the application of software tools in contract management. Last, there is a discussion of existing research in this area of study and concludes with a summary of the chapter.

A. AUDITABILITY THEORY

According to Rendon (2019) "Auditability Theory is concerned with those aspects of governance needed by organizations to ensure successful achievement of mission goals and objectives" (2019, p. 4). Rendon and Rendon (2015) describe the relationship between effective internal controls, capable processes, and competent personnel as the Auditability Triangle, depicted in Figure 1. Thus, "organizations need a competent workforce, capable processes, and effective internal controls to ensure mission success" (R. Rendon, 2019, p. 4). The application of Auditability Theory in procurement ensures accountability, integrity, and transparency (Rendon & Rendon, 2015). An auditable environment is dependent on established consensus about acceptable practice, procedures, and knowledge systems that enable it to operate (Power, 1996).



Figure 1. Auditability Triangle. Source: Rendon and Rendon (2015)



1. Internal Controls

According to Rendon and Rendon (2015), one component of Auditability Theory is effective internal controls which is defined as "the objective of enforcing internal control policies to ensure compliance with laws and regulations, monitoring procedures to assess enforcement, and reporting material weaknesses" (Rendon & Rendon, 2015, p. 716). The DoD utilizes the GAO *Standards for Internal Control in the Federal Government*, or the Green Book, as an overall framework for establishing and maintaining an effective control system (GAO, 2014). Depicted visually as shown in Figure 2, the GAO explains:

A direct relationship exists among an entity's objectives, the five components of internal control, and the organizational structure of an entity. Objectives are what an entity wants to achieve. The five components of internal control are what are required of the entity to achieve the objectives. Organizational structure encompasses the operating units, operational processes, and other structures management. (2014, p. 9)



Figure 2. Components, Objectives, and Organization Structure of Internal Control. Source: GAO (2014)

Utilizing software can play a role in upholding the values outlined in the Green Book by simplifying and improving the execution of internal controls on the buyer side. The Green Book highlights the significance of responsibility, risk management, and protecting assets to guarantee adherence to relevant regulations. Software tools can



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL support these principles by automating control procedures (Evans et al., 2006). Additionally, integrated software platforms can aid in identifying and addressing risks using data-driven insights that empower decision-making and increase transparency (Evans et al., 2006). This enables organizations to uphold compliance standards while improving operational effectiveness and maintaining a secure and controlled operational environment.

2. Capable Processes

Rendon and Rendon (2015) explain that the next component of Auditability Theory is capable processes and that "procurement processes should be documented, well-established, and integrated throughout the agency as well as continuously measured and improved" (Rendon & Rendon, 2015, p. 724). Capable processes are described as "fully integrated with other organizational functions, from procurement planning to contract closeout" (Rendon & Rendon, 2015, p. 716). The process of contract management is delineated through the NCMA CMS and Contract Management Body of Knowledge (CMBOK) into three phases: Pre-Award, Award, and Post-Award (NCMA, 2023). These phases are discussed in further detail later in the chapter. Additionally, the DoD Contracting Competency Model, which is based on the CMS, describes contract management in terms of, "the processes created through the integration and interaction of job tasks and competencies, and the purpose they serve" (DoD, 2020, p. 2).

Evans et al. (2006) explicate that software platforms act as "invisible engines" that streamline complex processes, drive innovation, and enable scalability across industries. Software tools can embed CMS guidelines directly into their operational workflows, promoting consistency and adherence to best practices. By fostering efficient, repeatable, and structured processes, such software has the potential to reduce manual errors, optimize resource allocation, and support data accuracy, ensuring an efficient contract management process.

3. Competent Personnel

The last component of Auditability Theory is competent personnel. According to Rendon and Rendon (2015), personnel competence requires, "specific educational,



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL training, and experience requirements for each functional area (i.e., career field) of the project team members" (Rendon & Rendon, 2015, p. 716). The DoD defines competency as, "a measurable pattern of knowledge, skills, abilities, behaviors, and other characteristics needed to perform work roles and occupational functions successfully" (DoD, 2020, p. 2).

Rendon developed a contract management competency instrument that covered all three phases of the contract life cycle from both the perspective of the buyer and seller (Rendon & Schwartz, 2021). One finding from his research discovered a disparity in the level of knowledge regarding seller tasks and recommended developing a curriculum focusing on seller processes and job tasks. Building on the importance of competency in contracting personnel, advancements in software tools could present opportunities to address gaps in knowledge. Martín-Lucas and García del Dujo, (2023) argue that technology, especially in digital environments, is reshaping cognitive processes. Their qualitative study investigated how digital tools enable higher-order thinking, fostering non-linear, complex, and often chaotic knowledge-building processes (Martín-Lucas & García Del Dujo, 2023). By focusing on social constructivism, Martín-Lucas and García del Dujo (2023) proposed a framework for understanding knowledge-building in the digital age. Their findings suggest digital technology encourages dynamic engagement, where skills like analysis, creative synthesis, and in-the-moment insights are prominent(Martín-Lucas & García Del Dujo, 2023).

The principles of Auditability Theory—effective internal controls, capable processes, and competent personnel—serve as a cornerstone for governance and accountability in procurement (Rendon & Rendon, 2015). These principles align seamlessly with structured contract management methodologies covered in the CMS, promoting compliance, performance, and transparency across the contract life cycle. By integrating practices rooted in Auditability Theory, organizations can strengthen contract management processes, enhance capabilities, and cultivate a workforce of skilled and competent personnel. Such integration fosters the accountability and precision necessary to achieve mission objectives. In the context of our research, Auditability Theory highlights the critical need for contracting personnel to demonstrate competence throughout all phases of the contract life cycle as explained in the CMS. The contract life



cycle will be further examined in the next section, which delves deeper into contract management.

B. NCMA CONTRACT MANAGEMENT STANDARD (CMS)

Effective contract management is essential for ensuring that contracts meet compliance, performance, and ethical standards. As procurement functions increasingly rely on standardized frameworks to achieve the principles outlined by Auditability Theory, contract management standards provide the structured processes and governance needed to maintain control and integrity across all phases of the contract life cycle.

The CMS developed by the NCMA and accredited by the American National Standards Institute (ANSI), provides a structured, phased approach to contract management (NCMA, 2023). This approach aligns with the CMBOK, offering detailed guidance and best practices to support contract management professionals throughout the contract life cycle (NCMA, 2019). The CMS was created through a thorough process that involved key stakeholders, including both buyers and sellers (NCMA, 2023). According to the NCMA (2023), "the purpose of the CMS is to describe contract management in terms of the processes and stakeholder relationships created through the integration and interaction of job tasks and competencies, and the purposes they serve" (NCMA, 2023, p. 1). As shown in Figure 3, the NCMA (2023) organizes contract management in three main phases: Pre-Award, Award, and Post-Award (NCMA, 2023). Each phase contaats specific domains, competencies, and job tasks essential to ensure thorough contract management (NCMA, 2023). These phases are discussed in the proceeding sections.







1. Pre-Award Phase

The Pre-Award phase establishes the groundwork for successful contract execution (NCMA, 2019). This phase involves developing solicitations, defining requirements, and planning offers, all of which set expectations and parameters for the contract's scope and terms (NCMA, 2023). Within this phase, the NCMA (2023) emphasizes the importance of meticulous planning and detailed requirement setting. Activities like "planning solicitation" and "requesting offers" ensure that all parties



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL understand the contract's objectives and requirements (NCMA, 2023). This approach aligns with CMBOK's focus on strategic planning and the critical need for structured solicitations to minimize risks and misunderstandings later in the contract life cycle (NCMA, 2019). Detailed documentation and a thorough vetting process at this phase help build a clear foundation for subsequent negotiations and awards (NCMA, 2019).

2. Award Phase

The Award phase of the CMS focuses on the critical steps involved in forming a contract (NCMA, 2023). This phase includes tasks such as analyzing the proposed price or cost to ensure fairness, planning negotiations, selecting the most appropriate source, and managing any disagreements that arise (NCMA, 2019). The primary goal during this phase is to solidify the contractual agreement by thoroughly evaluating the offeror's proposal, ensuring that both buyer and seller responsibilities are clearly defined, and establishing a fair, competitive, and effective contract through negotiation and agreement (NCMA, 2019).

As defined in the CMS, price analysis refers to the process of reviewing and assessing the offeror's proposed price without analyzing the individual cost components or the proposed profit (NCMA, 2023). It involves the buyer's ability to assess the offer by comparing it to indicators of reasonableness, such as past prices paid, published prices, competitive comparisons, and market data (NCMA, 2019).

Additionally, cost analysis involves reviewing and assessing the individual cost elements, profit, or fee in an offeror's proposal, as well as evaluating the assumptions and factors used to estimate costs (NCMA, 2023). The goal is to determine how accurately the proposed costs reflect the actual cost of performing the contract, assuming efficient and economical performance (NCMA, 2019). This process helps the buyer determine if the price is fair and reasonable, assess the realism of the price, and prepare for negotiations or discussions to mitigate risks in contract performance (NCMA, 2019).

3. Post-Award Phase

The Post-Award phase is where the contract's terms are executed and monitored to ensure compliance and performance (NCMA, 2023). Key activities in this phase



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL include "administering contracts," "managing changes," and "ensuring quality"(NCMA, 2023). This phase is essential for verifying that the contract outcomes meet the agreed standards and address any issues that arise during execution (NCMA, 2019). The CMBOK emphasizes the significance of contract administration, contractor performance evaluation, and quality assurance during this phase, as these activities safeguard both financial interests and compliance with regulations (NCMA, 2019). Effective post-award management, as per CMS, ensures that contracts are not only completed as planned but also closed out with proper documentation and audit readiness (NCMA, 2023). This final phase, which involves a comprehensive closeout process, is critical for compliance and future reference, providing a conclusive assessment of contract success (NCMA, 2019).

The CMS framework's three-phase structure—rooted in the ANSI-accredited standard and aligned with CMBOK principles—ensures that contracts are managed with a high level of professionalism and adherence to best practices (NCMA, 2023). A lack of commonality between buyers and sellers in practices, procedures, and knowledge systems can make it challenging to review cost and pricing information accurately and transparently, as it may result in inconsistencies and less clarity in the process overall. In the next section, we will discuss how utilizing a software tool common to buyers and sellers in the Award phase of the contract life cycle can be used to improve the efficiency of the process by ensuring communication and smoother negotiation outcomes.

C. SOFTWARE TOOLS

Evans et al. (2006) discuss multi-sided platforms (MSPs) as transformative tools that drive innovation by facilitating interactions between multiple distinct customer groups that benefit from one another's participation. MSPs enable ecosystems where diverse participants, such as application developers, end-users, and hardware providers, interact symbiotically to create value that would be difficult to achieve independently. This structure encourages network effects, where an increase in participants on one side of the platform attracts more participants on the other, creating a self-reinforcing cycle of growth and value creation (Evans et al., 2006). This concept of interconnected ecosystems is particularly relevant in the context of modern contracting tools, such as



ProPricer, which functions as an MSP by bridging the gap between government and industry stakeholders which is discussed in the next section.

ProPricer is software that promotes alignment with the CMS by supporting comprehensive cost analysis, negotiation, and contract administration (ProPricer, n.d.). As part of the CMS's phases—Pre-Award, Award, and Post-Award—effective cost and price analysis software helps contract managers ensure transparency, compliance, and efficiency throughout the contract life cycle. ProPricer specifically aids in these phases by automating pricing models, standardizing cost inputs, and allowing contract teams to model and compare multiple pricing scenarios, aligning with CMS's emphasis on rigorous cost analysis and negotiation practices (ProPricer, n.d.).

As a multi-sided platform, with both Government and Contractor Editions, ProPricer creates a collaborative environment between government and industry, and has the potential to be an effective tool for simplifying the training of new personnel and building core competencies within contract management teams. ProPricer utilizes a userfriendly interface and intuitive functionalities, enabling contract specialists to engage with complex pricing data, proposal models, and cost analysis workflows without extensive prior experience (ProPricer, n.d.). This accessibility reduces the learning curve for new users, allowing them to quickly familiarize themselves with essential tasks such as cost modeling, scenario analysis, and compliance verification (ProPricer, n.d.).

In the next section, we discuss past research about how ProPricer has been used in DoD contracting in different phases. Building on the discussion of software tools and their impact on modern contracting, the next section will explore past research that evaluates the implementation and effectiveness of ProPricer in DoD contracting environments, particularly engaging early adoption through training and education as well as the feasibility of adoption in the mission and execution area.

D. EXISTING RESEARCH

In examining the role of software tools in defense contracting, it is important to consider the body of past research that has explored their practical application and impact. Specifically, studies have investigated how tools like ProPricer are utilized within



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL the DoD contracting phase, at an academic level, to streamline cost analysis, price analysis, and price negotiation, and improve efficiency through the Award phase of the contract life cycle. However, there is little research on how the implementation of a software tool like ProPricer can affect the contracting life cycle in the actual mission area, such as at the AFLCMC Armament Directorate at Eglin AFB. The following section will review key research efforts, including those by Poree and Cooper, which highlight the strengths and challenges of using ProPricer, contextually, through the academic setting. Their findings provide valuable insights into how this software has influenced both the efficiency of acquisition practices and the competencies of contracting professionals in DoD environments.

Poree (2023) implemented the Chief of Naval Operation's Get Real, Get Better methodology into a DoD higher education context and experimented with implanting ProPricer into a classroom setting at the Naval Postgraduate School (NPS) in 2021. Poree (2024) identified that buyer and seller variations in education, training, and practice domains exist across major weapon system cost/price analysis and contract negotiation ecosystems. He noted that lack of collaboration between buyers and sellers prior to the execution phase leads to differing competence and confidence levels, as well as limited opportunities to build trust and innovation, as shown in Figure 4 (Poree, 2024).



Figure 4. Buyer and Seller Variations. Source: Poree (2024) Poree's research utilizing a common software tool, ProPricer, revealed that student buyers and student sellers developed new skills and abilities and improved understanding of concepts and activities associated with major weapons systems cost/ price analysis and contract negotiation (Poree, 2024). He concluded by making the



recommendation for future research comparing cost/price analysis process timelines in an organization with and without ProPricer (Poree, 2024).

Cooper (2022) experienced ProPricer in the classroom setting at NPS, and based his research on the 2018 *National Defense Strategy*'s demand for organizational reform in terms of faster speed to delivery in the acquisition process and organizational innovation. As part of this directive, the DoD introduced the Sole Source Streamlining Toolbox as a repository of techniques, resources, and best practices from all branches of the DoD (DoD, 2021) . This toolbox introduced ProPricer as "a tool to expedite the modeling process and facilitate constructive communications between the government and contractor" (DoD, 2021, p. 4). While certain organizations like the Navy Strategic Systems Program and the F-35 Joint Strike Fighter Program Office embraced ProPricer, numerous other acquisition entities opted not to integrate the tool into their operations (Cooper, 2022).

Cooper's (2022) study examined Naval Sea Systems Command (NAVSEA) acquisition leadership's perspectives on adopting ProPricer, uncovering critical themes and proposing further research on its potential to streamline the contracting process. The purpose of Cooper's (2022) research was "to explore NAVSEA acquisition leadership's perception on the feasibility of adopting and implementing ProPricer across their organization in Fiscal Year (FY) 2023" (Cooper, 2022, p. 25). Cooper's (2022) research resulted in three themes regarding feasibility: cost versus relative advantage, proposal compliance checks and observability, and compatibility. As part of his conclusion, Cooper recommended a future area of research opportunity should be to "research the extent to which the implementation of ProPricer reduced the time spent in the contracting life cycle" (Cooper, 2022, p. 31).

Poree and Cooper's research provides a foundational understanding of the potential benefits and challenges of implementing ProPricer in both academic and operational settings. Their work highlights critical themes such as the importance of collaboration between buyers and sellers, the impact of education and training disparities on trust and innovation, and the value of software tools in streamlining acquisition processes. While Poree (2024) demonstrated how ProPricer can enhance learning



outcomes and build competencies in academic environments, Cooper's exploration of senior leadership perspectives illuminated practical considerations for operational adoption (Cooper, 2022). Together, their findings underscore the need for further investigation into the real-world implications of ProPricer on contracting timelines, process efficiency, and acquisition outcomes. This case study aims to build on their research by analyzing ProPricer's implementation at a contracting organization tasked with major weapons system procurement, bridging the gap between theoretical insights and mission-area application.

E. SUMMARY

This chapter discussed the theoretical foundation that forms the basis of the research. It began with an overview of Auditability Theory, then discussed the *Contract Management Standard*, and considered the application of software tools in contract management. Last, there was a discussion of existing research in this area of study and concluded with a summary of the chapter. The next chapter will discuss the AFLCMC Armament Directorate at Eglin AFB.



III. AIR FORCE LIFE CYCLE MANAGEMENT CENTER, ARMAMENT DIRECTORATE

Chapter III gives context to our research by providing background information on the AFLCMC Armament Directorate at Eglin AFB. First, it presents an overview of AFLCMC Eglin's structure and systems. Next, it provides insight into their assigned mission and organization. Finally, it details a contract execution profile for the Direct Attack branch of AFLCMC Armament Directorate Eglin.

A. AFLCMC EGLIN STRUCTURE AND SYSTEMS

AFLCMC is "led by a 3-star general officer and charged with the life cycle management of Air Force weapon systems from their inception to retirement" (Air Force Life Cycle Management Center [AFLCMC], n.d.). The AFLCMC oversees the comprehensive management of weapon systems throughout their entire life cycle by "streamlining staff functions and processes to curtail redundancy and enhance efficiency" (AFLCMC, n.d.). The organization is structured to provide "an integrated framework for decision-making and process optimization across the weapon system life cycle" (AFLCMC, n.d.).

1. Mission

The AFLCMC's mission is to "Acquire and Support War-Winning Capabilities," and their motto is "providing what warfighters need, when they need it!" (AFLCMC, n.d.). Everything in the Air Force, from clothing to fuel and bombs, is provided by AFLCMC. This is why "Adherence to AFLCMC guiding principles enables AFLCMC personnel to meet their goal to deliver to commitments" (AFLCMC, n.d.).

2. Organization

AFLCMC Eglin's contracting organization supports the Air Armament Directorate, Department of the Navy, and Special Operations Command (R. Guerrero, email to authors, October 22, 2024). The Directorate is subdivided into five branches – Air Dominance, Long Range Systems, Armament Systems Development, the Agile



Weapons Office, and the focus of this research, the Direct Attack Branch, as shown in Figure 5.



Figure 5. AFLCMC Eglin Contracting Directorate Organizational Chart. Source: R. Guerrero, email to authors (October 22, 2024).

3. Contract Execution Profile

To contextualize the contracting portfolio of AFLCMC Eglin, we developed a contract execution profile using data extracted from the Federal Procurement Data System (FPDS), SAM.gov, and pivot tables in Excel. In FY2024, AFLCMC Eglin obligated a total of \$2.64 billion. Of this sum, \$411.2 million was obligated by the Air Armament Directorate, Direct Attack Branch, AFLCMC EDM, under the Department of Defense Activity Address Code (DoDAAC) FA8681. AFLCMC EDM is the primary subject of this case study. To initiate the contract execution profile, we examined total obligations by FY to establish a foundational understanding of AFLCMC EDM's contracting profile. Table 1 presents the obligated amounts for FY2005 and FY2024.


<u>Fiscal Year</u>	Amount Obligated
2005	\$818,943,629.00
2006	\$ 505,336,932.00
2007	\$682,500,413.41
2008	\$ 557,848,263.62
2009	\$ 352,123,934.18
2010	\$ 497,653,734.28
2011	\$400,296,964.80
2012	\$487,433,566.93
2013	\$ 524,165,143.72
2014	\$ 106,487,222.31
2015	\$803,926,486.12
2016	\$ 194,365,405.68
2017	\$ 175,989,395.57
2018	\$489,342,408.11
2019	\$ 337,593,425.08
2020	\$ 322,757,472.97
2021	\$298,024,269.86
2022	\$407,438,018.85
2023	\$715,876,570.09
2024	\$411,263,439.64
Grand Total	\$ 9,089,366,696.22

Table 1.FA8681 Total Obligations (FY2005 – FY2024)

While examining total obligations provides insight into the scale of AFLCMC EDM's contracting profile, an analysis of the types of products and services contracted highlights the primary categories for which funds are allocated. We identified the top five Product and Service Codes (PSC) procured during this period. The analysis revealed a strong emphasis on products, which accounted for 91% of the obligated funding, compared to only 9% for services. Table 2 displays the PSC breakdown across these top five categories.



PSC	PSC Description	PSC Amount	Percentage of Total Obligations
1325	Bombs	\$5.7 billion	63.07%
1390	Fuzes and Primers	\$905.8 million	9.97%
1410	Guided Missiles	\$719.8 million	7.92%
1095	Miscellaneous Weapons	\$442.0 million	4.86%
1425	Complete Guided Missile System	\$253.4 million	2.79%

Table 2. FA8681 Total Obligated by PSC (FY2005 – FY2024)

This data is significant because it indicates that the majority of contracting actions undertaken by the subject contracting office focus on major weapons systems acquisitions, which may benefit from leveraging a software tool such as ProPricer GE. While understanding the obligated amounts for each PSC is valuable, identifying the types of contracts and source selection methods used is essential for contextualizing AFLCMC EDM's contracting profile. An analysis of contract actions completed by AFLCMC EDM in FY24 showed that contracts with the highest obligated values primarily used a Fixed Firm Price method. The source selection for these contracts was predominantly Sole Source, a non-competitive approach employed when only one vendor can meet the requirements due to unique capabilities, urgent needs, or standardization considerations (FAR 6.302, 2024). This method was applied to the three largest contracts in FY2024, totaling \$359.9 million, underscoring the need for precise cost and price analysis as well as transparency in the negotiation process.

B. SUMMARY

Chapter III gave context to our research by providing background information on the AFLCMC Armament Directorate at Eglin AFB. First, it presented an overview of AFLCMC Eglin's structure and systems. Next, it provided insight into their assigned mission and organization. Finally, it detailed a contract execution profile for the Direct Attack branch of AFLCMC Armament Directorate Eglin. In the next chapter, the methodology used for this research is presented.



IV. RESEARCH METHODOLOGY

Chapter IV presents the methods to be used to obtain and analyze the data used in this research. First, it provides the case study research method. Then, it discusses the sources of data and how the survey and interview questions will be created. Next, it explains how the data from the surveys and interviews will be analyzed. Finally, it discusses the ethical considerations given to survey and interview participants.

A. CASE STUDY RESEARCH METHOD

This research employs a case study methodology to explore how incorporating a software tool can benefit both buyers and sellers in the negotiations of contracts by analyzing the perceived implications of adopting ProPricer GE at AFLCMC Eglin AFB to PALT, improving proposal understanding, and increasing contract management competency. The case method is selected for its capacity to offer a detailed exploration of complex phenomena within their authentic real-world settings (Yin, 2018) and its analysis of decisions, policies, and institutions (Thomas, 2011). Martinsuo (2021) detailed four types of case studies (Figure 6), which are predicated on the researcher's position in relation to the research object and the nature of the research task or goal of the research. The goal of our research is to understand and describe the phenomenon of how ProPricer GE is perceived to affect the cost/price analysis and contract negotiation process, acquisition workforce personnel competency, and the change in PALT. We are external to the government contracting office being examined (the research object), thus making the exploratory, descriptive, and explanatory case studies the appropriate choice for this case study. This research uses the descriptive case study approach by utilizing surveys and interviews to answer the research questions.



Internal Researcher's position	Interpretive case studies	Interventionist case studies	
(in relation to the research object)	Exploratory,		
External	descriptive and	Constructive case	
	explanatory case	studies	
	studies		
	Understanding, describing,	Driving or supporting	
	or illustrating a	transformation in the	
	pnenomenon	pnenomenon	
	Nature of the research task		

Figure 6. Four Types of Case Study. Source: Martinsuo (2021).

B. DATA COLLECTION SOURCES

A structured survey was developed and deployed to gather quantitative data from a larger sample of participants. The survey was designed to capture the perceived changes in effectiveness and transparency in the cost/price analysis and contract negotiations, acquisition workforce competency, and PALT from the implementation of ProPricer GE. It included both Likert scale and open-ended questions to allow for comprehensive data collection. The survey will be distributed to acquisition workforce professionals in the Direct Attack Branch at AFLCMC Armament Directorate Eglin AFB, ensuring a diverse representation of job roles and years of experience. The survey will be sent to 10 participants in the Direct Attack Branch utilizing the online survey platform SurveyMonkey. The survey questionnaire will be developed based on existing validated questions from existing research, literature review, and expert consultation.

In addition to the survey, semi-structured interviews will be conducted to gather qualitative data. The interviews aim to delve deeper into the experiences and perspectives of the participants, providing rich, contextual insights that complement the survey data. A purposive sampling technique will be used to select participants for the interviews. An interview guide will be developed, consisting of open-ended questions designed to explore the perceived changes in the competency of acquisition workforce personnel in



price analysis processes and contract negotiations. Interviews will be conducted via video call and will be recorded and transcribed for analysis.

C. DATA ANALYSIS

Survey data will be analyzed using exploratory and statistical methods. The purpose of the exploratory analysis is to graph the quantitative data to discern the data distribution, easily identify common themes among the participants, and examine the descriptive statistics to understand the data spread, identify outliers, and assess the consistency of the values between the study participants (Albers, 2017). The tests for the statistical analysis will be selected to answer two questions. (1) What do the results mean? (2) How do they fit within the case study's research questions and overall goal? (Albers, 2017). Parametric methods will be used to calculate the mean and standard deviation in each survey question to obtain descriptive statistics.

Interview transcripts will be analyzed using thematic analysis. This involves coding the data to identify key themes and patterns. Establishing themes and coding will be done manually. An inductive approach will be used to allow us to be influenced by the data when constructing themes (Fugard & Potts, 2019). Thematic analysis will be conducted in five stages, as described by Fugard and Potts. The first stage is familiarization, which encompasses reading and rereading the transcripts to become immersed in the data. The second stage involves generating the initial codes from the data. Stage three will be collating codes into potential themes. Once the initial themes are defined, we will move to stage four and refine the themes to ensure they accurately represent the data. Finally, the fifth stage will be clearly defining each theme and its significance.

Albers' (2017) cyclic nature of data analysis, as shown in Figure 7, will be utilized to ensure further that we were allowing the data to influence the themes and that all the themes were clearly defined before producing results. Interviews will be conducted as part of the second round of analysis to clarify potential themes, which will allow the final exploratory and statistical analysis of the qualitative data to be as inclusive as possible.





Figure 7. Cyclic Nature of Data Analysis. Source: Albers (2017).

D. ETHICAL CONSIDERATIONS

Ethical approval was obtained from the NPS Institutional Review Board, which determined that the case study does not meet the federal definition of "research" as defined under 32 C.F.R. 219. Participants were informed about the purpose of the study, their right to withdraw at any time, and the confidentiality of their responses. Informed consent was obtained from all participants prior to data collection.

E. SUMMARY

Chapter IV presented the methods to be used to obtain and analyze the data used in this research. First, it provided an overview of the case study research method. Then, it discussed the sources of data and how the survey and interview questions will be created. Next, it explained how the data from the surveys and interviews will be analyzed. Finally, it discussed the ethical considerations given to survey and interview participants. The next chapter presents the findings and analysis of the research.



V. FINDINGS AND ANALYSIS

This chapter presents the analysis and interpretation of data collected through surveys and interviews regarding the implementation of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB. The research findings are organized according to the study's primary research questions, addressing the impact on PALT, transparency in cost/price analysis, and acquisition workforce competency. Next, there is a discussion of the findings in relation to our literature review and of the implications of those findings. Lastly, recommendations on the findings are discussed.

A. FINDINGS

This section provides our ProPricer Implementation Assessment results for analyzing the data obtained from the AFLCMC Armament Directorate at Eglin AFB. The survey was distributed via email to 10 contracting workforce personnel of the Direct Attack Division of the Armament Directorate. All 10 participants successfully opened and participated in the voluntary survey. The demographics portion of the assessment was completed by 100% (10 of 10) of survey respondents. Of the total respondents, eight identified as ProPricer users and completed the entirety of the survey, including the openended questions. The remaining two respondents, who identified as non-ProPricer users, completed only the Likert scale portions of the survey. Two versions of the survey were developed to accommodate both ProPricer users and non-ProPricer users. While the questions were tailored to reflect the tools used by each group, both versions evaluated the same three core areas: the impact of software on cost/price analysis and contract negotiations, contracting workforce competency, and PALT. Additionally, while the assessment was voluntary, the participants were preselected by division leadership for survey distribution. The response data reflect the mean average of all survey participants responding to each question.

1. Demographics

Of the 10 survey participants, 10 responded to the first demographic question, "What tools or software do you currently use for cost/price analysis and contract



negotiations?" Figure 8 shows that eight out of the 10 participants utilize ProPricer GE for cost/price analysis and contract negotiations. Of the remaining two participants, one utilized Microsoft Excel, and the other selected no specific tool. The data reflect two distinct populations within the contracting workforce: ProPricer GE users (n = 8) and non-ProPricer users (n = 2).



Figure 8. Software Tool Used for Cost/Price Analysis and Contract Negotiations

Within the ProPricer GE population, all eight participants responded to the next demographic question, "How long have you used ProPricer GE?" All ProPricer GE users reported at least 6 months of experience with the software, with three participants indicating usage between 1 to 2 years and four participants greater than 2 years, as shown in Figure 9.







Amongst the two groups, 100% of participants responded to the next demographic question, "What is your current role in the contracting workforce?" Figure 10 shows that within the ProPricer population, two served as contracting officers, one as contract specialist, and five as cost and price analysts. Of our two survey participants within the non-ProPricer GE user population, both served as contract specialists.



Figure 10. Contracting Workforce Role

All participants responded to the next demographic question, "How many years of experience do you have in defense contracting?" The responses are depicted in Figure 11.



Experience levels among ProPricer respondents were distributed as follows: 50% possessed more than 15 years of experience, 25% had 6 to 10 years of experience, and 25% had 1 to 5 years of experience. Of our two non-ProPricer users, one respondent had 1 to 5 years of defense contracting experience, and the other had 6 to 10 years of experience. The next section presents the results of ProPricer GE's impact on cost/price analysis and contract negotiations, workforce competency, and PALT.



Figure 11. Years of Defense Contracting Experience

2. Impact on Cost/Price Analysis from ProPricer GE Users

The implementation of ProPricer GE demonstrated positive impacts on transparency in the acquisition process. All of the participants (100%) reported improvements in cost-estimating transparency, with 75% strongly agreeing and 25% agreeing that the software enhanced their ability to analyze costs. Similarly, all respondents indicated improved transparency in contract negotiations, maintaining the same distribution of responses (weighted average 6.75/7.0). The software's impact on understanding contractor pricing methodologies was equally substantial, with all respondents reporting improved comprehension. When asked whether ProPricer GE improved communications between buyers and sellers, 62.5% of users strongly agreed while 12.5% agreed. Notably, in Figure 12, 62.5% of users identified improved transparency as ProPricer GE's greatest benefit.



What do you consider to the greatest benefit of implementing ProPricer GE?

Answered: 8 Skipped: 0



ANSWER CHOICES	*	RESPONSES	•
 Improved transparency 		62.50%	5
✓ Enhanced workforce competency		12.50%	1
✓ Reduced PALT		12.50%	1
✓ Better cost estimates		0.00%	0
 Improved communications between buyers and sellers 		0.00%	0
✓ Other (please specify)	Responses	12.50%	1
TOTAL			8

Figure 12. ProPricer GE's Greatest Benefit

Qualitative data from open-ended survey responses reinforced the quantitative findings. Respondents consistently identified improved transparency as a key benefit, particularly in relation to traceability. One respondent noted, "Utilization of ProPricer and all of the reporting functionality has allowed for a much clearer path to determining linkages between BOEs (Basis of Estimates) and the impacts of the various components that comprise a contractor proposal." Users emphasized the ability to see complete proposal buildups from the contract line item number (CLIN) down to the work breakdown structure (WBS), task level, and labor category. The exchange of ProPricer files during negotiations also enhanced transparency of changes between offers, with one respondent stating, "The transfer of ProPricer files allowed the contractor to see exactly how and where we applied the decrements. It enabled them to understand our position and got us much closer and closed negotiations quickly." The standardization of proposal review processes was frequently cited as improving consistency across different contractors and proposals.



3. Impact on Acquisition Workforce Competency from ProPricer GE Users

Analysis of workforce competency metrics revealed improvements following ProPricer GE implementation. Three-quarters of respondents reported enhanced overall competency in cost estimating, with equivalent improvements noted in contract negotiation skills (weighted average 6.13/7.0). The software tool contributed to reducing the learning curve for cost/price analysis professionals, with 87.5% of respondents agreeing or strongly agreeing with this assessment (weighted average 6.50/7.0). Figure 13 illustrates that an equal percentage reported increased confidence in their decisionmaking capabilities.



ProPricer GE has increased my confidence in making decisions in cost/price analysis and contract negotiations.



Qualitative data from open-ended survey responses reported improvements in analysis capabilities and confidence levels. One analyst noted that "confidence in making decisions in cost/price analysis has increased because the data/numbers in a contractor's proposal write-up should trace to what's in their cost models." The software enabled users to focus on substantive analysis rather than administrative tasks, with several respondents noting an improved ability to ask targeted fact-finding questions, which are questions that clarify matters regarding cost (Defense Acquisition University, 2024).



Standardization provided by ProPricer was particularly beneficial for new personnel, making it easier to understand different contractors' proposals. Users highlighted how the software enhanced their professional development, with one stating, "I am able to easily understand how the proposal is built. The best part is, when I work with different contractors, I can easily pick up the proposal and understand it quickly." Another user stated, "I feel like I have gotten better and faster at developing my Gov position and developing updated positions as we progress through the negotiation process." Multiple respondents emphasized that ProPricer's consistency made it easier to transfer work across team members and develop expertise more rapidly than with user-specific Excel models.

4. Impact on PALT from ProPricer GE Users

The implementation of ProPricer GE yielded reductions in PALT. As displayed in Figure 14, a majority of users (62.5%) reported PALT reductions between 11% to 25%, while 25% observed reductions exceeding 50%. The remaining 12.5% noted modest reductions between 0% to 10%. The software's impact on cost-estimating efficiency was particularly notable, with 87.5% of respondents strongly agreeing or agreeing that ProPricer GE reduced estimation time (weighted average 6.63/7.0). Furthermore, 75% strongly agreed that the software reduced time spent resolving pricing discrepancies, indicating significant improvements in process efficiency.



In your experience, by what percentage has ProPricer GE reduced Procurement Administrative Lead Time (PALT)?

Answered: 8 Skipped: 0



ANSWER CHOICES	▼ RESPONSES	*
▼ 0 - 10%	12.50%	1
▼ 11 - 25%	62.50%	Б
▼ 26 - 50%	0.00%	0
✓ More than 50%	25.00%	2
✓ It has not reduced PALT	0.00%	0
TOTAL		8

Figure 14. PALT Improvement

Qualitative survey data indicated improvements in process efficiency metrics. The elimination of manual proposal modeling was frequently cited, with one respondent noting that cost modeling time reduced "from 2 weeks on average to 1 day on average." Users highlighted efficiency gains in technical evaluations (evaluation of the technical portion of the offer's proposal), with the ability to immediately export data for tech teams' review. The software's ability to quickly implement rate changes enabled quicker development and submission of counteroffers, representing a significant time-saving feature. One respondent noted, "While we are waiting for the tech eval we can start inputting the [Defense Contracting Management Agency] rates to show how just a rate change affects the pricing. More real-time data can be pulled from the system just by making small changes." The what-if analysis capabilities were credited with accelerating negotiation scenario evaluation. The next section presents the results of users who do not utilize ProPricer GE software.



5. Cost/Price Analysis from Non-ProPricer GE Users

Survey data from non-ProPricer (n = 2) users revealed mixed perceptions regarding transparency in their current processes, as shown in Figure 15. Half of the respondents agreed that their existing tools provided adequate transparency in cost/price analysis (weighted average 5.0/7.0), while the other half remained undecided. The current toolset consisted of Microsoft Excel for 50% of respondents, with the remainder reporting no specific software utilization.



Current software and/or tools are adequate for cost/price analysis and contract negotiations.

Figure 15. Current Software Tools Being Adequate for Cost/Price Analysis and Contract Negotiations

6. Workforce Competency from Non-ProPricer GE Users

The survey highlighted the learning curve as a universal concern for non-ProPricer users, as 100% of respondents identified it as their most significant challenge. The ability of new personnel to quickly learn current tools received mixed responses, with 50% somewhat agreeing and 50% remaining uncertain about the learning process. As shown in Figure 16, half of the respondents somewhat agreed that existing processes supported workforce competency development (weighted average 4.50/7.0), while the remaining respondents were undecided.





Our current process and tools support acquisition workforce competency development in cost/price analysis and contract negotiations.

Figure 16. Current Process and Tools Support

7. PALT from Non-ProPricer GE Users

Non-ProPricer users reported variable PALT durations, ranging from less than 30 days to more than 120 days, indicating inconsistent processing times. The assessment of current tools' benefits was evenly split, with half of respondents identifying reduced PALT as the most significant advantage and the other half citing improved cost estimates. However, neither respondent reported consistent PALT reduction with their current tools.

8. Tool Effectiveness Comparison

Comparative analysis between ProPricer GE users and nonusers revealed significant differences in process efficiency and confidence levels. ProPricer GE users reported higher levels of confidence in accuracy (weighted average 6.38) compared to nonusers (weighted average 5.00). Additionally, ProPricer GE users demonstrated more standardized processes and improved traceability capabilities.

9. Process Standardization and Traceability Capabilities

The implementation of ProPricer GE has yielded significant improvements in process standardization across multiple facets of contract management operations. Survey



respondents consistently highlighted how the software established standardized methodologies for proposal analysis, creating a uniform approach that enhanced consistency across different contracting actions. This standardization manifested through reduced calculation errors, as ProPricer's automated calculations eliminated many of the manual errors inherent in traditional spreadsheet-based analysis. Furthermore, the standardized platform dramatically improved response times to proposal updates, allowing contracting professionals to quickly assess and respond to changes in contractor submissions. Survey participants emphasized how this standardization fostered enhanced collaboration between government and contractor teams, creating a common framework for communication and negotiation. Perhaps the most important delineation noted by users is that ProPricer's standardization allows multiple people to become experts quicker versus customized user-specific Excel models.

Survey responses also revealed distinct differences in proposal traceability capabilities between ProPricer and non-ProPricer users. ProPricer users reported enhanced ability to trace and verify cost elements throughout proposals, with one user specifically stating, "It is so much easier to trace the basis of estimates from a contractor's proposal directly to the direct labor, material, ODC inputs within ProPricer. Prior to me using ProPricer, I would have to rebuild the contractor's proposed cost model in Excel and a lot of times the proposed BOEs would not match what was in their cost models." Multiple respondents emphasized how ProPricer allows evaluators to see BOEs by CLIN down to the WBS, Task Level, and Labor Category, providing clear visibility into proposal buildups. Non-ProPricer users (n=2), with 50% using Microsoft Excel and 50% using no specific software tool, reported limited traceability capabilities. These users indicated being undecided (50%) or only somewhat agreeing (50%) that their current tools provided adequate transparency in cost/price analysis.

The survey also revealed several significant implementation challenges that required careful attention and strategic management. From an information technology perspective, organizations faced complexities in integrating ProPricer with existing systems and networks. Survey respondents specifically highlighted challenges with network security constraints, noting that the software's implementation required careful navigation of DoD cybersecurity requirements and protocols. Software update



management emerged as another technical challenge, requiring dedicated IT resources to ensure proper maintenance and version control across the organization. These technical hurdles often necessitated significant coordination between contracting and IT departments to establish effective solutions.

The organizational adaptation required for successful implementation presented its own set of challenges. Survey responses indicated notable resistance to process change, particularly from personnel comfortable with traditional analysis methods. This resistance manifested in various ways, from reluctance to abandon established Excelbased processes to concerns about learning new software systems. The allocation of training resources emerged as a critical factor, with organizations needing to balance operational requirements with the need for comprehensive ProPricer training. Additionally, organizations faced challenges in developing and implementing standard operating procedures that incorporated ProPricer into existing workflows. These procedures needed to address not only the technical aspects of using the software but also new processes for collaboration, review, and approval workflows. The next section discusses the findings' relationship to Auditability Theory and prior research.

B. DISCUSSION OF FINDINGS

This research examined the implementation of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB through the framework of Auditability Theory, the CMS, and past research. The findings strongly support Rendon and Rendon's (2015) Auditability Theory by enhancing all three components: standardizing internal controls through consistent calculation methodologies, improving process capability through automation, and developing personnel competency through structured analytical tools. The results also demonstrate alignment with the CMS framework, particularly in the Award phase of the contracting life cycle, by maintaining process integrity and fostering clear communication between buyers and sellers. These findings also complement Cooper's (2022) research at NAVSEA, which identified similar benefits in process standardization and transparency, while also supporting Poree's (2023) findings on the educational benefits of ProPricer in developing acquisition workforce competency.



1. Relationship to Auditability Theory

The implementation of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB demonstrated significant impacts across all three components of Auditability Theory. Our analysis revealed how the software strengthened each pillar while creating synergistic effects between them.

For effective internal controls, ProPricer GE established comprehensive standardized proposal analysis methodologies with clear documentation trails. Survey respondents consistently reported enhanced ability to trace cost elements and verify pricing decisions, creating a more robust control environment. The software's automated calculations and standardized workflows reduced manual errors and improved process reliability. Importantly, the system's built-in validation checks and audit trails provided better visibility into decision-making processes, supporting the internal control objectives outlined in the GAO Green Book.

Regarding process capability, the implementation showed marked improvements in efficiency and standardization across multiple dimensions. The finding that 87.5% of respondents reported reduced PALT demonstrates how enhanced processes led to measurable improvements in acquisition outcomes. The software's standardization of proposal analysis and negotiation workflows created more consistent and repeatable processes across the organization. Survey respondents highlighted specific process improvements, including a reduction in proposal modeling time from "2 weeks on average to 1 day on average" and the ability to quickly implement rate changes during negotiations. These improvements indicate a significant enhancement in process maturity and capability.

Personnel competency saw gains through multiple mechanisms. The 75% of users reporting improved capabilities in cost estimation reflects enhanced technical proficiency. The software facilitated a better understanding of contractor pricing methodologies and increased confidence in negotiation decision-making, as evidenced by 87.5% of respondents reporting increased confidence in their analysis. The standardized platform helped reduce learning curves for new personnel while enabling more rapid development of expertise across the workforce. Survey responses indicated that the software's



consistency made it easier to transfer work across team members and develop expertise more rapidly than with user-specific Excel models. This improvement in workforce capability directly supports the Auditability Theory's emphasis on competent personnel as a foundation for organizational success.

2. Relationship to Contract Management Standard

The research findings also demonstrated strong alignment with the CMS framework, particularly in the Award phase where ProPricer GE implementation enhanced several key competencies and processes outlined in the CMS.

In the price analysis and cost analysis domains, the software provided structured methodologies that directly supported CMS competencies. Users reported improved ability to analyze costs and verify pricing methodologies, with 100% of respondents indicating enhanced transparency in cost estimating. The software's capabilities enabled more thorough analysis of cost elements and pricing structures, supporting the CMS emphasis on price reasonableness determination. Survey respondents specifically noted improved ability to trace basis of estimates and conduct detailed cost element analysis.

The negotiation planning and execution competencies received significant enhancement through improved proposal understanding and standardized analysis capabilities. Users reported enhanced ability to develop negotiation positions and respond to contractor proposals, reflecting core CMS negotiation competencies. The survey revealed that 62.5% of users experienced PALT reductions between 11% to 25%, with an additional 25% reporting reductions exceeding 50%, demonstrating improved efficiency in key CMS process areas.

The software's standardization of processes strongly aligned with CMS emphasis on consistent, repeatable contract management practices. This standardization supported both buyer and seller perspectives, facilitating better communication and understanding between parties as emphasized in the CMS framework. Users highlighted the ability to see complete proposal buildups from CLIN level to WBS, task level, and labor category, enabling more effective execution of CMS-defined tasks.



3. Relationship to Prior Research

Recent studies examining ProPricer implementation across DoD organizations provide valuable insights into adoption strategies, perceived benefits, and organizational challenges. Cooper's (2022) thesis on implementation feasibility at NAVSEA and Poree's (2024) study on educational implementation at NPS, combined with comprehensive survey results, reveal important patterns in the software's organizational impact and implementation requirements.

The studies demonstrate distinct but complementary approaches to ProPricer implementation. Cooper focused on organizational feasibility through the Diffusion of Innovation Theory, while Poree examined educational implementation using the Get Real, Get Better methodology. Despite their different contexts, both studies advocated for phased implementation approaches. Cooper recommended starting with one division at NAVSEA to minimize initial investment and risk, while Poree demonstrated success through gradual integration into the course curriculum over multiple quarters. These measured approaches allowed for testing, refinement, and demonstration of value before broader organizational rollout.

Regarding perceived benefits, all three research studies (Cooper, Poree, and this study) revealed significant improvements in process transparency and understanding. Survey results showed 100% of users reporting improved transparency in cost estimating and contract negotiations, with a weighted average of 6.75 out of 7.0. Cooper's research confirmed the potential for enhanced communication between government and contractors, while Poree demonstrated improved student understanding through consistently high course evaluation scores, ranging from 93% to 98% across metrics. Time savings and improved efficiency were also consistently identified across studies, with survey results indicating that 87.5% of users reported reduced cost-estimating time. Cooper noted the potential for significant PALT reductions, while Poree's implementation showed streamlined learning processes through integrated lab exercises.

However, the studies also identified several consistent organizational challenges. Cost and funding considerations emerged as a primary concern, with Cooper identifying funding as a key consideration for NAVSEA implementation. Survey results showed



organizations needed to carefully weigh implementation costs against relative advantages. Cultural and process changes presented another significant challenge, with survey results showing resistance to change as a significant challenge for 37.5% of respondents. Both Cooper and Poree emphasized the importance of leadership support and change management in overcoming this resistance. Technical integration challenges were also noted across sources, with survey results identifying software complexity and integration as implementation hurdles.

The collective findings suggest that successful ProPricer implementation requires a balanced approach considering both organizational and educational factors. The research supports four key implementation principles: First, a phased implementation approach allows organizations to demonstrate value while managing risk. Second, clear communication of benefits, particularly regarding transparency and efficiency gains, helps build organizational support. Third, leadership engagement and structured training are critical for overcoming organizational resistance. Finally, investment in proper training and integration support can effectively mitigate technical challenges.

These insights provide valuable guidance for other DoD organizations considering ProPricer implementation, whether in operational or educational contexts. The success documented across different organizational settings suggests that while implementation challenges exist, they can be effectively managed through proper planning and execution strategies. The consistent benefits reported across studies indicate that ProPricer can significantly enhance both operational efficiency and educational effectiveness when properly implemented.

C. IMPLICATIONS OF FINDINGS

Although this research was not based on statistical analysis, the findings of this research have significant implications for defense contracting organizations considering software tool implementation. The perceived successful adoption of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB demonstrates that standardized software tools can substantially improve the efficiency and effectiveness of contracting processes. The enhanced transparency in cost/price analysis, unanimously reported by ProPricer users, indicates potential for improved buyer-seller relationships in defense contracting. The ability



to trace cost elements and quickly assess proposal changes could lead to more efficient and effective negotiations across the defense industrial base. This improved communication and understanding between government and industry partners could result in better value for taxpayers while maintaining fair and reasonable pricing.

The improvement in workforce competency, with 75% of users reporting enhanced capabilities in cost estimation, implies that standardized tools can effectively accelerate professional development in the acquisition workforce. This is particularly relevant given the ongoing challenges of workforce development and retention in defense acquisition. The software's ability to reduce learning curves and standardize processes suggests it could help organizations more quickly develop competent acquisition professionals and maintain consistent performance despite workforce turnover.

The reported 11% to 25% reduction in PALT among 62.5% of users suggests the potential for significant time savings across the broader defense acquisition enterprise. This efficiency gain could translate to faster delivery of critical capabilities to warfighters while maintaining procurement integrity. However, the implementation challenges identified in the study, particularly regarding IT integration and organizational change resistance, suggest that organizations must carefully plan and resource software adoption initiatives. The technical complexities of integrating new software within DoD networks and the need for comprehensive training programs indicate that successful implementation requires significant organizational commitment and resources. These findings imply that organizations should approach software adoption as a strategic initiative rather than simply a technical upgrade.

The comparison between ProPricer users and nonusers reveals implications for process standardization across defense acquisition. The higher confidence levels and improved traceability reported by ProPricer users suggest that standardized tools could help reduce variation in acquisition practices across different organizations. This standardization could lead to more consistent and predictable acquisition outcomes across the defense enterprise.

These findings suggest that while software tool implementation presents significant challenges, the potential benefits to efficiency, workforce development, and process



standardization make it a worthwhile investment for defense acquisition organizations. The success demonstrated at the AFLCMC Armament Directorate at Eglin AFB provides a model for other organizations to follow while highlighting important considerations for implementation planning

D. RECOMMENDATIONS BASED ON FINDINGS

Based on the analysis of survey data and interview responses, several key recommendations emerge for improving the implementation and utilization of ProPricer GE across defense contracting organizations. First, the AFLCMC Armament Directorate at Eglin AFB should develop a comprehensive training program that includes both initial and recurring ProPricer GE training to maximize workforce competency benefits. The high satisfaction rates among current users, with 75% reporting enhanced overall competency in cost estimating and contract negotiation skills, suggest this investment would yield significant returns in workforce capability. The training program should address the learning curve challenges identified by survey respondents and incorporate best practices developed by experienced users.

Second, given that 62.5% of users experienced PALT reductions between 11% to 25%, with an additional 25% reporting reductions exceeding 50%, the Air Force should consider implementing ProPricer GE across additional acquisition centers using a phased approach. The substantial improvements in process efficiency, particularly in areas such as proposal modeling time reduction "from 2 weeks on average to 1 day on average," demonstrate the potential for significant time savings across the enterprise. This phased implementation approach would allow organizations to learn from the experience of AFLCMC Armament Directorate at Eglin AFB while managing transition risks effectively.

Third, the DoD should establish standardized implementation guidelines for ProPricer GE adoption based on the AFLCMC Armament Directorate at Eglin AFB's experience. These guidelines should focus on network security integration protocols, software update management procedures, training resource allocation, and change management strategies. The guidelines should address the specific challenges identified in the study, such as network security constraints and DoD cybersecurity requirements. By



creating a standardized implementation framework, the DoD can help future organizations avoid common pitfalls and accelerate successful adoption.

These recommendations aim to maximize the benefits demonstrated in the case study while mitigating identified implementation challenges. By following these recommendations, organizations can work toward achieving the significant improvements in transparency, workforce competency, and procurement efficiency demonstrated at the AFLCMC Armament Directorate at Eglin AFB.

E. SUMMARY

This chapter presented the analysis and interpretation of data collected through surveys and interviews regarding the implementation of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB. The research findings were organized according to the study's primary research questions, addressing the impact on PALT, transparency in cost/ price analysis, and acquisition workforce competency. Next, there was a discussion of the findings in relation to our literature review and of the implications of those findings. Lastly, recommendations on the findings were discussed. The next chapter summarizes our examination of ProPricer GE at AFLCMC Armament Directorate at Eglin AFB, presents conclusions about its impact on contracting processes and workforce competency, and identifies key areas for future research to advance software tool implementation across defense contracting organizations.



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VI. CONCLUSION

This chapter summarizes the research by reviewing the background, problem, and purpose of the research. Then, it answers the research questions that guided the research. Finally, it provides recommendations for areas of further research.

A. SUMMARY

The acquisition of major defense weapon systems is a complex process often marked by cost overruns and delays, which has led the GAO to designate it as a high-risk area since 1990 (GAO, 2023). Within this framework, program offices, or buyers, and defense contractors, or sellers, follow distinct procedures to negotiate contracts. This difference in objectives and methods frequently leads to miscommunication and limited transparency, particularly during the source selection phase of the contract life cycle. In this phase, the buyer seeks to negotiate best value through structured evaluations and comparative analyses, while the seller focuses on maximizing long-term value and growth. The divergence in tools and processes used by buyers and sellers during this phase reflects their separate goals and contributes to the overall complexity of defense acquisitions.

The primary problem identified in this research centers on the lack of shared tools, which exacerbates communication challenges, reduces transparency, and complicates cost and pricing negotiations during the source selection process. This disparity in tools and methods impacts both buyers and sellers, leading to inefficiencies and misunderstandings, particularly in cost analysis and negotiation segments. To address these challenges, the study aims to explore the integration of a shared tool, specifically ProPricer GE, at the AFLCMC Armament Directorate at Eglin AFB. By examining the impact of this software on PALT, proposal clarity, and contract management, the research seeks to evaluate whether a unified tool can streamline negotiations and enhance mutual understanding between buyers and sellers in defense contracting.

To examine the potential benefits of a shared software tool in defense contracting, this research utilized a case study methodology, focusing on the adoption of ProPricer GE within the AFLCMC Armament Directorate at Eglin AFB. A case study approach was



suitable for this research due to its capacity to provide in-depth insights into complex real-world issues, such as defense procurement, within their operational context (Yin, 2018). The methodology enabled a detailed examination of decisions, policies, and institutional factors influencing both buyers and sellers in the contract negotiation process (Thomas, 2011). This method allows the study to capture nuanced perspectives on ProPricer's perceived impacts and offers a structured approach to assess whether shared tools like ProPricer can improve communication and efficiency within defense contracting.

B. CONCLUSIONS

By utilizing the Auditability Theory framework and CMS, the surveys and interviews in this case study of AFLCMC Armament Directorate at Eglin AFB answered the following questions:

(1) What is the perceived impact on cost/price analysis and contract negotiations process from implementing ProPricer GE?

The implementation of ProPricer GE has significantly enhanced the cost/price analysis and contract negotiations process at the Direct Attack Branch of AFLCMC Armament Directorate at Eglin AFB. The software has improved transparency in contracting processes, with 100% of users reporting enhancements in their ability to analyze costs and contractor pricing methodologies. The ability to trace the basis of estimates and view detailed cost structures directly in ProPricer, such as CLINs down to labor categories, has streamlined the evaluation of contractor proposals. Respondents noted that these features not only improved the traceability and reliability of cost data but also facilitated faster, more effective negotiations by enabling clear communication of cost adjustments and supporting consistent proposal reviews.

Furthermore, ProPricer GE has contributed to standardizing cost/price analysis workflows, reducing manual errors and administrative workload. This standardization improved collaboration between government and contractors by creating a unified framework for assessing and adjusting proposals. The software's ability to perform whatif analyses and integrate real-time data changes proved invaluable for resolving pricing discrepancies and expediting the negotiation process. Users reported reduced proposal



modeling time—often cutting the process from 2 weeks to a single day—and significant reductions in PALT, with 62.5% of users citing improvements of 11% to 25%. These findings underscore ProPricer GE's role in enhancing process efficiency, transparency, and the overall quality of contract negotiations.

(2) How has the implementation of ProPricer GE affected AWF personnel competency in cost/price analysis and contract negotiations?

The implementation of ProPricer GE has markedly improved AWF personnel competency in cost/price analysis and contract negotiations at the Direct Attack Branch of AFLCMC Armament Directorate at Eglin AFB. A majority of users (75%) reported enhanced skills in cost estimation and negotiation, with the software reducing the learning curve for these complex tasks. The tool's standardization and automation capabilities allowed personnel to focus on substantive analysis rather than administrative tasks, fostering a deeper understanding of contractor pricing methodologies and empowering users to make more informed decisions during negotiations. ProPricer also facilitated targeted fact-finding, improving analysts' ability to ask precise questions, which contributed to more efficient and effective contract discussions.

Additionally, the software's structured and transparent approach to proposal analysis enhanced the professional development of AWF personnel by enabling them to quickly comprehend proposal frameworks across different contractors. This capability significantly boosted confidence, as users could trace cost elements with ease and develop government positions more efficiently. The standardization provided by ProPricer not only supported professional growth but also allowed for seamless transfer of tasks across team members, ensuring continuity and faster expertise development. These outcomes highlight the critical role of ProPricer GE in advancing workforce competency, thereby strengthening the overall effectiveness of the contracting process.

(3) What is the perceived effect of the implementation of ProPricer GE on PALT?

The implementation of ProPricer GE has had a significant perceived effect on reducing PALT at the Direct Attack Branch of AFLCMC Armament Directorate at Eglin AFB. The majority of users (62.5%) reported PALT reductions between 11% to 25%,



while an additional 25% noted reductions exceeding 50%. These improvements were primarily attributed to the software's ability to streamline cost modeling and eliminate time-consuming manual processes. For instance, tasks such as proposal modeling saw dramatic time reductions, with some users reporting decreases from 2 weeks to just 1 day on average.

ProPricer GE's automation of cost/price analysis tasks and its what-if analysis capabilities allowed contracting professionals to quickly assess various scenarios and implement rate changes, accelerating the pace of negotiations. Additionally, the software facilitated real-time data sharing and analysis, enabling immediate input of adjustments while awaiting technical evaluations. This efficiency not only reduced the time required to resolve pricing discrepancies but also enhanced the overall responsiveness of the contracting process, making PALT reductions a tangible and impactful benefit of ProPricer GE implementation.

(4) What recommendations can we provide to AFLCMC Eglin AFB, the Air Force, and the DoD regarding adopting ProPricer GE to acquisition centers?

To fully leverage the benefits of ProPricer GE, several strategic recommendations should be considered for the Direct Attack Branch of AFLCMC Armament Directorate at Eglin AFB, the Air Force, and the DoD in its broader adoption across other contracting offices. First, comprehensive training programs are essential to address the learning curve challenges identified by survey respondents. These programs should incorporate both initial and recurring training modules designed to build technical proficiency and a strategic understanding of the software's capabilities. The training should emphasize best practices developed by experienced users, which could further enhance workforce competency, particularly in cost/price analysis and negotiations. Such training investments will likely yield significant returns in workforce efficiency and confidence, accelerating professional development and fostering consistency in analysis methodologies.

Next, standardization is critical for successful adoption, and the DoD should develop unified implementation guidelines that address technical and organizational



challenges. These protocols should include detailed procedures for cybersecurity integration, software updates, and operational workflows, ensuring compliance with DoD network security requirements. Dedicated IT resources are necessary to navigate the technical complexities of implementation, including troubleshooting integration issues and maintaining system updates. Standardized procedures will facilitate smoother transitions and ensure consistent application of ProPricer GE's features across different contracting offices.

Leadership engagement is crucial in overcoming resistance to process changes and implementation of ProPricer GE. With early and transparent communication about the software's benefits and alignment with organizational goals, the Air Force can reduce this resistance to change. Creating forums for user feedback can further refine processes and build trust in the software's capabilities, ensuring continuous improvement throughout the implementation phases.

Lastly, it is essential to monitor and share best practices across the DoD to reinforce the software's value. Establishing mechanisms to evaluate ProPricer GE's impact on critical metrics, such as PALT, workforce competency, and cost/price analysis transparency, will provide actionable insights for future implementation. Success stories and performance data from early adopters can drive momentum for widespread implementation, fostering a culture of process standardization and efficiency across the DoD's contracting workforce. By adopting these recommendations, the Air Force and DoD can effectively harness ProPricer GE's potential to transform contracting processes, elevate workforce capabilities, and achieve significant operational efficiencies.

C. AREAS OF FURTHER RESEARCH

Based on the findings of this research, several opportunities for further study have emerged that could enhance the understanding and application of cost/price analysis tools and methodologies in defense contracting. These recommendations build on the lessons learned from the implementation of ProPricer GE at the AFLCMC Armament Directorate at Eglin AFB and aim to address broader challenges and opportunities in contracting processes.



(1) Expand research to other major weapon systems contracting offices.

The scope of this study focused on AFLCMC Eglin's Direct Attack Branch and its contracting processes. Future research should expand to include other major weapon systems contracting offices across different branches of the military, particularly those handling Acquisition Category I (ACAT I) programs. These programs, given their size, complexity, and high-profile nature, offer unique challenges and opportunities for cost/ price analysis and contract negotiations. Investigating the implementation of tools like ProPricer GE in these environments could provide insights into scalability, interoperability, and the unique requirements of larger contracting efforts. Additionally, this expanded focus would allow for a comparative analysis of the effectiveness of ProPricer GE across various organizational structures and operational contexts.

(2) Incorporate quantitative analysis utilizing actual PALT data.

While this study gathered perceptions of PALT reductions from survey participants, future research should incorporate quantitative analysis based on actual PALT data. A statistical examination of PALT trends before and after ProPricer GE implementation could provide a more precise measurement of its impact. This approach would allow future researchers to identify specific factors contributing to time savings and establish evidence-based benchmarks for other contracting organizations to evaluate the effectiveness of similar tools. Such quantitative research could also investigate the correlation between reduced PALT and other key performance indicators, such as cost savings, proposal accuracy, and negotiation outcomes.

(3) Investigate the use of software tools in other phases of the contracting life cycle.

While this research focused on ProPricer GE in cost and price analysis in the Award phase of the contracting life cycle, the potential benefits of software tools in other phases of the contracting life cycle warrant further investigation. Software tools utilized in the Pre-Award phase for market research and the Post-Award phase for contract administration could complement or enhance the capabilities offered by ProPricer in proposal analysis, cost analysis, and price analysis (Deltek, n.d.). Comparative studies evaluating the features, usability, and outcomes of various tools could help contracting



organizations make informed decisions about technology adoption. This research could also explore how different tools integrate into existing workflows, address cybersecurity requirements, and contribute to workforce competency development.

These areas for further research offer pathways to deepen understanding, improve processes, and enhance outcomes in defense contracting. By addressing these topics, future studies could provide valuable guidance for policymakers, contracting professionals, and technology developers in their efforts to optimize procurement practices and deliver value to warfighters and taxpayers alike.



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