Journal of Contract Management

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in the contract management field*

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EDITOR'S WELCOME

The National Contract Management Association (NCMA) Contract Management Institute (CMI) is pleased to present the 2023-2024 issue of the *Journal of Contract Management* (*JCM*). Since 1966, the *JCM* (originally called the *National Contract Management Journal*) has been supporting the NCMA mission of advancing the contract management profession through advocacy and the execution of programs to connect NCMA members and enable their professional development. Specifically, the *JCM* does this by publishing research aimed at expanding the contract management body of knowledge, serving both the buying and selling communities of the private and public sector.

The *JCM* scope spans a wide range of topics in the contract management field, as reflected in the Contract Management Body of Knowledge® (CMBOK®). It strives to comprehensively cover the contract management body of knowledge by publishing conceptual, empirical, and practice-based application research that demonstrates substantial conceptual development, appropriate methodology, proven best practices, and value-added topics.

We hope the *JCM* will promote and foster discussion of both theory and practice across the CMBOK competencies. Each article published in the *JCM* is aligned with specific CMBOK competencies as noted in the article's abstract. To this end, the *JCM* brings together key theory and practice applications, making the research available not only to the academic community but also to the private and public sector buying and selling communities. The *JCM* seeks research on both cutting-edge theories and practice applications in areas impacting the contract management profession. We invite both academics and practitioners to contribute to and read the *JCM*.

The *JCM* uses a double-blind peer-review process. Neither the authors nor the manuscript reviewers are made aware of each other's identity during the manuscript review process. This approach removes potential biases in the review process, thereby retaining quality and objectivity. The authors submit manuscripts with findings based on their own perspective, and the blind peer reviewers provide comments related to the quality, impact, and technical accuracy of the research.

The *JCM* is now registered in Cabells Journalytics after successfully completing a rigorous review and acceptance process. Cabells provides accurate, up-to-date information about academic journals to universities worldwide. The inclusion of *JCM* in Cabells demonstrates the integrity of the Journal's practices and the quality of its content.

This year's issue contains five peer-reviewed articles covering a range of contract management topics. In the first article, "Technical Ways to Lower Cybersecurity Costs for Small Businesses," Donald E. Shannon analyzes the decline in small business participation in the federal arena and examines the regulatory and contractual requirements imposed on contractors dealing with Controlled Unclassified Information or Federal Contract Information. He found that technologies such as automation and artificial intelligence can play a significant role in producing documentation and in evaluating network typology, hardware, and software for vulnerabilities and then creating automation scripts that assure conformance to Security Technical Information Guides (STIGs). He recommends the creation of a cybersecurity appliance combining hardware, software, and services in an affordable and easily deployed solution for basic cybersecurity compliance.

In the second article, "Oral Presentations – Exploring Fitness for Use and Associated Outcomes of a Forgotten Tool," authors Timothy Hawkins, Yavuz Idug, Jamie Porchia, and Daniel Finkenstadt examine the characteristics of procurement conducive to the oral presentations of offers and the limited prevalence of their use in procurement. Using a mixed-method approach combining a survey of buyers with semi-structured interviews, the authors found that buyers tend to use oral presentations when procuring services as a way to avoid uncertainty in supplier behaviors and that oral presentations don't always yield the expected benefits. These findings provide insights for the surprisingly rare use of oral presentations and suggest that certain measures should be taken to adapt the practice of oral presentations to more closely fit its theoretical potential to add value to procurement outcomes.

The third article, authored by Jody Cleven, Rene G. Rendon, and John W. Wilkinson, is entitled,

"Professional Association Impact on Training, Academia, and Professional Development: The Case for Contract Management." In this article, the authors' research focuses on how NCMA has made an impact on the training, academia, and development of the contract management workforce. In this research, they identify NCMA artifacts and then analyze and discuss the impact made by NCMA in the areas of training, education, and professional development on the contract management workforce. Their findings indicate that NCMA's Contract Management Standard™ (CMS™) has impacted federal organizations as well as several state procurement agencies. They also found that NCMA has an impact on industry, in terms of adopting the CMS in corporate hiring and training frameworks, as well as using the CMS as a quality assurance guide for their contracting teams. Finally, they found that NCMA has had an impact on academia, where colleges and universities have incorporated the CMBOK and CMS into their contract management curricula at both the undergraduate and graduate level.

The fourth article, authored by James Rich, Rene G. Rendon, and Richard Wahidi, is entitled, "Noise Analysis: Variability in Contract Manager Decision-Making." In this article, the authors investigate the level of noise in the contract management environment, specifically in contract manager decision-making. Their Qualtrics-based assessment using short scenario-type questions requiring a judgment-based decision found that there is some level of variability in contract manager decisions. They concluded that the problem facing organizational leaders is acknowledging that variability in contracting decision-making exists, analyzing the cumulative effects of variability in selected decision-making activities, and determining appropriate tolerance levels so that unwanted variability in judgment, or noise, can be managed across the organization.

The final article, authored by Robert F. Mortlock, Zeferino Cortes-Rodriguez, Mark Anthony Booc, and William J. Lynch, is entitled, "Contracting Strategies for Navy Ship Port Visit Support." In this article, the authors provide U.S. Navy policymakers with a model that can be used when planning future port operations. This model will enable the Navy to use the ship port visit support contracting framework that provides the best value to the warfighter in the current operational environment. Using a qualitative comparative case study approach, the authors' research shows that the optimal support contracting framework is dependent on the specific needs of the Navy as well as on the mix of five enabling factors: auditability, flexibility, reliability, vulnerability, and durability that are desired for each specific port. The authors' recommendations include conducting more in-depth market research, investing in organic capabilities in strategic locations, and developing standardized policy and quality assurance processes, regardless of the selected support strategy.

As you can see from the above descriptions of these articles, the *JCM* covers a wide range of topics in the CMBOK. This *JCM* issue would not have been possible without the support of our editorial board and the volunteer efforts of its members in conducting the manuscript reviews. I would like to thank the editorial board members for taking time out of their busy schedules to perform the reviews of these manuscripts. I sincerely appreciate the sharing of their time and expertise to ensure that the *Journal of Contract Management* continues as the top contract management journal for scholars and practitioners across the globe.

Dr. Rene G. Rendon, CPCM, CFCM, CPSM, PMP, Fellow
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Journal of Contract Management

TECHNICAL WAYS TO LOWER CYBERSECURITY COSTS FOR SMALL BUSINESSES

BY DONALD E. SHANNON, CPCM, CFCM, PMP, OUTSTANDING FELLOW

Abstract

PURPOSE: The federal government reports meeting most of its small business contracting goals despite a significant reduction in the number of small businesses actively contracting with it. This loss of small business participation is of concern because many of the innovative ideas that have fueled American technical and military superiority come from this sector. Concurrent with the drop in small business numbers there has been a significant increase in the administrative requirements to meet ever-more-strenuous (and expensive) demands for cybersecurity. Are these trends correlated and can reducing the cost of administrative compliance using technical means offer a reduction in barriers to entry and reinvigorate the sector?

DESIGN/METHODOLOGY/APPROACH: In this paper I first analyze the decline in small business participation in the federal arena with a more detailed focus on the Defense Industrial Base (DIB) and supply chain. I then examine the regulatory and contractual requirements imposed on contractors dealing with Controlled Unclassified Information or Federal Contract Information with particular attention to the costs of compliance. Finally, I consider strategies to leverage technology, including artificial intelligence and expert systems to assist very small businesses (VSBs) comply with federal cybersecurity requirements.

FINDINGS: My study indicates technologies such as automation and AI can play a significant role in two compliance areas. One is producing documentation such as policy and procedures, training literature, and other products. The second is to evaluate network typology, hardware, and software for vulnerabilities and then to create automation scripts that assure conformance to Security Technical Information Guides (STIGs).

PRACTICAL IMPLICATIONS: Based on the above I propose the creation of Cybersecurity in a Box (CSIB), i.e., a cybersecurity appliance combining hardware, software, and services in an affordable and easily deployed solution for basic cybersecurity compliance. The low cost and targeted nature of this device will improve compliance at an affordable price and may lower cybersecurity as a roadblock limiting VSB entry into the DIB.

ORIGINALITY/VALUE: This paper highlights a novel approach that leverages technology to address a significant barrier to entry into the government contracting environment and provides actionable direction for future research.

Keywords

contracts, small business, cybersecurity, artificial intelligence

Contract Management Body of Knowledge® (CMBOK®) Competencies

B.1 Business Management
B.5 Risk Management
1.4 Regulatory Compliance

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Shannon is the recipient of numerous awards, including the NCMA 2021 Outstanding Fellow Award. He currently serves as a committee member on the NCMA Board of Directors, as a member of the NCMA Editorial Advisory Council and The National Defense Industry Association (NDIA) IPMD Working Group writing the Contracting with EVMS Requirements Handbook. He is a nationally recognized author and speaker who has published numerous articles in *Contract Management* magazine, the *Journal of Contract Management* and is the author of two NCMA National Education Seminars.

Introduction

There is growing concern with a decrease in small business (SB) participation in the Defense Industrial Base (DIB). This is especially worrisome for the research and development (R&D) community, where small businesses (SBs) in general and very small businesses (VSBs), those with less than 20 employees, are key participants in the Small Business Innovation Research (SIBR) and Small Business Technology Transfer (STTR) programs.

These same businesses are the headwaters of new and advanced technologies that support our national defense. While there has been much discussion concerning the decline, there is little discussion concerning specific root causes or detailed strategies for reversing the decline.

How bad is the problem? In an article published in *SmallGovCon*, a government contracts law blog, author Steven Koprince wrote:

"In its FY 2020 goaling scorecard, the SBA reported that 45,661 distinct small businesses received contracts in the top 100 NAICS codes. The previous fiscal year, 46,661 distinct small businesses received contracts. Four years ago, when SBA first started including this statistic in its annual reports, the number stood at 51,866. The latest data is just the latest bad news in a troubling downward trend in the number of small primes being awarded government contracts."[1]

Could this decline in SB participation in government contracting be related to efforts to implement new, strong, and seemingly expensive cybersecurity requirements? The timelines for both seem to align, suggesting that as cybersecurity requirements ramped up, the number of SBs declined.

What follows is an analysis of the extent and nature of the decline of SB participation in government contracts, with a focus on the DIB paired with an analysis of the cybersecurity requirements. While the precise correlation between the two is difficult to prove, the circumstantial evidence points in that direction.

If this proves true, what steps can (and should) be taken to reduce cybersecurity compliance costs, eliminate a significant barrier to SB entry, and remove the incentive for incumbents to leave the government contracting arena?

Literature Review

The Shrinking Number of Small Businesses in the DIB

In the FY 2022 Small Business Administration (SBA) Procurement Scorecard, the SBA reported 26.5% of federal contract dollars were awarded to small businesses, thereby exceeding the annual 23% goal. However, the SBA also reported that the number of SBs decreased nationally by 4.22% from the preceding year.

On the surface the increased contract awards to SBs are a positive narrative, but the good news is offset by the reduction in the number of SB awardees.

The data in Figure 1 are for SBs overall. If we focus on Department of Defense (DoD) contract awards

Table 1. SBA Scorecard Data FY 2022

Prime Contracting Achievement			
Achievement Data			
Small Business	27.33%	23.00%	26.50%	$162.90 B
Women-Owned Small Business	4.63%	5.00%	4.57%	$28.1 B
Small Disadvantaged Business	11.01%	11.00%	11.38%	$69.9 B
Service Disabled Veteran Owned	4.41%	3.00%	4.57%	$28.1 B
HUBZone Small Business	2.53%	3.00%	2.65%	$16.3 B

Figure 1. Comparison of FY 2021 vs FY 2022 SBA Small Business Participation by Socio-Economic Sector
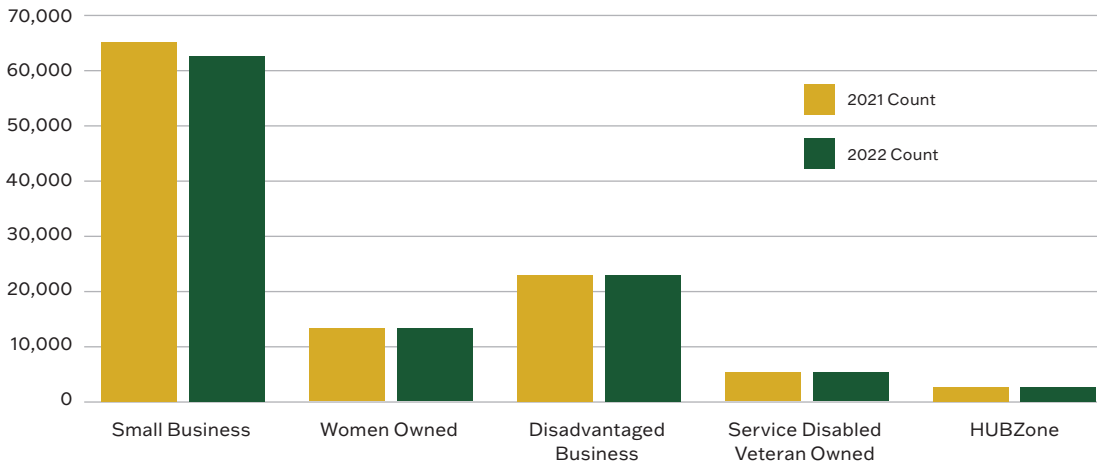
(or the DIB), we see a similar picture. In FY 2022, 5% fewer SBs received 1.2% more (a total of $83.4 billion) in awards (2021 Data).

Figure 2 is reproduced from the DoD 2023 publication, *Small Business Strategy.*[2] It shows the decline in SB numbers from 2011 to 2020. Based on this data, SB participation dropped from a high of more than 40,000 SBs in 2011 to approximately 25,000 in 2020 – a 38% decrease in nine years. Yet total spending remains at $70 to $80 billion per year. More dollars went to fewer companies – that is a reasonable conclusion. But where in the SB spectrum did those dollars flow?

Koprince addresses this point in a recent article by noting that SBs have declined in number by 12.7% nationally in the 2017 to 2021 period while, in the same period, the number of dollars being awarded to them has increased. Here is what Koprince wrote:

"But I think that the number of small businesses receiving federal contracts is every bit as important as the dollars. The federal government didn't create the small business preferences on a whim. The small business programs exist to help grow a broad industrial base and give mom-and-pops on every Main Street in the country the chance to sell their goods and services to Uncle Sam. By focusing almost exclusively on the dollars and awarding "A" grades in the face of sharp declines in small business participation in the federal

Figure 2. Number of Small Business Concerns Receiving DoD Contracts vs. Total Small Business Spending by Year
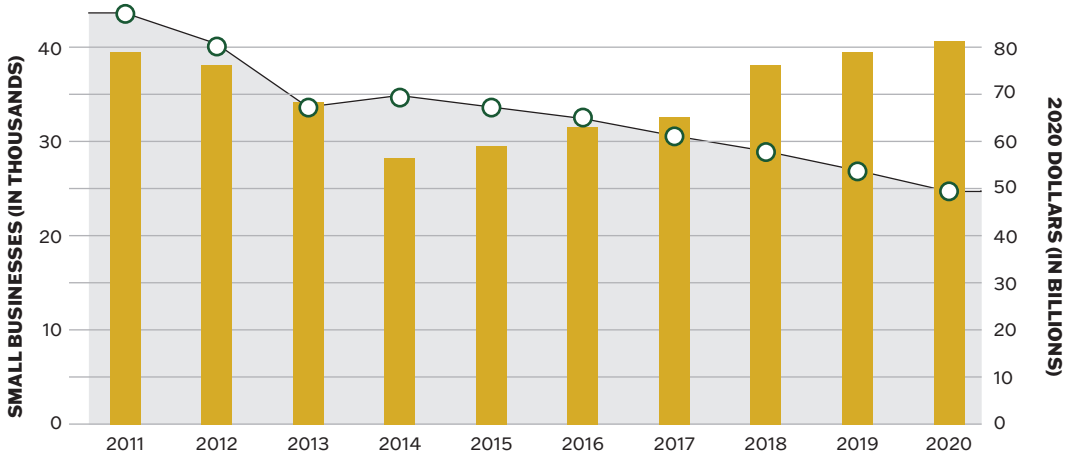
marketplace, the SBA's goaling scorecards seem to ensure that the downward trend continues."[3]

The 2019 Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations (i.e., the "Section 809 Panel") noted:

"The number of small business ***contract actions*** dropped nearly 70% from FY 2011 to FY 2016, but during that same timeframe the value of DoD small business contracts rose approximately 290%. Small companies are receiving contracts of substantial value from the government, including DoD, but the decline in the number of small business contract actions indicates DoD's small business contracting is not promoting competition and fostering robustness in the defense market."[4]

In addition to the shrinking overall number of small businesses contracting with the federal government, fewer small businesses are newly entering into federal contracts. While the federal government contracted with 23,000 new small business vendors in 2012, in 2019 just 9,400 new small businesses entered the federal marketplace.[5]

Therefore, fewer companies appear to be receiving more money through fewer and larger contract actions. Due to their size, capacity, and other capabilities, larger or more established SBs (or those in the middle-to-upper range of the NAICS size limit), may be awarded a disproportionate amount of contract actions. It is plausible to deduce that smaller rivals are unable to finance their participation in the market. This is an

assumption that cannot easily be verified at present due to data reporting limitations in FPDS but merits further study.

Although a decrease in DIB SBs might be intriguing from an academic perspective, it also highlights a worry expressed by DoD Small Business Programs Director Farooq Mitha. Mitha noted in his testimony before the Senate Committee on Armed Services in March 2023:

"That's both an economic and national security risk for our nation as we seek to strengthen our domestic supply chains, increase competition, and reduce dependency on single and foreign sources of supply."[6]

Not all SBs Are Equally Small
One factor obscuring the underlying problem is the SBA classifies business sizes as "small" or "other than small." Other than classification by NAICS code or socio-economic demographics, there is no further sub-classification of SBs. However, not all SBs are equally small.

Table 2 details the number of SBs by number of employees. To highlight these differences, adjectival category names such as nano, micro, etc. are used to sub-categorize these business sizes.

For DoD, approximately 77% of all SBs are in the three lowest sub-categories (i.e., less than 20 employees) and the fewest number of SBs (over 100 employees) comprise 11% of the total number of SBs.

Why Don't More SBs Enter the Defense Industrial Base?
There is an imperative for SB participation in the

Table 2. Comparison of 'Small' Business Entities Contracting With the Department of Defense by Number of Employees[7]

Name	Number of Employees Per Firm	Number of Firms	Total Number of Employees	Average Number of Employees
Nano	<5	4928	7,685	1.6
Micro	5 – 9	1345	8,826	6.6
Mini	10 – 19	952	12,836	13.5
Midi	20 – 99	1126	45,400	40.32
Small	100 – 499	457	68,935	151
Big Small	500+	528	367,947	696
Total		9,336	511,629	45

government (especially the DoD) that stems from practical as well as documented policy and regulatory directives. These go back as far as Section 202 of the Armed Services Procurement Act of 1947 that formed the impetus for the SB program and the goals alluded to earlier in this article. The rationale supporting a robust SB sector was clearly stated by the Section 809 Panel:

> "Small businesses produce many of the innovative capabilities, emerging technologies, and complex services DoD must acquire for warfighting dominance in a dynamic and uncertain strategic environment. …Therefore, DoD's challenges in working effectively with small businesses to address critical needs and achieve the strategic objectives of DoD are of substantial concern."[8]

SB participation is desired and necessary; it provides innovation and fresh approaches, yet the data show a steady reduction in the number of SBs offset only by continued achievement of spending goals. Is the problem being obscured by the nature of the reporting mechanism? Recommendation 21 of the Section 809 Panel report points that out:

> "Contracting officers and program managers, not DoD's small business specialists, are held accountable for ensuring small businesses receive contracts, small business requirements are met, and goals are achieved. As a result, small business programs focus almost exclusively on the amount of money and number of contracts awarded to small businesses."[9]

Figure 3. Distribution of Small Business Entities Within DoD by Size Sub-Category

Legend:
- Nano
- Micro
- Mini
- Midi
- Small
- Big Small
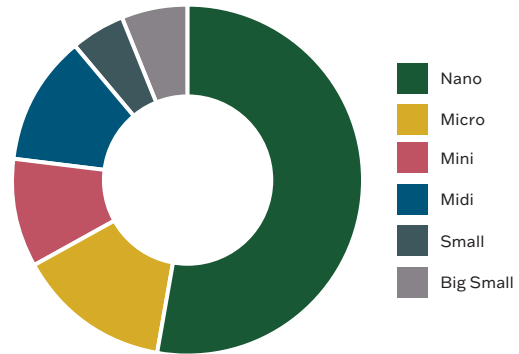
Another area of concern noted by the Section 809 Panel report was a tendency of the government to focus its SB spending on commodities or maintenance and repair of structures and facilities, with 55% of obligated dollars in those categories going to SBs and only 20% of R&D dollars going to SBs. The report noted:

> "Meeting small business goals by acquiring basic commodities and services, rather than obtaining innovative products and support from small companies, will ultimately hurt DoD's ability to maintain warfighting dominance."[10]

This observation is especially poignant given there are many opportunities provided through programs

like the Small Business Innovative Research and Development (SBIR), Small Business Technology Transfer (STTR) and traditional R&D contracts with SB set-aside opportunities.

Entry Barriers to the Defense Industrial Base

Increasing the number of SBs and their participation in the DIB is acknowledged as a high priority. In the January 2023 Small Business Strategy, Secretary of Defense Lloyd Austin stated:

> "Despite their significance to the defense mission, the Department of Defense has yet to utilize the full potential of small businesses. … If the Department does not work to reverse the decline of small business contracting, then the industrial base that equips our military will weaken."[11]

Given the number of awards and the economic incentives of SB set-asides, it would seem natural for there to be significant motivation for SBs to enter or remain in the DIB. Yet the data shows the opposite; the number of SBs continues to decline. Why is that true despite the plentiful opportunities and readily available assistance from government or government-sponsored agencies?

This was answered by Farooq Mitha, Director of DoD Small Business Development, in an opinion article published in *The Hill*, where he stated:

> "This trend has several causes, ***but one of them is that working with DoD as a smaller firm isn't always easy. Small businesses don't have the same resources that larger firms do to help comply with DoD regulations and practices***, which can discourage them from wanting to work with us. Also, there are so many points of entry into our marketplace that small businesses often don't know where to start."

Through a variety of efforts by the government, there is a plethora of programs supporting entry into the government contracting sector. Federal government agencies have developed programs and provided aid to SBs. This includes specialized offices to guide and instruct new companies on competing and working with the federal government. However, government contracts – and especially those with the DoD – have organizational or administrative requirements that can complicate or even block SB and VSB entry into the market. Traditionally these requirements – sometimes called "barriers to entry" – could be circumvented by the contracting officer with either regulatory exceptions or proper selection of contract type. This is not possible with the one-size-fits-all nature of cybersecurity requirements.

The Section 809 Panel reported:

> "… it met with more than 50 small companies. Of those companies, at least 30 explicitly stated that doing business with DoD is too complex and burdensome. …. Some small companies indicated they need more communication and support to understand administrative requirements, such as how to certify compliance with complex legal liability and risk provisions included in many contracts, ***such as cyber security***…"[12]

The exact impact on businesses complying with the *Defense Federal Acquisition Regulation Supplement (DFARS)* requirements is difficult to gauge statistically since there is little data openly available on the topic. It is however a "cost of doing business" that many existing SBs balk at and that can be an incentive to leaving or a disincentive to joining the DIB market. DoD is aware of the challenge and said so in its Small Business Strategy (emphasis added):

> …The resources required to safeguard data and systems from common and advanced persistent threats can put a strain on companies of any size, ***but resource-constrained small businesses are particularly vulnerable.***[13]

Moving Goalposts

The *DFARS* identifies six "contractor business systems" in DFARS 252.242-7005. These systems are generally well known, and except for the earned value management system, are present in some degree in every well-managed business in either the commercial or government sector. They are also a part of the curricula in most business administration or MBA degree programs. Cybersecurity is in many ways the seventh of these systems although not specified in this *DFARS* clause. However, cybersecurity is much newer than the other tried-and-true business systems and it is that lack of familiarity that has created many adoption issues – especially by less technologically savvy businesses. Yet the cybersecurity requirements

Figure 4. New DoD SBs by Year Overlaid With Key Cybersecurity Milestones
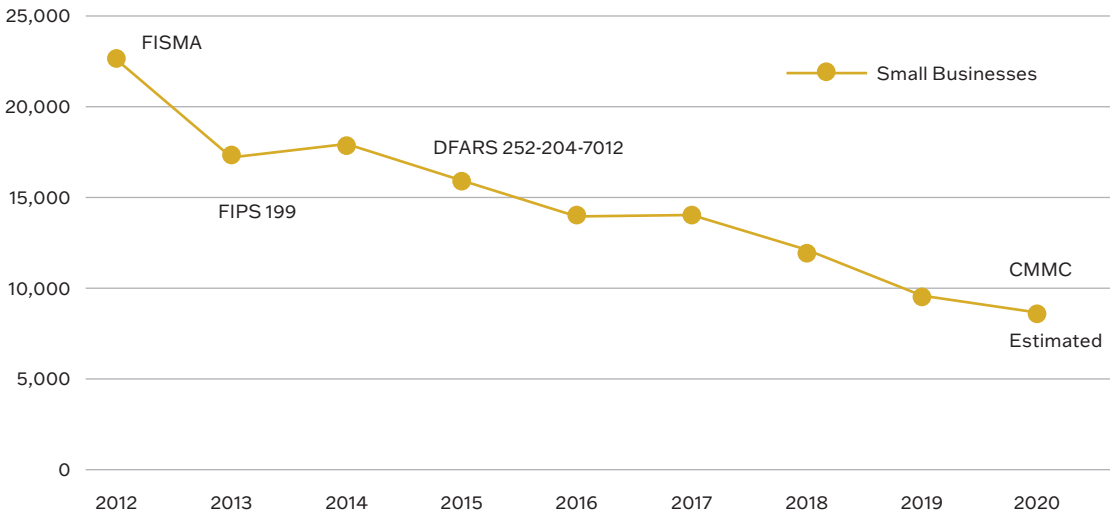
are contractually mandated (see DFARS 252.204-7012 and FAR 52.204-21) so many small businesses are less than certain of what they must do to comply. Years of rumors and conflicting opinions in media have chummed the water to the point that even the "experts" frequently disagree on requirements and implementation strategy.

The history of cybersecurity requirements is a long and winding road marked by constant change, rumors, and uncertainty. Contractor uncertainty is fueled by the near-continuous revision of the NIST SP 800-171, Protecting Controlled Unclassified Information in Nonfederal Systems and Organizations. Initially published in December 2015, it has gone through three revisions in eight years, with Revision 3 pending release as of November 2023.[14]

Aligning the Contractor Data Systems requirements of NIST SP 800-171 to the more general requirements of NIST SP 800-53, Security and Privacy Controls for Information Systems and Organizations, has been a difficult task especially when it comes to the Nonfederal Organization (NFO) controls in Appendix E of Revision 2 to NIST SP 800-171, and how they would be interpreted for VSBs is still unclear. ComplianceForge, a company that sells cybersecurity documentation to businesses, described it this way:

"What is groundbreaking about the NFO controls is that NIST has essentially created a new benchmark to define minimum security expectations for private industry. The NFO controls in NIST 800-171 sets

a precedent for what now constitutes "reasonable practices" by private industry and the failure to live up to that expectation may be considered negligence on the behalf of an organization."[15]

Many of the concerns noted here with NFOs have been addressed in the release of the initial public draft of NIST SP 800-171R3 in November 2023.[16] However the new revision is mired in the rulemaking process and there are many remaining questions with how the final rules – especially those pertaining to CMMC and third-party verification – will read in their final form.

While businesses may be uncertain about the future of cybersecurity, one underreported fact is that compliance with NIST SP 800-171 has been required for the past eight years by an earlier DFARS clause: 252.204-7012, Safeguarding Covered Defense Information and Cyber Incident Reporting (2015). Therefore, if your company is a DIB contractor and has the clause in your contract then you are subject to NIST SP 800-171 and the pre-award self-assessment required in DFARS 252.204-7019.

Are Cybersecurity Requirements a Barrier to Entry in the DIB?
Prospective participants in the DIB supply chain encounter a substantial and costly barrier prior to being deemed eligible to submit proposals, much less secure their initial government contract. The correlation between oversight of cybersecurity requirements and SB participa-

tion in the DIB is, at best, anecdotal. However, the chart in Figure 4 seems to track with that theory showing a sharp downturn in SBs starting in 2014 and continuing through the latest data. Other sources show a similar downturn. The correlation here is presumed but is worthy of additional research.

The cybersecurity requirements in question are not unique to the defense sector; they also apply via clause FAR 52.204-21 to all executive agency contracts. This clause requires all contractors to have a "cyber hygiene" program addressing 15 basic requirements for contracts dealing with products and services other than those that are "commercial off-the-shelf" (COTS) items and, to protect Federal Contract Information (FCI).

The distinction between FCI and CUI is nuanced where CUI requires protection and FCI is held in confidence and not publicly released. Note that FAR 52.204-21 also allows for additional security requirements (i.e., NIST SP 800-171) to be specified should CUI be included in the contract. Experts in the field often disagree publicly over social media concerning nuanced interpretations of what requirement(s) apply and how compliance will be accomplished or measured.

Contract requirements add cost so it is natural to assume that the addition of cybersecurity requirements would add to the cost of doing business – and that by itself is problematic. A paper, "Lifting Barriers to Small Business Participation in Procurement," published by the JPMorgan Chase & Co. Policy Center, noted:

> "…the cost of creating and implementing cyber security programs can still be cost-prohibitive, preventing small businesses from fully participating in private and public supply chains … JPMorgan Chase, for example, has estimated that the cost of cybersecurity planning assistance can range from $50,000 to $500,000 for firms to participate in large corporate supply chains and become contract-ready… Policymakers should increase cyber readiness resources for federal technical assistance programs so that small businesses have the proper controls needed to safeguard them from security risks that may compromise their business and help them meet the compliance standards necessary to participate in supply chains."[17]

DIB contractors frequently find themselves in a no-man's land of compliance since their contract (and frequently subcontracts) often include "all" potential clauses to shift the burden of interpretation on applicability. Contractors (and the government as well)

also tend to over-specify what is or is not CUI, making flowdowns to SB subcontractors a near certainty. The extent to which cybersecurity requirements apply has been a recurring question voiced by SBs at the lower end of the compliance spectrum since 15 requirements for FCI is much easier (and less expensive) to achieve than the 110 NIST 800-171 requirements for CUI.

This growing emphasis on cybersecurity may be a significant and underreported factor in the continuing malaise of SB participation in government – especially DoD contracting. While workarounds are well known to overcome the lack of an approved accounting system or other FAR requirements, contract clauses dealing with cybersecurity lack any dispensation for businesses size and appear to have a disproportionate impact on small and very small business participation.

The Cost of Cybersecurity Compliance – How Much and Who Pays?

As previously stated, all businesses providing DoD other than COTS items are subject to *both* the requirements in DFARS 252.204-7012 and the initial assessment requirement in DFARS 252.204-7019.

The following discussion about the "cost of compliance" will focus exclusively on the cost of complying with those two clauses, which address the core requirement: NIST SP 800-171. The discussion will not address the costs for Cybersecurity Maturity Model Certification (CMMC) or third-party assessments as that requirement is yet to be formally published.

What Are the Potential Costs of Compliance?

Going to the cost – which is a significant concern for cash-strapped new DIB entrants – compliance can be a significant expense. The cost elements comprising cybersecurity compliance illustrated in Figure 5 are extracted from Gartner's publication, "Measure the Real Cost of Cybersecurity Protection."[18]

While the security services listed may not have a one-to-one correlation with the NIST SP 800-171 requirements, they do identify significant areas of concern. Figure 5 also identifies the extent to which cybersecurity costs could be allocated or apportioned with other business costs. Therefore, a help desk function might be apportioned between Cybersecurity and IT as could the cost of various hardware or software products. This is an important factor since businesses do not normally provide details concerning their IT budgets, which contain various cost elements.

Consequently, few predictions of cybersecurity costs in the literature are expressed as dollars but rather as a percentage of the total IT budget. This complicates extracting an estimated cost and comparing it across various sectors and business sizes.

Figure 5 identifies 13 security services that have an associated cost. Scaling these expenses to a 5 or 10-person SB makes any comparison of costs unreliable. However, the same types of services are being obtained by both small and large business – what's different is the amount of these services being consumed.

Cost must be analyzed from the perspective of the percentage of revenue that must be dedicated to these expenses rather than simply dollars and cents. That differs for a SB because those in the VSB sector (Nano, Micro and Mini) only generate between $350,000 and $1,000,000 annually in gross revenue.[19]

If one accepts the estimated NIST SP 800-171 compliance cost of $35,000 to $50,000 for a business in the less-than-20-employee size range and a 10% gross margin, then the initial costs of cybersecurity compliance are either prohibitive or highly discouraging for new entrants. How representative is the $35,000 to $50,000 estimate? Here's a breakdown.

In a recent article published by *Proven Data*,[20] some representative costs were discussed for becoming "cybersecure" – which for the moment we will assume means becoming compliant with NIST SP 800-171. Combining my personal experience navigating the process with the data provided in the article leads to the following factors and their contribution to the costs of cybersecurity compliance:

Figure 5. Cybersecurity Services Viewed by Cost Categories
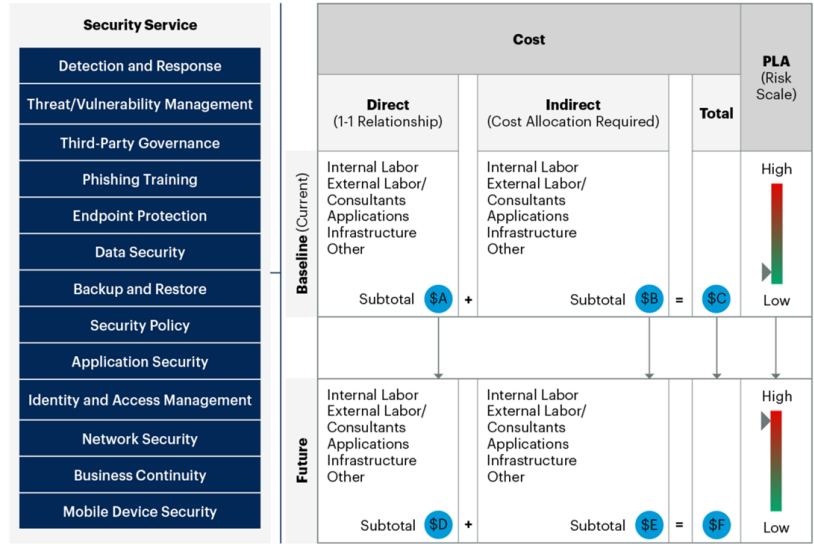
Source: Gartner

Table 3. Estimated Average Small Business Revenue by Number of Employees

Number of Employees	Average Revenue	Estimated Net Profit
1 to 4	$347,000	$34,700.0
5 to 9	$1,080,000	$108,000.0
10 to 19	$2,160,000	$216,000.0

Note: The above table excludes revenue provided as salary or wages to owners who also participate directly as "contributors" in the operation of the company.

- **Policy and procedure creation** is typically a one-time fee and includes creating and implementing written policies and procedures for the organization. Security program development for an extremely small DIB business can take a consultant up to 20 hours depending on the complexity of the organization. Hourly rates range from $149 to $479 per hour plus any royalty fees for pre-prepared templates. *Estimated cost: $6,000 to $10,000.*
- **System hardening** to meet NIST SP 800-171 requirements can be cost-estimated based on labor hours, number of employees, or endpoints at a minimum of 50 hours up to 100 hours for a business of 20 or fewer employees. *Estimated cost for 50 hours at $200/hour: $10,000.*

- **Migration to a Federal Risk and Authorization Management Program** cloud environment such as Microsoft GCC High is a one-time cost. One source projected the cost for a five-employee company at $8,500 to $10,000 and the per-employee costs at more than $150 thereafter. *Estimated cost: $10,800.*
- **Initial assessment of compliance** *could be based on a DoD estimate of 24 hours* for pre- and post-assessment support. Multiplying that by three people for a total of 72 hours and using the labor rate from DoD of $117.08 per hour, the typical assessment would cost $8,429. However, the hourly rate quoted by the DoD appears unrealistically low and other sources put the labor rate at $200 per hour or more for an external consultant. That would be offset somewhat by reduced effort for a smaller business. *Estimated cost: $14,400.*
- **The total cost** based on this analysis for a company of 20 or fewer employees is in the range of $37,000 to $50,000 with a midpoint of about $44,000 excluding annual costs for other IT services such as Office 365, GCC, etc. This figure does not include labor costs for the business to support or manage the effort.

The above total correlates with what one noted cybersecurity expert found in a recent LinkedIn survey conducted October 1-3, 2023. The survey indicates costs were in the $25,000-and-up range depending on several variables with consultant labor hours being a major cost – probably the largest.

As mentioned above, J.P. Morgan Chase pegged the number at $50,000 to $500,000. Using the above data, it is easy to see that it could easily cost the smallest businesses $35,000 or more to initially comply with NIST SP 800-171. Subsequently, it will cost an estimated $20,000 every three years for the CMMC (or other third party) assessment (if required based on changes published in NIST SP 800-171 R3) and an additional $150 to $200 per month per employee (+/- $3,000 per year) to maintain compliance through cloud services and managed service providers.

Realistically, a 10-person small business should be prepared to budget approximately $100,000 for combined IT and cybersecurity for the first year and another $48,000 per year thereafter (excluding individual equipment such as laptops, etc.). The actual cost will vary with business location, complexity of operations, and availability of in-house resources to accomplish various tasks. Even with a 10% gross profit, the business case for a VSB is quite gloomy.

Who Pays for Cybersecurity?

From the DoD perspective, cybersecurity costs are the costs of complying with contractual requirements, and the costs for complying with DFARS 252.204-7012 are likely allowable and chargeable to an indirect cost pool. The *DFARS* states:

"*There is nothing in FAR 31 or DFARS 231 that would make costs of compliance with* DFARS *unallowable if the costs are incurred in accordance with FAR 31.201–2 …. Implementation of this rule may increase contractor costs that would be accounted for through the normal course of business.*"[21]

The DoD stance that such costs be added to indirect costs is somewhat disingenuous as it applies to VSBs because it does not address the competitive impacts of such rate increases for very small companies, the lump-sum nature of incurring the expense for new entrants, and the likely firm fixed-price nature of the contracts typically awarded to VSBs.

Businesses at the larger end of the size continuum (more than 50 to 100 employees) are also concerned, but they have a greater ability to absorb the costs. They likely have structured their business to account for contract compliance requirements and the allocation of such costs to indirect cost pools. But the situation at the other end of the SB continuum is, as Mathi said: *"Small businesses don't have the same resources that larger firms do to help comply with DoD regulations and practices, which can discourage them from wanting to work with us."*

The Cost of Non-Compliance
Putting aside the cost of a data breach or the effects of malware – which are common to government and non-government contractors alike – government contractors face a unique cost for not complying with contractual and regulatory cybersecurity requirements: the False Claims Act.

Clearly, the intent by DoD and the Department of Justice (DOJ) is to step up enforcement actions concerning contractor cybersecurity compliance and they have publicly stated as much. Enforcement of the requirement to meet NIST SP 800-171 has been historically ad hoc. However, recent remarks by the DOJ indicates plans to step up enforcement actions

using the False Claims Act (FCA) at 31 U.S.C. §§ 3729 - 3733. A recent article in *JDSUPRA* said this:

"Despite the costs of compliance, 'knowingly' failing to meet cybersecurity obligations included in government contracts carries significant FCA risk. The FCA defines 'knowingly' to include acting with deliberate ignorance or with reckless disregard. On October 6, 2021, the DOJ announced the launch of its Civil Cyber-Fraud Initiative, which united its government procurement and cybersecurity enforcement efforts to pursue civil enforcement against government contractors who fail to satisfy required cybersecurity standards."[22]

This news puts SBs in a quandary: either pay the high cost of compliance, get out of government contracts, or face severe penalties for non-compliance. The fourth (unspoken) option is "hope you don't get caught." The high cost of compliance may (like the high cost of insurance) drive a decision by cash-strapped SBs to overstate their compliance and hope they are not audited. This is certainly not a recommended strategy but is one that should be acknowledged and one that could be answered by less expensive compliance options.

Affordable SB Cybersecurity Compliance – A Road Map

Government agencies have tried to help SBs by offering many informational and training resources for free. For example, the SBA offers substantial grants (recently totaling $6 million[23]) reasoning:

"…*As we seek to build a stronger and more inclusive entrepreneurial ecosystem, we must innovate and provide resources to meet the evolving needs of the growing number of small businesses. With this new funding opportunity, the SBA intends on leveraging the strengths across our state governments, territories, and tribal governments to provide services to help small businesses get cyber ready and, in the process, fortify our nation's supply chains.*"

While such programs are quite helpful in raising awareness, they do little to directly address the primary hurdle that I perceive impedes entrance into the government SB contracting arena and the defense supply chain, which is the cost and complexity of becoming cybersecure.

What Do We Really Need?

The IT universe has an abundant selection of tools and services currently used by mid-size and larger entities to protect their data and their networks. This is the benefit of being an established and successful organization. Such tools are used by businesses of all sizes in meeting stringent federal cyber requirements, and while their use could benefit smaller businesses, there are three barriers to their use by most VSBs:

1. These tools – even when offered for free via "community editions" – need the services of a qualified expert to properly configure, implement and support.
2. These tools don't necessarily scale well – enterprise tools need enterprise-level (hardware and network) resources.
3. These tools can be prohibitively expensive for a significant number of SBs.

Surveying this patchworked landscape, a valid question is: Given the array of tools and services available, is it possible to create (or assemble) an automated product that combines various bits and pieces of existing inexpensive or free products and services into a functional solution to provide a low-cost cybersecurity solution for the benefit of the SB community?

The short answer to the question is "maybe" but, and this is a significant constraint, some chartered organization – or a small group of organizations – will need to take a strong leadership role. There are so many variables in the mix that a clear path forward is obscured by choices that can form an obstacle to automation and artificial intelligence (AI) solutions.

Using CSIB to Automate NIST Compliance

The first step is defining a narrow use case for Cybersecurity in a Box (CSIB) through assumptions and requirements definitions. This will lead to creating a consensus SB office and network configuration that can comply with the government's cybersecurity requirements. The CSIB use case must touch all areas such as policy and procedures, training, system configurations, hardening, patch management, monitoring, anti-malware, etc. Notionally that would include a single office location, a CSIB domain controller with firewall and other capabilities, etc.

The CSIB solution must address hardware, software, and the various services (below) that will be bundled into an all-in-one solution package, which includes AI-driven document generation and AI-assisted configuration of the system. Post-implementations services, such as remote monitoring, patch management, help desk, and technical support, would also be required. *The plan would be to leverage free tools,*

put those tools behind an intelligent and user-friendly software interface, and connect to a known hardware network (domain) controller that would then manage the network autonomously. Administrative and documentation requirements would be facilitated by AI or other automated tools, and training would leverage freely available government sources.

AI (i.e., so-called Large Language Models) has a significant role to play when it comes to compliance: both in terms of policy and procedure creation as well as automating the security settings and configuration of hardware, software, and networks. The ability of an AI to generate documents that are suitable for the purpose of defining cybersecurity policies and detailed implementation checklists or procedures has been tested and found to be possible. The principal limitation is crafting a question or scenario for which the AI will respond with an appropriate output. The strategy would also include combining an AI tool with other software such that the AI interrogates the system owner in a chat environment and then uses that information to craft a script that automatically invokes various tools so as to deliver parameters used to perform a custom configuration of the system.

Where Do We Begin?

Starting From a Known Position

One suggestion concerning the proposed automated approach is to begin from a common, acceptable baseline through an expertly curated master system. This assumption is key to the proposed "appliance" or CSIB solution that will be further discussed below. One of the key features of this solution is that it is preconfigured with a defined set of hardware, software, and a pre-hardened OS image. Such OS releases are available from several sources such as the Center for Internet Security (CIS), Red Hat Linux, and Microsoft Security Technical Implementation Guide (STIG) Hardened Images for deployment on its Azure platform.[24] Deploying a device with a known state of compliance is a logical first step.

Dialing In the System Hardening

As stated earlier, the software and OS have myriad settings and options that can be switched on or off. Consequently, no single deployment of an off-the-shelf pre-configured system like CSIB will ever be 100% compliant as delivered. That is where automation and AI take over.

Pre-Set-up and Initialization

The CSIB must be specifically configured for the

installed environment. These steps usually require entering unique information concerning network addresses, usernames, initial passwords, domain name, etc. Many commercial products come with elaborate installation programs that prompt the user to fill in specific information. Often, this process is marred by the user's lack of knowledge about very detailed technical specifications such as IP address, DNS server, and other esoteric – but needed – settings. The common result is a user or administrator will set only those values needed to obtain minimal use for the range of specific tasks they perform and skip other settings that impact system performance or security because they don't know what they are or how to properly configure them.

Automation has the potential to significantly improve results and at the same time reduce the time and effort required for this process. The automation will automatically scan the installation network, compiling a complete inventory of hardware and software, and then use AI to determine what settings are needed and automatically apply them. This process will result in cost savings because of the many steps and potential errors that it eliminates.

Data Collection and Interview Process

The first use of automated tools is collecting information to guide the overall cybersecurity compliance process. This differs from traditional software installation that uses a tightly scripted process with only a few variables. The proposed AI approach will be more flexible and will be predicated on a curated library of hardware and software choices that are approved for the CSIB project. The data collection process will begin with an automated system inventory accomplished by scanning the various devices attached to the business network. The automation will confirm information through interaction with the operator to confirm detected values. This process will model commercial approaches such as Spiceworks (see *www.spiceworks.com/free-pc-network-inventory-software/*) and the inventory will be an essential input into the network compliance remediation process.

AI will also use a chatbot approach to interactively identify various information about the business such as ownership, number of employees, CAGE code, unique entity ID (UEI), organizational structure, etc. that will be used later to develop policy and procedure documentation. The AI may either request, or, where permitted, automatically retrieve this data from various

cloud services for the installation process. This search could include information from existing databases, such as SAM.gov. This possibility appears to have been considered by SAM.gov as the site currently offers an application program interface (API) key that would allow other applications to access information in a business' SAM.gov registration.

Automating Network and Device Hardening
One major cost of compliance is an assessment of system vulnerabilities and their remediation to achieve an acceptable baseline. As previously discussed, the assessment of individual systems and networks for vulnerabilities and then correcting them (i.e., hardening) is a necessary – and highly technical – aspect of complying with NIST SP 800-171. Each setting or configuration choice must be set to a specific value and misconfiguration will impair not only security but may also impact performance and reliability. Consequently, this process is typically performed by expert technicians making it both labor-intensive and expensive.

Several tools are available today that scan the system configuration, compare the settings to the appropriate STIG, report deviations or potentially risky settings and – in some cases – automate implementing the preferred settings.

As a test of these tools for their efficacy and ease of use, I performed the following tests:

1. Installed and ran the DISA SCAP tool on a fresh installation of Windows Server 2022 achieving a base score for the Windows component of 44.32% compliant.
2. Installed and ran a free hardening tool in "audit" mode to identify a baseline. The utility performed some 329 checks of which 66 (20%) passed.
3. Re-ran the utility directing it to not only identify non-conformances but to repair as many as possible. This time the score was 329 tests accomplished; 203 (62%) passed.
4. Re-ran the DISA SCAP tool on the now "hardened" installation and achieved an improved score of 90.4% compliant.

The DISA SCAP tool was moderately easy to use and offered a graphical user interface. The tool is designed for system verification in multiple environments and use cases. The existing user interface (UI) does not define these choices therefore the relevancy of the data acquired could be in question; in other words, the

evaluator might select a "CAT I Classified" environment (the default value) without understanding the implications of that choice. This is an obvious area where the AI can assist.

Note that the SCAP tool is not intended as a "once and done" tool – its value is when it is used periodically to test for newly discovered vulnerabilities or revisions in the STIG. The tool is designed to be run from a command line interface and that operation can and should be included in the CSIB capabilities.

A more thorough examination of the test logs indicated the Windows SCAP Score would show additional improvement if time were invested to make changes in the "Manual Questions" portion of the analysis. That effort involves documenting the necessary manual adjustments directed by over 125 questions to verify settings, corporate policies, etc. Improving DISA compliance from the present 90% range was appraised as a potentially long and laborious path and prompted the recommendation for using a pre-hardened OS distribution.

Another set of commercially available tools from BitDefender and Syxsense were trialed with similar results. Both tools identified misconfigurations and supported automated remediation to some degree. However, both tools had similar limitations when remediating and they only were able to immediately address less than 10% of the identified issues. Where the tools differ is SyxSense offered to make many of the updates using its proprietary Cortex automation[25] tool. While both vendors offer many pre-built automation scripts, time and a lack of technical resources precluded more than a cursory examination of what appears to be a promising technology.

Patching
Patching is the application of a software update to correct a known or suspected vulnerability or software bug. The key tool in this process is the Common Vulnerability Enumeration (CVE) that uniquely identifies a specific vulnerability. Vulnerabilities and their corrective actions are routinely published via STIG and will be identified by the automated scanning of the network previously discussed.

Patching can occur by applying automatic updates to software from the publisher or by using a specific patch management tool to automatically apply "hot fixes" in response to a recently discovered vulnerability or bug. Automated patch management compares the version of software currently installed with the database

at CVE.org (or similar) to identify vulnerabilities and then uses proprietary software to push and install the update (patch) to the affected system.

Patching of the operating system is automated via security updates; enabling this feature is part of the system hardening process. Application hardening can be automated using either third-party products (generally applicable to Windows) or by scheduled updates of the installed packages on Linux. Both approaches were tried and worked with the advantage of going to open-source software that provides the service at no cost.

Commercial patching tools from BitDefender and SyxSense were trialed, and both proved effective in identifying software that needed patching and automatically deploying the patched software. Once configured, the tools continued to perform this function automatically.

Can AI Be Used for Policy and Procedure Creation?

Written policies and procedures are central to a mature cybersecurity implementation. The role played by policy and documentation in the cybersecurity process is a component of what is evaluated in the certification process. An auditor (assessor) asks, "Do you have a policy for x?" Once the policy is reviewed the auditor then proceeds to gather information documenting compliance with the procedure or process.

Generating the policies, procedures, and other documentation associated with cybersecurity is a time-consuming and costly process – even when well-crafted templates are used. For example, one vendor licenses its templates for $4,700 yet advises clients they will still need the services of a consultant (25 hours @ $250/hour) to fill them in or at least advance them to the point where they have been adopted for the client's unique circumstances.[26] Automating this process using open-source templates and AI could potentially reduce the cost of compliance by $10,000.

AI engines such as ChatGPT are well publicized. To determine how effective they would be at generating the required policies and procedures documentation, I used ChatGPT to create sample documentation for a fictional SB. As expected, the quality and usefulness of the AI output was strongly driven by the detail and phrasing of the input. When I used a template containing common business information including business name, telephone, email, website, address, and other specifics, the quality of the AI output improved,

albeit at the risk of making such information retained by the AI and open to possible exploitation. Bifurcating this process to anonymize the data given to the AI and later replacing it with the correct information is recommended.

Note: One negative aspect of AI is non sequiturs can occur when the AI inadvertently or illogically connects two concepts, therefore prudence dictates a thorough review of the AI output for AI-produced documentation.

As a part of the testing regimen, I first looked at the most obvious area of automation – policies and procedures. When I queried ChatGPT: "*What policies and procedures would be needed to comply with NIST SP 800-171?,*" it provided a list of recommended documents that was reasonably complete but of little use.

To further test the AI ability, I provided a more specific request to ChatGPT: "*Provide a system security plan document as it would be written by a cybersecurity consultant implementing NIST 800-171 in a 10-person SB. The business name is XYZ inc. and its address is 123 Any Street, Albuquerque, NM 87120. It is registered in SAM.gov as a SB Sole Proprietorship in NAICS 541611. The business has only laptop computers and uses an ad-hoc workgroup network typology via a single (shared) wireless access point.*"

The resulting document was minimally acceptable and addressed topics such as: Introduction, System Overview, Security Objectives, System Description, System Categorization, Security Controls, Incident Response Plan, System Security Procedures, Access Control, Audit and Accountability, Identification and Authentication, Security Assessment, Plan for Continuous Monitoring, References, and Review and Revision History.

The query was then rewritten to request more detail such as including best practices, specifics on who, what, and how, etc. As expected, with each iteration and each detail added to the query, the specificity and acceptability of the policy document improved. The AI was also able to successfully transform the policy document into a procedure and implementation checklist. The implication is AI can provide the documents needed to fulfill much of the policy and procedure requirement if properly queued for a response. This opens the door for a specific application (front end) for an AI program that would pre-process business information or specifics then queue the AI program with the results. This approach would mimic commercial sources such as Tugboat Logic that includes a prebuilt library of 40

policies to take a lot of the spadework out of creating information security (InfoSec) policies. [27]

Findings

As previously discussed, the internet is teeming with cybersecurity tools and utilities that could be used to create an efficient solution for VSBs to achieve compliance with the "core" requirements of NIST SP 800-171. The CSIB, if properly developed, will save money, and provide the incentive for VSBs to enter or remain in the DIB.

The Role of AI

AI has a significant role to play when it comes to creating policy and procedures for an organization. With the right data, interaction between system tools, and a well-crafted script or scenario, a technician can generate the documentation needed to address the requirements of NIST SP 800-171 and comply with *DFARS* or *FAR* clauses. It is important to recognize that the tool cannot do it all and an IT expert(s) will have to review and validate the documentation, but it will be far more efficient than having to spend the considerable amount of time and resources required to manually create them.

What's Not Working?

Government agencies have tried to draw SBs into the DIB through a multitude of programs. The continued flow of money and new programs is testament to their lack of success. Why? Because such grants, while being quite helpful in raising awareness, do little to directly address the nuts and bolts of compliance with NIST SP 800-171.

The situation remains that the SB entrepreneur must make a sizable investment just to be considered for a contract award. The cost of that investment is in the range of $37,000 to $50,000 at the low end and potentially more for businesses that are more data-centric or that have multiple office locations. Until this root cause is addressed the problem will persist.

A Better Solution

We need an innovative solution developed by experts that takes advantage of the array of tools and services available to develop a functional product that delivers a low-cost cybersecurity solution for the benefit of the SB community and ultimately the DIB. This can be done by accomplishing the following steps:

1. Clearly define the core requirements tailored for the target audience. This would comprise the various elements of a compliant (to NIST SP 800—171 and DFARS 252.204-7012) solution that touches all the subordinate or inferred requirements such as policy and procedures, training, system configurations, hardening, patch management, monitoring, anti-malware, etc. discussed above and then evaluating that end state with respect to which elements can best be addressed – fully or partially – by an automated solution.

2. Assemble a CSIB using inexpensive hardware and free or very low-cost software that is *expertly curated and configured to a presumptive baseline*. The target cost for this appliance is similar to the price for a high-quality laptop or desktop computer – probably $2,500 to $3,500 plus another $2,000 for services to set up and support the product. To foster innovation and reduce cost, the CSIB appliance would combine the functions or features of many stand-alone devices such as firewalls, routers, domain server, proxy server, email server, and web server, thus eliminating the cost and complexity of procuring and configuring each item separately and making them work harmoniously. Each appliance would include a license for the selected OS, a collection of software utilities united by a common interface, and access to a selection of government-provided or sponsored cloud services for an agreed-upon number of users.

3. Develop an installation and set-up configuration process – likely AI-based or cloud-based – that walks the SB owner through a dialogue using a selection of utilities to probe the company's IT infrastructure, including configuration, status, and other information required to create customized documentation and a Plan of Action and Milestones (POAM) for next steps. Help desk and online support services would be an essential factor in the success of such a solution and it could be performed by a one-time screensharing session with an expert technician included in the cost. Automation (AI) would be heavily leveraged in this process to create customized instructions for addressing unique circumstances.

4. Connect the appliance to a network. Then securely add users and their workstations or other devices to the network via an automated process that includes pushing various configuration (or profile) settings, policies, and software to their devices. An integral part of the onboarding process would be conducting cybersecurity training for users.

5. Enroll the system into a secure cloud environment provided or subsidized by the agency for the express

purpose of storing or accessing controlled unclassified information (CUI) related to contract performance.

Nothing is New Under the Sun

If the preceding sounds like a regurgitation of an existing approach, you're correct. In many respects it is what we have now with a couple of nuanced twists. But it is these twists that make it possible.

The first departure is a standardized network controller (the CSIB) device that is pre-configured to eliminate many of the uncertainties or variables in securing the network thus providing a known starting point for the security process. It would be simple for the government to specify what that device would be and have a contractor build it to specification. But doing so would introduce an entirely new set of problems:

- **Political pressure.** Every hardware and software supplier imaginable would compete for the rights to manufacture the CSIB solution and those with political sway would use such leverage to tip the scales in their favor.
- **Lack of innovation.** The solutions offered by government 'experts' would likely be some assemblage of existing or off-the-shelf "enterprise" solutions. True innovation and emerging technologies would be bypassed in favor of the better known yet expensive solutions.
- **Overspecification.** Government designs have traditionally been "belt and suspenders" solutions favoring robust but expensive and frequently duplicative designs.
- **Bureaucracy.** Specifying and designing a CSIB in a government environment would be a lengthy process complete with internal competition to own the process, multiple levels of approval, and egos at stake. It would be Pentagon Wars II. (see *www.imdb.com/title/tt0144550/*)

What's in the Box?

The exact design and specifications of the CSIB would be up to the vendor. It is a performance requirement subject to review and approval by an authorized individual or agency. As a reminder, the CSIB appliance is envisioned as a small scale (25 or fewer users) domain server with integrated firewall, router, and system management capabilities. It is not intended to be a productivity workstation nor an application/database server.

Ultimately, it will be the vendors who will compete for this niche market who will design and configure the appliance, but my experience from my lab environment shows the solution need not be extraordinarily expensive. The primary cost will be in the initial selection and configuration of hardware and software. The power and cost savings of such a system will come through leveraging appropriate software and utilities from a near-endless library of open source (and free) products and the flexible architecture afforded the host system. The 25-user limit is intentionally arbitrary. SBs below this point are likely to need and appreciate the simplicity of a CSIB approach and their workload for the CSIB hardware will be well within its limits.

Discussion and Implications

How Do We Get a CSIB Appliance?

Market forces have yet to provide such an appliance. One could surmise that only the author has envisioned such a device – but I'm sure that's not the case. Low-end versions of these security appliances exist, and one home device (the Bit Defender Box) is available for only $200 yet it provides an impressive degree of enhanced security suitable for home or home office use. The real issue is creating such an appliance may not be beneficial to the large OEMs. The design and programming of a CSIB device would be trivial for most computer science graduates – and a good number of hobbyists. The pros of such a device strongly favor the VSB operator but computer and software companies would prefer to sell them more elaborate (and profitable) proprietary solutions that lock them into their ecosystem.

One approach would be for an organization or government agency to sponsor a competition for developing the CSIB with the competition winner(s) eligible for a cash award and the ability to market their product as an "approved system." Using such a system would expedite any compliance review or assessment. Potentially, the best source to create such a device will be a SB who understands firsthand the plight of SBs in achieving compliance.

The system or systems judged to be the best would be tested and verified by NIST or another agency that would approve the design for use. All software and hardware would have to be either commercially available or open-source. Any new software (i.e., user interfaces to existing tools, expert systems to generate AI scripts, etc.) would be licensed in the public domain. The incentive would be only the system built by or to the engineering specifications of the winner and would be officially recognized as part of a compliant solution.

Small and open-minded developers are likely to produce the most innovative solutions – eschewing traditional constraints, enterprise solutions, and digging deep into the library of open-source software and tools, using hardware dismissed by enterprise-oriented designers. The goal is to enable a 25-person SB to meet the requirements – not a multi-branch enterprise with several thousand employees.

Getting to the Finish Line

Getting to the finish line will take leadership. I suggest that whatever group is given the authority to charter the development of a CSIB develop a turnkey package of hardware, software, and support infrastructure. Winners will have their solutions tested and vetted by NIST and approved for sale with a certificate of hardware and software compliance.

Installation and setup of the CSIB appliance could be performed by either the business or remotely assisted by a security expert in a few hours and at a cost of well under $1,000 – over and above the cost of the appliance. Total cybersecurity costs using this approach would be in the $2,500 to $3,500 range for hardware and software and the first year's subscription to various services with a total price target under $5,000. Year-on-year expenses for maintenance, software licensing and subsidized support services are estimated at $2,000 per year.

It's possible to get there. I've given you a roadmap. All it takes now is commitment.

Acknowledgements

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ORAL PRESENTATIONS – EXPLORING FITNESS FOR USE AND ASSOCIATED OUTCOMES OF A FORGOTTEN TOOL

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Abstract

PURPOSE: The purpose of this paper is to examine the characteristics of procurement conducive to the oral presentations of offers and the limited prevalence of their use in procurement.

DESIGN/METHODOLOGY/APPROACH: This study uses a mixed-method approach combining a survey of buyers with semi-structured interviews.

FINDINGS: Findings indicate that buyers tend to use oral presentations when procuring services to avoid uncertainty in supplier behaviors. Findings also show that oral presentations don't always yield the expected benefits.

RESEARCH IMPLICATIONS: This paper augments the literature on supplier selection by providing unique insights into the impact of oral presentations on buyers' perceptions of contract performance and buyer satisfaction.

PRACTICAL IMPLICATIONS: This paper provides insights for the surprisingly rare use of oral presentations and suggest that certain measures should be taken to adapt the practice of oral presentations to more closely fit its theoretical potential to add value to procurement outcomes.

ORIGINALITY/VALUE: This study offers a novel contribution to procurement literature, shedding light on the effects of ex ante uncertainty of prospective supplier behavior and the bounded rationality of buyers during supplier selection.

Keywords
oral presentations, transaction cost economics, procurement, source selection, government contracting

CMBOK Competencies
2.0 Pre-Award
3.0 Award

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Introduction

In industrial buying, buying organizations usually issue a request for proposals (RFP) that describes the buying organization's needs, the information required from commercial firms (offerors), the timeline for proposal evaluation and contract award, and an explanation of how the proposals are to be evaluated.

In response, the offerors usually submit a written proposal addressing all the required information such as cost or price, qualifications, past performance, technical approach, and proposed schedule. For some tenders, the buying organization will invite offerors to present their proposals orally rather than, or in addition to, a written format.

Conducting oral presentations during source selection emerged as a promising acquisition reform in the mid-1990s, purporting to expedite the source selection process (Rumbaugh, 2010) and enhance communications and exchanges of information between offerors and the government (Hannaway, 2000; Hawkins et al., 2021).

Furthermore, oral presentations are claimed to improve the ability to select the best offer, and therefore, the best supplier (PEA and OFPP, 1996) by helping the buying agency reduce risk. Risk is reduced by enabling the buying agency to gauge the extent to which the offeror understands the buyer's needs and the technical requirements of contract performance (Cibinic et al., 2011). As such, the Federal Acquisition Institute (FAI) currently lists oral presentations in its "Periodic Table of Acquisition Innovations" (FAI, 2022).

Mysteriously, despite the touted benefits of oral presentations, their use in public procurement has waned. A search of solicitations posted on the U.S. government's System for Award Management portal identified only 11 of 38,718 active procurements containing the search term "oral presentation." This begs a question as to whether buying organizations are realizing the advertised benefits of oral presentations.

The underutilization of oral presentations further suggests that there may be barriers to use that are not identified or fully understood. It also raises questions as to the sourcing situation that is conducive to using oral presentations. Hence, there appears to be a disconnect between oral presentation policy and actual use. As such, this study focuses on the characteristics of a procurement that are conducive to oral presentations and the outcomes associated with them.

In 1996, the Procurement Executives Association (PEA), in partnership with the Office of Federal Procurement Policy (OFPP), published "Guidelines for the Use of Oral Presentations" (PEA and OFPP, 1996). This guide vaguely reported the results of a survey of government and industry representatives.

While no details of the study's methodology, validity, or reliability were reported, the study reported that oral presentations: (1) improved the source selection

process (although it did not report specifically how or to what extent), (2) saved the government buyer time and money after a learning curve (although it did not report by how much), (3) allowed offerors an opportunity to demonstrate capabilities, and (4) had mixed effects on offeror's proposal preparation time and costs (PEA and OFPP, 1996). However, by 2001, research interest in the practice decreased without a rigorous examination of the value of oral presentations.

Oral presentations might be an under-appreciated tool that yields heretofore unknown benefits to buying organizations and their suppliers. It is important to understand the situational factors that render an oral presentation more likely to successfully yield those benefits. A recent literature review of public procurement identified a need for a better understanding of supplier selection and evaluation activities in public institutions (Patrucco et al., 2017).

Therefore, the purpose of this research is to test a theoretical explanation of the conditions that lead to the use of oral presentations and the underlying reasons why the use of oral presentations is not more ubiquitous. Drawing on transaction cost economic theory, it identifies various sourcing strategy decisions and actions that affect the use of oral presentations. This study specifically addresses the following research questions:

RQ1: What characteristics of the procurement are conducive to oral presentations?
RQ2: What outcomes are associated with the use of oral presentations?
RQ3: Why is the use of oral presentations not more ubiquitous?

This study uses a mixed-method approach combining surveys of buyers with semi-structured interviews. A sample of 328 buyers involved in government source selections is quantitatively examined to explore the antecedents of oral presentations and their impacts on buyer satisfaction, contract performance, and procurement administrative lead time (PALT). Next, semi-structured interviews with six buyers were conducted as a post-hoc check to understand the results of quantitative analyses and further investigate why buyers do not often use oral presentations during source selection.

The findings contribute to several streams of literature. First, it augments the literature on supplier selection by providing unique insights into the impact of oral presentations on buyers' perceptions of contract performance and buyer satisfaction. Second, it expands the research by examining the factors affecting buyers' use of oral presentations. Third, drawing on Transaction Cost Economics (TCE) theory, it contributes to the literature on buyer-supplier relationships by revealing the impact of ex ante uncertainty of the prospective supplier's potential behavior and bounded rationality of the buyer in supplier selection. Fourth, it provides insights for the surprisingly rare use of oral presentations and suggest that certain measures should be taken to adapt the practice of oral presentations to more closely fit its theoretical potential to add value to procurement outcomes. The government often struggles to attract new suppliers to government business (Bresler and Bresler, 2021) for the sake of increasing competition and innovation, and meeting socio-economic goals; thus, understanding barriers is paramount.

These contributions are meaningful since the importance of public procurement is growing (Flynn and Davis 2014; Patrucco et al. 2017). Over 60% of Fortune 1,000 firms partake in U.S. government contracts (Josephson et al., 2019). Procurement constitutes a large portion of government spending (Wontner et al., 2020), estimated as 12.6% of the gross domestic product of most nations (OECD, 2021). In 2022, the United States spent $1.1 trillion on government contracts, representing nearly 12% of the $9 trillion annual budget. While public contract spending has substantial economic impact, public procurement is understudied (Josephson et al., 2019).

The remainder of this manuscript is structured as follows. First, it provides a review of the relevant literature on oral presentations and formulates hypotheses. Next, it introduces the methodology and report the findings. It then presents a discussion of the findings and implications for theory and practice. Finally, we identify the research limitations and offer an outlook for future research.

Theoretical Background and Hypothesis Development
Transaction Cost Economics (TCE)

TCE is among the most utilized theories in supply management research (Giunipero et al., 2018). TCE proposes that transaction costs, along with the price of the purchased products or services, determine a firm's make-or-buy decisions (Williamson, 2008).

TCE places a firm in the epicenter of governance of economic activity and focuses on transactions within and between firms (Hoffmann et al., 2013).

Behavioral assumptions, transaction dimensions, and governance mechanisms are the three groups of parameters that form the framework of TCE (Carter and Hodgson, 2006).

Behavioral assumptions are characterized by bounded rationality and opportunism. Bounded rationality suggests that human decisions are rarely ever optimal since they lack computational and cognitive ability, although they intend to behave rationally (Speklé, 2001).

Williamson (1975, p.6) defines opportunism as "self-interest seeking guile" that occurs before or during the transaction by such activities as providing incomplete or inaccurate information, distorting data, disguising attributes or preferences, confusing transactions, obfuscating issues, cheating, deception, stealing, breach of contract, and misrepresentation (Hawkins et al., 2008; Williamson, 1987, 1993). In contract arrangements, special emphasis is placed on the prevention of opportunistic behavior of suppliers (Zheng, et al., 2008).

Williamson (1979) denotes that uncertainty, asset specificity, and frequency are the three dimensions characterizing transactions, and he stresses that uncertainty is the critical attribute. Empirical studies in TCE have investigated how uncertainty and opportunism, together or distinctly, impact governance decisions (Shin, 2003). Due to uncertainty and opportunism, firms increase contract terms and monitoring, which increase transaction costs. When the cost of outsourcing surpasses the cost of organic performance (i.e., within the hierarchy), the firm's boundaries will expand to absorb the function (i.e., the governance decision).

TCE has been broadly applied to examine sourcing phenomena (Grover and Malhotra, 2003, Spina et al., 2013) and has been used to explain how behavioral uncertainty emerges in the existence of highly appropriable assets that can be opportunistically availed by parties during or before the transaction (Subramani and Venkatraman, 2003). In line with the prior research, this study investigates the underlying role of uncertainty on government buyers' decisions.

Oral Presentations
A rewrite of FAR Part 15 in 1997 allowed agencies to receive proposals via face-to-face presentation (Edwards, 2006). An oral presentation, therefore, is defined as the submission of proposal information orally (Edwards, 2006). Source selection can be based solely on an oral proposal supplemented by representations, certifications, and a signed offer sheet, by not requiring a written technical proposal (Stewart and Fulop, 2019).

The *FAR* explicates considerations for the use of oral presentations, including the source selection team's ability to evaluate the oral information. Obviously, if substantial amounts of quantitative data must be evaluated, an oral presentation would be an impractical means to communicate that data. Other considerations include the need to incorporate any of the orally delivered information into the resultant written contract, the effect on the efficiency of the source selection, and the impact on small businesses – particularly, costs such as preparation and travel (FAR, n.d.).

Limited research validates differences in perspective not only in which situation to use oral presentations but also how they are used. In interviews of practitioners in different government organizations, Schilling (2000) reported divergent preferences for using oral presentations across three federal and state organizations, suggesting either extensive use, non-use, or selective use.

Relationship of Oral Presentations With Requirement Type and Source Selection Method
Henry (1999) suggests that non-complex buys are not appropriate for oral presentations. Conversely, Hannaway (2000) claims oral presentations are appropriate for routine service contracts (Hannaway, 2000). Although prior research mentions some appropriate conditions leading to the use of oral presentations, it has not considered the role of uncertainty. This research indirectly examines the role of ex ante uncertainty of the prospective supplier's potential behavior on a buyer's decision to utilize oral presentations.

Per TCE theory, uncertainty may arise due to the threat of opportunism in the market transactions. Previous studies of TCE point out that uncertainty and opportunism can impact governance decisions; hence, contractual (e.g., more stringent contract terms and quality inspections) or relational mechanisms may be used as a response to uncertainty (Krishnan et al., 2016). Thus, a high level of uncertainty might lead a buyer to favor oral presentations of proposals.

Oral presentations are claimed to improve communication and exchanges of information between the buyer and offerer (PEA and OFPP, 1996); thus, oral presentations can be an effective mechanism that safeguards against the opportunistic behavior of the supplier by limiting uncertainty.

Extant literature suggests the relevance of communication in buyer–supplier relationships (Lu et al.,

2019). Oral presentations help the buying agency reduce risk by enabling it to gauge the extent to which the offeror understands the buyer's needs and the technical requirements of contract performance (Cibinic et al., 2011). Furthermore, oral presentations provide a venue for the source selection team to evaluate the offeror's capabilities, staffing resources, past performance, and work plans or approaches (FAR Part 15.102, 2022) as a way to build trust and confidence. Therefore, oral presentations reduce the uncertainty on the offeror's capability of and commitment to performing the contract well and on time.

Hannaway (2000) suggests that oral presentations are appropriate for service contracts. This is logical since there exists a higher level of uncertainty in contracts for services due to the properties of services. Services can be intangible (i.e., nothing physical to evaluate), heterogeneous (i.e., variability in human performance), and perishable (i.e., "delivery" – performance – must be done correctly and at the time demanded, which expires) (Ellram and Tate, 2015; Finkenstadt et al., 2016). Conversely, goods are usually standardized commercial products and can be inspected ex-post.

For services, there are usually more specifications required to be defined – some of which cannot be defined entirely, which causes uncertainty. Buyers might expect more uncertainty in supplier behavior when services are purchased rather than goods. Such properties make the procurement of services risk-laden and challenging to evaluate ex-ante (Parasuraman et al., 1985). Given these uncertainties, especially when compared to purchasing goods, buyers might resort to oral presentations as a way to address and reduce the uncertainties associated with service contracts.

As such, we posit that:

H1: Buyers are more likely to use oral presentations when services are purchased.

Complexity, environmental dynamism, performance risk, and uncertain requirements associated with buying situations increase the importance of a supplier's performance and lower the concern for a contract's cost and price (Hawkins et al., 2016). In these conditions, factors such as the supplier's past performance, technical approach, technical capabilities, personnel qualifications, and reputation prevail, and a full tradeoff of price and non-price evaluation criteria becomes the appropriate source selection method. In contrast, where the cost or price of the contract prevails, a lowest-price, technically acceptable (LPTA) source selection method becomes appropriate.

Gansler and Lucyshyn (2013) state that LPTA is inappropriate when human lives are at risk or the technology to be acquired is complex and unprecedented. Federal government regulation (DFAR 215.101-2-70) asserts that buying agencies should avoid, to the maximum extent possible, utilizing LPTA in the case of procurements where uncertainty is high and performance quality is critical, such as for the acquisition of information technology and cybersecurity services, other knowledge-based professional services or training, personnel protective equipment, or logistic services in contingency operations.

Thus, the *FAR* implies that using a full-tradeoff method is more appropriate for acquisitions in which there is a high level of complexity, ambiguity in the required work, and quality is critical. The top reasons for sustained GAO protests between 1990-2019 involved improper use of evaluation procedures, poor recordkeeping of the process employed, or scope-related issues (Dawson, 2021).

These findings suggest that agencies may be most at risk (and incidentally feel most uncertain) when evaluation procedures are at risk of being violated or improperly communicated (62% of cases), or they may be uncertain about their full understanding of the requirement and the ability to make an award decision within the stated scope of their solicitation (10% of cases).

Under the full-tradeoff method, the buying agency is allowed to pursue the best value by paying more for better past performance and/or superior capability when warranted (Hawkins et al., 2016). A full tradeoff requires detailed evaluation of offers and documenting important differences in proposals to justify paying a higher price.

Since oral presentations help to prevent opportunistic behavior of the supplier by limiting uncertainty and risk through facilitating a better understanding of the proposal, buyers may consider that extra value can be achieved in a full tradeoff by utilizing oral presentations.

Thus, we propose that:

H2: Oral presentations are positively related to using the full-tradeoff source selection method.

Relationship Between Protest Risk and Oral Presentations
A bid protest is a challenge to the award or solicitation of a government contract for the procurement of services or products (GAO, 2022), and is a common mechanism for ensuring integrity, fairness, and transparency in public policies worldwide (Gordon,

2013). The protest is a corrective mechanism that allows for relief to the offeror, sometimes in the form of a second chance to win a contract and sometimes with legal expenses reimbursed.

For the buyer, a protest is disruptive since the contract award or performance is suspended until the protest is resolved. A bid protest can occur due to an alleged error or a mistake committed by the source selection team (Hawkins et al., 2016).

For example, sometimes the buying team: (1) fails to strictly follow its selection process or use its evaluation criteria prescribed in its RFP, (2) fails to adequately document their ratings of proposals and rationales for award decisions, and (3) treats offerors differently during the evaluation resulting in unfair discrimination (GAO, 2014).

From 2017 to 2021, an average of 2,200 protests were filed with the GAO annually. Only 15% of these protests were sustained, but more than 40% of the protests resulted in a corrective action or settlement prior to a decision (Perez, 2021). This "effectiveness rate" – which accounts for sustained protests and corrective actions/settlements – increased to 57% in 2023 (Perez, 2023). Previous research found a relationship between oral presentations and fewer bid protests (Hawkins, 2021), indicating a better understanding of the offer and a more accurate evaluation.

Bid protests lead to longer procurement lead time (31 U.S.C. § 355I, 2022) and, consequently, increase buying agencies' transaction costs (Hawkins et al., 2016), delay receipt of services and goods, and delay payment to suppliers (Hawkins et al., 2021). As such, protest risk refers to the sum of the products of magnitudes of the negative outcomes and the probabilities of those negative outcomes that arise from a bid protest.

Since protest risk implies risk to the buyer (personally and its organization's mission) if a protest is received and since oral presentations have been associated with fewer bid protests, buyers will be inclined to utilize oral presentations when the magnitude of negative outcomes of a protest is large. Therefore, we suggest that:

H3: Buyers are more likely to use oral presentations when there is a high protest risk.

Relationship Between Discussions and Oral Presentations
Discussions (i.e., negotiations) are employed to attain best value by enabling buyers to discuss with each offeror the aspects of their proposals such as weaknesses, deficiencies, and their adverse past performance (FAR part 15.306. 2022). Discussions provide a venue for information exchange between each offeror and buyer; therefore, they lower risk and uncertainty.

Williamson (1975) posits that the combination of human behavior (bounded rationality and opportunism) and uncertainty can lead to difficulties in exchange (Shin, 2003). Consequently, discussions can help to prevent opportunistic behavior of the offeror and adverse selection risks by reducing uncertainty.

Oral presentations can invoke discussions (Hannaway, 2000). Buyers do not want to risk accidentally opening discussions while conducting oral presentations (largely, to avoid prolonging the source selection), which could engender a bid protest if discussions are not then properly held with all offerors.

Not only do buyers often wish to avoid discussions so as to avoid a bid protest and longer procurement lead time; they also want to receive the offerors' best offer up front. To do so, the buyer must advise the offerors that an award may be made without conducing discussions. Since oral presentations often coincide with discussions, oral presentations are expected to be negatively related to the intent to award a contract without discussions. Hence, we postulate that:

H4: Buyers are less likely to use oral presentations when they intend to award a contract without discussions.

Relationship Between Procurement Administrative Lead Time and Oral Presentations
The purported purpose of oral presentations is to streamline and expedite the source selection process (Rumbaugh, 2010). Procurement administrative lead time (PALT) represents the actual time spent to accomplish a source selection (Hawkins et al., 2016) from the buyer's receipt of a requirement from an internal user to the contract award. PALT is important since the amount of time consumed in the sourcing process can delay the receipt of needed goods and services. "Complaints of excessive PALT continue to plague the acquisition system and present challenges to both government and industry" (Berteau, 2018).

In the context of inventory management, longer planning horizons caused by greater PALT increase forecast error, resulting in excess inventory or stockouts, and, thus, also increase safety stock levels (Gill and Hawkins, 2021). Presenting information orally can eliminate the need for suppliers to write lengthy proposals and for buyer teams to evaluate them, thereby rendering the evaluation more efficient.

Based on a survey of government and industry

representatives chartered by the PEA in 1995, oral presentations save the government buyer time and money, after a learning curve, and reduce the offeror's proposal preparation time and costs (PEA and OFPP, 1996).

The study mentioned one procurement conducted by the Internal Revenue Service that showed a reduction of 18 days, and a reduction by the Nuclear Regulatory Commission of five days. Hannaway (2000) cited acquisitions that saved 60 days and at least 30 days for the Air Force and the National Oceanic and Atmospheric Administration, respectively.

Oral presentations decrease transaction costs indirectly by expediting PALT because longer PALT adds to transaction costs, which denote monetary costs of resources allocated to carry out a source selection (Hawkins et al., 2016). Thus, we posit that:

H5: Oral presentations are negatively associated with actual PALT.

Oral Presentations' Effect on Buyer Satisfaction and Contract Performance
Oral presentations support the buyer's decision-making process by providing an opportunity to evaluate purchasing criteria and by experiencing firsthand what it will be like to work with the supplier. Oral presentations provide the supplier an opportunity to reduce the source selection team's uncertainty that the supplier has the capability to satisfy the buyer's needs (Stewart and Fulop, 2019).

The enhanced communication enables the buying team to better understand the supplier's proposal (Hannaway, 2000). This should translate to fewer disputes and greater odds of successful supplier performance. Likewise, better communication enables the supplier to better understand the buyer's requirements, increasing the likelihood that those requirements will be satisfied.

As evidence of the potential effect on performance, one study found that a better definition of contract requirements (facilitating a supplier's better understanding) improves the supplier's level of service quality delivered to the buyer (Hawkins et al., 2015). When supplier performance improves, in turn, buyer satisfaction should increase.

In an unconventional twist of satisfaction and service quality literature, Ramsay et al. (2013) examined the supplier's satisfaction with and perceptions of quality of buyer's purchasing offerings (i.e, the RFP). The idea is that suppliers have needs during the tendering process, and the extent to which those needs are met affects suppliers' decisions such as willingness to satisfy buyers' needs, willingness to submit an offer, intent to pass on costs to buyers, and performance.

They further identified sources of supplier benefits such as personal meetings with the buyer, buyer attentiveness, buyer receptiveness to supplier ideas, free information flow, staff access, fairness, trustworthiness, honesty, and a good match between the buyer and the supplier's preferences. Hence, helping the supplier can help the supplier contribute to the buyer's sourcing goals. Thus, we suggest that:

H6: Oral presentations are positively related to supplier performance.

H7: Oral presentations are positively related to buyer satisfaction.

Methodology
Data Sources
This research relies on existing survey data collected for the purpose of exploring bid protests (Calandruccio et al. 2014; Hawkins et al. 2016; Hawkins et al. 2021). However, this study is independent from that research and offers a unique perspective. While the previous research focused primarily on bid protests, this study delves into the characteristics of procurement processes that are conducive to the use of oral presentations and investigates why their adoption remains limited. Post-hoc interviews with six buyers were conducted to validate and explain the findings in this study. The unit of analysis for both survey and interviews is a government source selection.

Survey Sample
The survey sample consisted of U.S. government contracting personnel who had conducted a formal, best-value source selection pursuant to FAR Part 15. Dillman's (2000) "Tailored Design Method" for internet surveys was employed in collecting data. An online survey was emailed to a list of buyers whose email addresses were gathered from the Federal Procurement Data System-Next Generation (FPDS-NG) database, which curates federal spending data from contracts valued at greater than $3,000. Respondents were asked to answer the survey questions based on their most recently completed formal source selection to avoid respondents' selection bias. Of the 3,882 surveys emailed, 350 responses were received. Twenty-two responses were removed due to outliers in PALT and contract value, resulting in 328 usable responses,

Table 1. Data Demographics

Characteristic	Sample size	Percentage
Gender		
Female	167	49.4%
Male	171	50.6%
Education		
High school (or equivalent)	8	2.4%
Associate's degree	11	3.4%
Bachelor's degree	124	37.8%
Master's degree	179	53.9%
Doctorate degree	8	2.5%
Oral Presentations		
Used	29	9%
Not used	299	91%
Type of Purchase		
Services	197	60%
Other	131	40%
Source Selection Method		
Full tradeoff	208	63%
LPTA	120	37%
Intended to award a contract without discussions		
Yes	255	78%
No	73	22%
Dollar Value		
0 - $499,999	36	11%
$500K - $999.999	13	4%
$1M - $9,999,999	100	30.5%
$10M - $49,999,999	92	28%
$50M - $99,999,999	51	15.5%
$100M - 499,999,999	29	8.9%
$500M - $999,999,999	6	1.8%
$1B +	1	0.3%

corresponding to a response rate of 9%. This response rate is normal for the nature of this study (Alreck and Settle, 2004) and similar to the response rates of previous studies in public procurement (Finkenstadt, 2020; Saastamoinen et al., 2017).

Survey Measurement

Oral presentations, type of purchase (services), type of source selection process (full tradeoff), and intent to award without discussions were categorical variables. Perceived buyer satisfaction, perceived supplier performance, and perceived criticality were interval data (seven-point Likert scale), while actual PALT, protest risk, and dollar value of the contract were continuous and objectively measured. Data demographics are provided in Table 1, and variable and construct measurements are provided in Table 2.

The values of planned PALT were not normally distributed (Kline, 1997). Although logistic regression is robust to nonnormal data, planned PALT scores were transformed to mitigate distortion due to extreme values.

Measurement Model

Confirmatory factor analysis (CFA) was employed on the multi-item variables using M-Plus v8.7. Results indicate an excellent model fit (χ^2 = 148; df = 65; RMSEA=0.062; CFI=0.98; TLI=0.98) (Hu and Bentler, 1999). Composite reliability (CR) was computed to assess measurement reliability for each factor. CR values of each factor were found to be greater than the threshold of 0.70. The squared root of average variance extracted (AVE) for each construct is greater than the paired correlation, suggesting discriminant validity (Fornell and Larcker, 1981). The average variance extracted (AVE) for each construct exceeded the recommended cut-off

Table 2. Variable/Construct Measurement

Variable	Definition	Data Type
Oral presentation	It measures whether the respondent utilized oral presentation for the contract.	Binary
Services	It measures whether the type of purchase was a service.	Binary
Full tradeoff	It measures whether full tradeoff was the type of source selection process.	Binary
Protest risk	It was computed as the sum of the products of 5 items each measuring threat vulnerability and threat severity that was perceived by the respondent in terms of the negative consequences of a bid protest (Hawkins et al.,2021).	Continuous
Intent to award contract without discussions	It measures whether the respondent intended to award the contract without discussions.	Binary
Actual PALT	It measures how much time the procurement team spent to accomplish the source selection.	Continuous
Perceived buyer satisfaction	It measures the respondent's perception of the level of buyer satisfaction with the purchased product or service. The scale was adapted from Cannon & Perreault (1999).	Interval 7-point Likert 3 items
Perceived contract performance	It measures the respondent's perception of the overall level of performance provided by the supplier in delivering the product or service. The scale was adapted from Fawcett, Smith, and Cooper (1997), Cannon, Achrol, and Gundlach (2000), and Prahinski and Benton (2004).	Interval 7-point Likert 7 items
Perceived criticality (control variable)	It measures the respondent's perception of the level of importance of the service or product purchased to the buying organization's mission success. The scale was adapted from Schoenherr & Mabert (2011).	Interval 7-point Likert 7 items
Dollar value (control variable)	It represents the monetary value of the awarded contract inclusive of all options.	Continuous

Table 3. Reliability Measures and Bivariate Correlations

Construct	AVE	CR	1	2	3
1. Buyer Satisfaction	0.75	0.90	(0.87)		
2. Contract Performance	0.79	0.96	0.665**	(0.89)	
3. Criticality	0.66	0.85	0.172**	.190**	(0.83)

** Correlation is significant at the 0.01 level (2-tailed); Diagonal values are square roots of AVE.

value of 0.50 (Fornell and Larcker, 1981). Furthermore, each item significantly loads to its intended constructs at the $p < 0.001$ level and each factor loading is above the threshold value of 0.6, indicating convergent validity. Table 3 provides reliability measures and bivariate correlations, while Table 4 presents the item descriptive statistics and factor loadings.

Common Method Bias

To test for common method bias (CMB), we employed the single unmeasured latent method factor technique using CFA (Podsakoff et al., 2003). The results indi-

cated that fit indices of the method factor model are marginally better than the measurement model fit indices (CFI and TLI by 0.01). A chi-square difference test was conducted between the measurement and method factor models. While the chi-square difference test suggests that the models are significantly different ($\Delta\chi2 = 64.565$; $\Delta df=13$; $p < 0.01$), the average percent of variance accounted by the proposed constructs in our model (73%) was computed to be much greater than the average percent of variance accounted for by the method factor (15%). Thus, CMB does not appear to be a concern in this study.

Table 4. Item Descriptive Statistics

Construct and items	Std λ	SE	Mean	SD
Perceived Buyer Satisfaction				
PBS 1	0.898	0.015	5.503	1.23
PBS 2	0.953	0.012	5.463	1.17
PBS 3	0.723	0.029	4.977	1.47
Perceived Contract Performance				
PCP 1	0.893	0.012	4.686	1.37
PCP 2	0.913	0.010	4.737	1.32
PCP 3	0.922	0.009	4.737	1.32
PCP 4	0.842	0.017	4.757	1.30
PCP 5	0.903	0.011	4.754	1.26
PCP 6	0.805	0.020	4.529	1.21
PCP 7	0.946	0.007	4.883	1.22
Perceived Criticality of the Contract				
PCR 1	0.839	0.027	5.903	1.09
PCR 2	0.871	0.026	5.791	1.13
PCR 3	0.717	0.032	5.766	1.14

Post-Hoc Interviews

In order to gain insights to explain the findings from the study, we conducted post-hoc interviews as described by Harris and Brown (2010) with six government buyers who had used an oral presentation during source selection. An interview protocol was used to explore: (1) informants' opinions on the characteristics of procurements that are conducive to oral presentations, (2) the outcomes associated with oral presentations, and (3) reasons why oral presentations are not used very often and whether the buyers perceive oral presentations as a useful tool to enhance efficiency and effectiveness. Demographic information of the informants is presented in Table 5.

Results

Survey Results

The data confirm that oral presentations are rarely used, employed in only 9% of source selections. Logistic regression was conducted to test the hypotheses on the characteristics of the procurement conducive to oral presentations and multivariate analysis of variance (MANOVA) was utilized to test the hypotheses on the outcomes of oral presentations.

The data was transformed by using Synthetic Minority Over-sampling Technique (SMOTE) to prevent the negative impact of imbalanced binary dependent variable. Effectiveness of logistic regression is significantly reduced when a binary dependent variable's event rate is rare (Woo et al., 2022); in the dataset, oral presentations were utilized in only 9% (29 out of 328) of the source selections. SMOTE has been found to be one of the best sampling techniques to overcome a classification problem caused by imbalanced data by creating samples from the minority class through interpolation with K-Nearest Neighbors (Marinakos and Daskalaki, 2017).

Logistic regression was conducted in SPSS v.28.0 to examine the factors that are hypothesized to be conducive to oral presentations. As a measure of classification accuracy, non-statistical significance in Hosmer and Lemeshow test (χ^2 = 7.868, df = 8, p = .446) suggests good model fit. Moderate effect size indices (Cox and Snell R^2 = .233; Nagelkerke R^2 = 0.310) indicates that the full model with predictors is better at predicting oral presentations than the constant-only model.

Based on the results, service-type purchases (Wald

Table 5. Interview Demographics

	Interview Duration	Words in Transcript	Gender	Years of Experience	Number of Oral Presentations Used	Number of Source Selections Conducted
Informant 1	27:56	4,212	Male	10	1	80-100
Informant 2	30:35	5,533	Female	12	25-30	200
Informant 3	48:41	7,399	Female	13	2	10-15
Informant 4	26:09	3,463	Female	13	15	30
Informant 5	24:13	3,309	Female	12	2	6
Informant 6	39:55	5,565	Male	1.32	1	3

= 65.42, df = 1, p < .001) and buyer's intent to award a contract without discussions (Wald = 24.53, df = 1, p < .001) are found to have a significant relationship with oral presentations, supporting H1, and H4. We found a marginal support for our H3 (Wald = 3.79, df = 1, p = .052), which tests the relationship between protest risk and oral presentations. Results of the logistic regression analysis are presented in Table 6.

As a post-hoc test, we examined the effect of protest severity in lieu of protest risk. Protest severity represents the aspect of protest risk that measures the magnitude of the consequences (i.e., omitting the probability of occurrence). More recent conceptualizations of protection motivation theory discount the role that probability of a threat plays in affecting a behavioral response (Johnston and Warkentin, 2010). The model results are nearly identical but show a p-value less than .05 (β = .085, p = .048) for the effect of protest severity, showing further support for the effect of potential protests on oral presentation use (H3).

MANOVA was conducted using the GLM procedure in SPSS to test the relationships between oral presentations and variables that are hypothesized to be outcomes of oral presentations. The means of actual PALT, buyer's perception of buyer satisfaction, and supplier performance were found to be 186.3 days, 5.3, and 4.7 (on 7-point scales), respectively, when oral presentations were not conducted. Conversely, these values were 188.7 days, 5.3, and 4.9, respectively, when oral presentations were employed. Due to non-normal distribution of the actual PALT data, the square root transformation of these values was employed for the MANOVA. Nonsignificant MANOVA results (Pillai's Trace = 0.002; Wilks' λ = 0.988; p > 0.05) suggest that oral presentations are not significantly related to actual PALT, buyer's perception of buyer satisfaction, or supplier performance. Therefore, H5, H6, and H7 are not supported.

Table 6. Results of logistic regression.

	B (coef)	S.E. (coef)	Wald	df	p
(Intercept)	-3.55	1.18	9.01	1	0.003
Services	2.17	.27	65.52	1	**< 0.001**
Full-tradeoff	-0.48	.22	4.57	1	**0.032**
Protest Risk	0.084	0.043	3.79	1	0.052
Award without Discussions	-1.078	0.22	24.53	1	**< 0.001**
†Criticality	-0.62	0.039	2.54	1	0.11
†**Contract Value**~	0.21	1.18	9.01	1	**0.003**

Hosmer and Lemeshow test χ2 = 7.868, df = 8, p = .446
Cox and Snell R2 = .233; Nagelkerke R2 = 0.310
† Control variable   ~ Transformed

Interview Results

Interviews with six buyers were conducted as a post-hoc check to understand the unexpected findings of the quantitative analyses, to further investigate the reasons why the use of oral presentations is not more ubiquitous, and to fully understand the societal impact of the practice of oral presentations (Ozanne et al., 2017).

The results suggest that buyers opt to conduct oral presentations for purchases that are complex, technology and innovation-embedded, high-dollar value, critical, and services. Thus, interview results are consistent with H1, which states that buyers are more likely to use oral presentations when services are purchased. Consistent with H2, informants implied that oral presentations are utilized when a full tradeoff source selection method is used by stating that they consider oral presentations for purchases of requirements that are complex, critical, technology-related, and innovative.

While we did not find significant relationships between oral presentations and proposed outcomes in the quantitative analyses, the majority of the informants stated that oral presentations expedite actual PALT. Furthermore, informants asserted that oral presentations lead to a better decision and better supplier performance. Considering the results of the quantitative analysis, these mixed results confirm confusion among practitioners as to situations conducive to oral presentation use and their outcomes.

Interview results also provided insights for our third research question that seeks to understand why oral presentations are not common. Based on the results, buyers think that there is an inherent risk of bid protest if oral presentations are not meticulously conducted, and they do not feel comfortable using oral presentations if they have never practiced oral presentations. Furthermore, they think that oral presentations require trained personnel and preparation. A summary of the interview results is provided in Table 7.

Discussion and Implications
Discussion

This study sought to uncover characteristics of procurements that are conducive to the oral presentation of proposals and examine the purported outcomes associated with them. Although positioned as an innovative best practice, government buyers seldom use oral presentations. Thus, it was important to explore whether an oral presentation is an under-appreciated tool that offers untapped benefits to buying organizations. It was also important to understand the situational factors that render an oral presentation more likely to successfully yield those benefits. Data from a sample of 328 buyers was utilized to explore the antecedents and consequences of oral presentations. Interviews with six buyers were conducted to provide insights into the rare use of oral presentations in the government procurement setting.

Theoretical implications

Through the theoretical lens of TCE, this research contributes to the literature on public procurement by revealing the impact of ex ante uncertainty of the prospective supplier's potential behavior and bounded rationality of the buyer in supplier selection. More specifically, it offers a theoretical explanation of the conditions that lead to the use of oral presentations and the underlying reasons why the utilization of oral presentations is not more common.

The findings support those of prior literature that oral presentations are appropriate for service contracts (Hannaway, 2000). The results indicate that buyers are inclined to use oral presentations as a coping mechanism against the uncertainty arising from service contracts. We also found that oral presentations are negatively related to the buyer's intention to award a contract without discussions (i.e., to vacate negotiations). In other words, oral presentations tend to coincide with discussions. Discussions, like oral presentations, provide a venue for information exchange; thus, they help to avert opportunistic behavior and adverse selection risks by reducing uncertainty.

Prior research found that oral presentations result in lower odds of receiving a bid protest (Hawkins et al., 2021). Thus, we hypothesized that buyers are more likely to use oral presentations when there is a high probability of severe negative outcomes of a bid protest (i.e., protest risk). We found marginal support for this hypothesis, but also find that the effect is not from risk per se but the severity of a protest on the buyer. Thus, oral presentations may increase the offerors' perceptions of a fair source selection. The face-to-face interaction allows the parties to trust each other. It builds assurance to the seller that the buyer is genuinely interested in giving the seller a fair chance to win the business – insight that may not be otherwise detectable. Sometimes, offerors protest without high assurance of a basis for protest (i.e., prospecting) to gain access to the administrative record in hopes

Table 7. Summary of interview results.

What characteristics of procurement are conducive to oral presentations?	
Informant #1	Complex procurements and service contracts are conducive to oral presentations.
Informant #2	Mission and type of the contract (services vs products) are determinants of whether to conduct oral presentations. If the contract is important for the buyer's mission, oral presentations can be appropriate.
Informant #3	New or high-technology purchases and high-dollar-value contracts are conducive to oral presentations. If the buyer is uncertain about its requirements, then it may want to use oral presentations.
Informant #4	Complexity, technology purchases, high-dollar-value, and risky procurements are conducive to oral presentations.
Informant #5	Technology and innovation-involved purchases and service contracts are conducive to oral presentations.
Informant #6	Procurements that are not simple or very complex are conducive to oral presentations. However, very complex contracts may not be appropriate because the buyer may prefer a written document.
What outcomes are associated with oral presentations?	
Informant #1	Oral presentations lead to better understanding between the source selection team and offerors since requirements are explained verbally. They help the buyer team to come to a better decision, which leads to a better outcome. However, oral presentations do not help with lead time.
Informant #2	From my experience, oral presentations speed up the acquisition by about 40% because they enable evaluators to make their evaluations on the spot. When an oral presentation is done right, it saves a substantial amount of time. Oral presentations help offerors better understand the buyer's requirements than do written documents. The risk would be lower because you get to hear details of the proposal from the offerors' key personnel.
Informant #3	Oral presentations expedite procurements and allow source selection team to observe whether the offeror is able to meet contract requirements. However, if the source selection team does not document properly or does not know how to conduct oral presentations, there is a high risk of protest. The whole point of oral presentations is to reduce ambiguity and assumptions. We had an offeror tell us that they hadn't thought they could have met our requirements based on the oral presentations. Thus, oral presentations saved them from proposing and saved us from reviewing their proposal.
Informant #4	Oral presentations expedite the procurement, lower the protest risk, and provide good performance. Oral presentations help me understand offerors' proposals better by enabling me to ask questions. In oral presentations, I have my engineers and subject matter experts who can help frame proper questions to better evaluate the proposal and also help offerors understand what we really mean.
Informant #5	Oral presentations provide better contract performance and collaboration during the selection process. They also allow offerors to demonstrate their product, which is extremely helpful. However, they are conducive to bid protest.
Informant #6	Oral presentations provide positive outcomes such as speeding up the selection process and reducing protest risk.
Why are oral presentations not common?	
Informant #1	Oral presentations are "outside the box." We like our boxes and I think people are afraid of protests. If they are not done properly, they bring more harm than good. If they are used properly, they are really a good tool. To be able to properly conduct oral presentations, buyers require lots of training. Buyers need to be prepared before using oral presentations to ask good questions and frame them properly.
Informant #2	Buyers' fear of the unknown causes them not to use oral presentations. Oral presentations are risky unless you know what you're doing. I think that we are extremely risk-averse and do not want our contract to be protested. You have to be focused and listen to what is going on and the evaluators have to make sure that anything that they write up is in accordance with the evaluation criteria. When I did my first oral presentation, I was terrified, but once I learned, I got more comfortable communicating with offerors.
Informant #3	If you haven't done oral presentations before, they are scary. I don't think we know how to use them appropriately. Not everyone is able to do oral presentations. You have to know what your rules are. You have to be meticulous in your documentation and procedures. You have to be able to communicate very effectively and ask appropriate questions to make sure you fully understand the offeror's response.
Informant #4	I think oral presentations can be intimidating. They make you feel like you are going to get protests. If you don't have a good vendor base and a good government team, you might not want to do the oral presentations.
Informant #5	I think there is an inherent risk in the oral presentations. People feel safer with written words. If people have not done oral presentations before, they may feel uncomfortable with oral presentations.
Informant #6	People just get scared of having things that they have no experience. There is a learning curve with using oral presentations. I think getting help from folks that have done it before is massively helpful, like the Acquisition Center of Excellence.

that errors or biases may be found (Hawkins et al., 2023). Through oral presentations, the offeror may develop trust that the buyer would not unjustifiably discriminate against it.

The results suggest a negative association between oral presentations and a full-tradeoff source selection method, which is characterized by contracts where complexity is high and performance is critical. Hence, because of the importance of the requirement to the buyer's mission, the buyer desires the flexibility to pay more (i.e., not choose the low bidder) for better performance and/or reduced risk of poor or non-performance.

While the survey data suggested that the full-tradeoff source selection method is not conducive to utilizing oral presentations, interviews suggested that oral presentations are appropriate for complex, critical, high-technology purchases wherein the buyer often needs to trade off price and non-price evaluation factors. These contradictory findings are an avenue for future exploration. However, a plausible explanation is that since the full-tradeoff method requires substantial justification and documentation for awarding a contract to a higher-priced offeror, buyers may not be confident in their ability to provide the required justification outside of the traditional written proposal method.

Buyers may also be reluctant to add complexity to an evaluation process that is susceptible to errors, which invites bid protests. As the interviews indicated, oral presentations are not often used because of fear of protest. If the buyer has not frequently used oral presentations, they may be reluctant to use this method when a full-tradeoff scenario is warranted.

This represents an interesting tension between three forms of public procurement uncertainty - the buyer's requirements, the offeror's proposal, and evaluation procedures. Buyers seek to reduce total uncertainty but trade the risk of violating evaluation procedures with the risk of misunderstanding the proposal or the offeror misunderstanding the full scope of a purchase requirement.

Services may represent an area where the benefit of clarifying the offeror's proposal or clarifying the scope of the required service with the offeror outweighs the potential risks of violating evaluation procedures. In contrast, more intricate technical evaluation tradeoffs may be conducted for products that can be clearly specified (i.e., low risk of requirement scope uncertainty and low risk of misunderstanding the proposal) yet carry substantially more risk of violating evaluation procedures when the tradeoffs of price and non-price factors become exceedingly complex. Thus, while interviewees show that oral presentations could benefit these technically complex source selections, empirical evidence suggests that most buyers are unwilling to take a chance.

Perhaps the most interesting finding of this research is the disparity between what buyers think about oral presentations and how this is reflected in their use (or lack thereof) of oral presentations, which confirms the need for this research. Although, based on the interviews, buyers believe oral presentations reduce PALT, enable the buyer team to come to a better decision, and lead to higher supplier performance, the results of our quantitative analyses do not support these suppositions.

More interestingly, while they believe oral presentations reduce PALT and provide positive outcomes, they seldom use them. This disparity between the beliefs and practices of buyers is consistent with the assumption of bounded rationality. Nevertheless, the early research on oral presentations and our interview testimonies suggest that oral presentations *can* render the touted positive outcomes. This disconnect between overall quantitative results and anecdotal successes suggests a need for refined policy and guidance to help buyers implement oral presentations more effectively.

Various explanations for a lack of use may exist. Buyers may not feel comfortable utilizing oral presentations since it requires effective oral communication skills and creating consistent boundaries for the procurement process that are not explicitly outlined in policy and regulations. Government buyers are risk averse (Georghiou et al., 2014). Our interviews support this explanation because buyers think that appropriate and effective use of oral presentations requires training and experience. Another explanation is that while oral presentations may render information evaluation more efficient (i.e., less PALT), the fairness-imposed rules can invite bid protests (i.e., more work and more PALT).

Communication during oral presentations can constitute proposal revisions if an offeror, during the oral presentation, alters any information in its written proposal. If one offeror is allowed to alter a proposal, all offerors must be afforded the same opportunity. Further, once discussions are opened, all weaknesses and deficiencies must be discussed with each offeror. Additionally, questions posed to offerors (i.e., information solicited) must be uniform across all offerors. Hence, oral presentations can trigger compliance with many peculiar fairness-oriented procedures. While communication reduces uncertainty and enables faster evaluation, it invites errors in procedures, and thus, bid protests.

Another explanation for the lack of expected outcomes of oral presentations is that only a few buyers have mastered the art of oral presentations, while most have not. Hence, some buyers have figured out how to use an oral presentation to accelerate evaluations and increase supplier performance (or avoid supplier non-performance) without inviting a protest. Thus, this study supports the existing literature by underlining the importance of communication and interaction skills of sellers and buyers in business-to-business relationships (Høgevold et al., 2021; Lu et al., 2019).

Managerial Implications
Both the quantitative and qualitative analyses support that purchases of services and procurements that are characterized with high protest severity are conducive to oral presentations. The irony of this finding is blinding; interviews revealed buyers' reluctance to use oral presentations for fear of protest, but oral presentations are statistically associated with decreased bid protests (Hawkins et al., 2022). Bid protests seem to be a perpetual problem for public buyers.

The U.S. Congress continues to direct studies thereof in attempts to better understand the dilemma of fairness versus efficiency and adjust public policy thereto (Arena et al., 2018; Drabkin and Yukins, 2023). Therefore, public policy should identify services and procurements with high protest severity as candidates for the application of oral presentations. For procurements with these characteristics, the policy default should be to require oral presentations with an ability to opt out due to exceptional circumstances, rather than today's policy of opting in.

After all, the first thing a customer does when a problem is discovered during contract performance is call a meeting in order to resolve the problem. Why would a buyer not call a meeting with prospective suppliers (i.e., an oral presentation) when the buyer is trying to select the firm to solve its problem? The scale for assessing protest severity developed herein could be used by the members of sourcing teams and a risk threshold could be set via policy at which point oral presentations could be required.

We expected that two-way communication provided by oral presentations leads to communication openness and feedback early in the exchange and that it should lead to better outcomes. However, we could not find such support in our quantitative analyses. Interviews suggest that buyers question the utility of oral presentations since they can be subject to bid protests if proposal revisions were inadvertently allowed. Therefore, despite the positive outcomes that are assumed to be associated with oral presentations, they lack value-creating levels of communication openness due to perceived risks of violating fairness and transparency across competitors.

Thus, we see that trying to optimize fair and open communication is a natural tension in public procurement that stifles potential value creation. Managers should develop guides or instructions showing buyers how to properly conduct oral presentations without violating source selection policies, regulations, and case law. Scenario-based training for buyers may result in better application of oral presentations and better contract outcomes.

Until the specific practices of oral presentations are altered in a way that outcomes are improved, procurement managers should not expect that oral presentations will save lead time or improve supplier performance. Similarly, the study results raise the question whether oral presentations belong on FAI's "Periodic Table of Acquisition Innovations."

Oral presentations appear to be an underutilized tool; they were only used in 9% of the source selections. The lack of use corroborates our lack of association with desired outcomes such as faster source selections and higher supplier performance. Buyers think that appropriate utilization of oral presentations requires training, experience, and effective communication skills.

Interpersonal communication and communication skills are part of the most important competencies required by seller and buyer teams (Bals et al., 2019; Høgevold et al., 2021). Extant literature points out the dependency of supplier effectiveness on individual purchasing and supply management professionals and their skills (Stek and Shile, 2021). Therefore, how the communication skills and experience of the buyers affect the outcomes of oral presentations begs further probing.

Limitations and Directions for Future Research

The following limitations should be taken into consideration. First, the response rate is low, calling into question generalizability. Nevertheless, the response rate was typical for business research (Melnyk et al. 2012). Second, the sample was drawn from buyers of a U.S. military department, which may also limit the generalizability of our findings. Future research beyond a U.S. military context is needed. Third, the data was collected before video conferencing applications such as Zoom were ubiquitous. Virtual platforms may increase the attractiveness of oral presentations by easing the recording and transcribing burden and reducing the logistical costs to meet face-to-face. Finally, the use of oral presentations in the dataset was low. To minimize the negative effects of this rare event situation, we used the SMOTE technique to balance the data.

We did not find support for the relationship between oral presentations and PALT, buyers' perception of buyer satisfaction, or supplier performance, whereas the literature and the results of the interviews posit a relationship. Further investigation is required to draw consensus on the impact of oral presentations on PALT, buyer satisfaction, and supplier performance.

Given the dissonance between the qualitative and quantitative results – which suggests that oral presentations can be effective, future research should explore the different ways in which oral presentations are conducted. To facilitate further research, key data should be reported in FPDS-NG such as the use of oral presentations, supplier performance levels, and

protest filing. Ideally, however, a study applying an experimental design would allow stronger causal inference isolating the unique effect of oral presentation use on key outcomes such as PALT, supplier performance, and protests.

We also suggest that a future study explore the time of sub-processes within the source selection process. For example, oral presentation preparation and delivery may consume 10 days, but this could be offset by time normally spent on proposal preparation and proposal evaluations associated with not utilizing oral presentations.

Finally, oral presentations have long been thought to help indicate whether an offeror understands the buyer's need and has the capabilities to do the work. Hence, they can help detect whether an offeror is over-promising. Today, this concern is heightened by the ability of artificial intelligence (AI) to generate written proposals. Future research could explore whether oral presentations can help buyers detect AI-generated proposal content and whether oral presentation use thwarts AI use to generate proposals.

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PROFESSIONAL ASSOCIATION IMPACT ON TRAINING, ACADEMIA, AND PROFESSIONAL DEVELOPMENT: THE CASE FOR CONTRACT MANAGEMENT

BY DR. JODY CLEVEN, CPM, NCCM; DR. RENE G. RENDON, CPCM, CFCM, CPSM, PMP; AND DR. JOHN W. WILKINSON, CPCM, CFCM

Abstract

PURPOSE: The purpose of this research is to show how professional associations can have an impact on the training, academia, and development of a professional workforce. Specifically, this research will show how the National Contract Management Association (NCMA) has made an impact on the contract management profession with its Contract Management Standard™ (CMS™), Contract Management Body of Knowledge® (CMBOK®), and its professional certifications. The question of this research is, "How has NCMA made an impact on the contract management profession?"

DESIGN/METHODOLOGY/APPROACH: The methodology of this research is to focus on the contract management profession and its related professional association, NCMA. In this research, we identify NCMA artifacts (e.g., CMS, CMBOK, certifications) and then analyze and discuss the impact made by NCMA in the areas of training, academia, and professional development on the contract management workforce.

FINDINGS: Our findings indicate that NCMA has made an impact in several aspects of the contract management profession. In the area of workforce training, NCMA's CMS has impacted federal organizations (to include all civilian and defense agencies) as well as several state procurement agencies. We also see NCMA's impact on industry, in terms of adopting the CMS in corporate hiring and training frameworks, as well as using the CMS as a quality assurance guide for their contracting teams. Finally, we see NCMA's impact on academia, where colleges and universities have incorporated the CMBOK and CMS into their contract management curricula, at both at the undergraduate and graduate levels.

ORIGINALITY/VALUE: The impact of professional associations on its profession and associated workforce has not been researched extensively for the contract management profession. Building on the previous research presented in the literature review, the major contribution of this research is to fill the gap in the literature by investigating the impact of NCMA on the contract management profession in the areas of training, academia, and development of a professional workforce.

Keywords

Professional associations, professional certifications, bodies of knowledge, contract management, standards

CMBOK Competencies

A. Leadership
C. Learn

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Introduction

Today's organizations have become increasingly technical and complex network systems. In addition, their workforce requires specialized knowledge and training to successfully perform their mission. Examples of professions that require specialized training include nursing, information technology, human resources, project management, and contract management. These organizations and their workforces have come to rely on professional associations to provide specialized knowledge and training.

Professional associations are defined as "organizations consisting of mission, objectives, structures, and processes centered about the education and development of a voluntary membership situated in the intersecting contexts of specific fields of knowledge and practices, clientele, and values" (Rusaw, 1995, p. 217).

Today, professional associations represent almost every profession and provide education and training to workforce members in professional fields such as accounting, engineering, and medicine (Nesbit and Gazley, 2012). Additionally, professional associations offer certifications, publications, as well as training conferences (Gazley, 2013).

The impact of professional associations on their professions and associated workforces has not been researched extensively (Tschirhart and Gazley, 2014), specifically for the contract management profession. The purpose of this research is to show how professional associations can have an impact on the training, academia, and development of a professional workforce.

Specifically, this research will show how the National Contract Management Association (NCMA)[1] has made an impact on the contract management profession with its Contract Management Standard™ (CMS™), Contract Management Body of Knowledge® (CMBOK®), and its professional certifications. The question of this research is, "How has NCMA made an impact on the contract management profession?"

The methodology of this research is to focus on the contract management profession and its related professional association, NCMA. In this research, we identify NCMA artifacts (e.g., CMS, CMBOK, certifications) and then analyze and discuss the impact made by NCMA in the areas of training, academia, and professional development on the contract management workforce.

Our article is organized in six sections. This first section presents the background, problem statement and purpose statement, as well as a brief discussion of the research methodology. The second section provides a brief literature review of professional associations in terms of their impact on areas such as training, academia, and professional development and the conclusions that this research has found. The third section focuses on one specific professional association, NCMA. This section will discuss NCMA's doctrinal publications and their affiliated certifications. The fourth section presents how NCMA's doctrinal publications have impacted the contract management profession and workforce. This section will specifically focus on NCMA's impact on the contract management workforce training, academia, and professional development, and perform an in-depth examination of NCMA's impact on a state-level certification program in North Carolina. The fifth section will discuss the implications of our findings on the contract management profession. Finally, we conclude our discussion and provide areas for further research.

Literature Review

Professional associations are defined as "organizations consisting of mission, objectives, structures, and processes centered about the education and development of a voluntary membership situated in the intersecting contexts of specific fields of knowledge and practices, clientele, and values" (Rusaw, 1995, p. 217).

Today, professional associations represent almost every profession and provide education and training to workforce members in professional fields such as accounting, engineering, and medicine (Nesbit and Gazley, 2012).

Professional associations play a vital role in "socializing members to the skills, competencies, and roles needed to perform effectively in bureaucratic organizations" (Rusaw, 1995, p. 215).

These organizations perform three learning roles. First, they provide formal and informal learning opportunities. Second, they act as constructors of frames of reference in which professional and bureaucratic norms can be blended. Third, they act as catalysts for changing conditions and relationships in external environments (Rusaw, 1995, p. 215).

Professional associations also play an important role in facilitating mentoring within the workforce (Zabel, 2019).

Research on professional associations have traditionally focused on various aspects of how these associations have impacted organizational processes and performance.

For example, Newell and Swan (1995) found that a professional association in production and inventory control and its established body of knowledge created informal networks, linking members from different organizations, and these networks were important for innovation in specific operational technologies (p. 371).

Swan and Newell (1995) also found that this production and inventory control professional association and its established body of knowledge allows its members to act as boundary spanners who, through their involvement in these networks, are able to learn about new technological developments.

Their research found that this professional association was perceived to be an important network for learning about new developments in production and inventory control. Predictors of technological innovation included involvement in the professional development activities of this professional association. The findings support the idea that professional associations impart knowledge that is important for the diffusion of technology (p. 847).

Many professional associations offer certifications to the workforce, regardless of association membership. Professional certification "involves assessing whether or not an individual within a profession possesses the requisite skills or knowledge based on some set of established standards" (Martinson, DeLeon, and McCamey 2023, p. 34). As Butler states, "To most people, the word 'certified' is interchangeable with the word 'competent'" (Butler, 2001, p. 91).

It should be noted that "professional" certification differs from "occupational" certification. Professional certification is a voluntary credentialing process requiring the applicant to meet specific education, training, and experience requirements, as well as pass an examination based on an established industry standard and body of knowledge.

Once certified, the certificant must meet continuing professional education requirements as a requirement for maintaining certification. Occupational certification is a credentialing process required of employees who are employed by a specific organization, for example a federal or state government agency (Albano, 2013). The employee must be certified to be employed by the agency, and once the employee is no longer employed by the agency or transfers to a position within the

agency that does not require the certification, the certification is no longer active.

Prier, McCue, and Behara (2010) conducted research on the value of certification in public procurement. Through original data analysis, they examined differences in perceptions regarding the value and benefits of certification among public sector procurement practitioners.

Their research findings indicate that there is growing awareness by those holding certification and those who are not certified that certification leads to advanced knowledge and skills within the procurement area. They also found that job advancement and occupational growth is perceived to be directly related to certification, and that certification holders enjoy special privilege within occupational norms (p. 512).

Additionally, Abutabenjeh, Dayarathna, Jaradat, Nagahi, and Gordon (2021) researched the perceived value of public procurement and contract management (PPCM) professional certification. In their survey-based research, which included responses from 1809 PPCM professionals, the results indicated that "certified PPCM officials, who were shown to be more highly motivated by the intrinsic, extrinsic and the total perceived value of certification compared to the uncertified officials, perceived greater value in certification as a critical element in advancing the PPCM profession and adding value to the organization" (p. 86).

The research also found that uncertified PPCM officials perceived barriers to becoming certified, which include the "challenges of the certification process along with a lack of institutional support by employers, a lack of financial support for reimbursing the costs of training, education, and examination fees, and a lack of time to pursue certification" (p. 87).

Finally, the literature also reflects research on how professional associations have impacted academic curricula. In the area of project management, Thomas and Mengel's (2008) research on preparing project managers to deal with complexity found that the majority of universities and colleges' curricula they reviewed were "explicitly targeted at covering PMI's PMBOK® Guide areas and preparing for PMP® certification" (p. 306).

The literature shows that "PMP certification is beginning to control entry into the practice of project management in many jurisdictions" (Winter and Thomas, 2005, p. 242). Furthermore, PMI's PMBOK has become the de facto global standard for project management.

The purpose of this article is to discuss how NCMA, the professional association for the contract management profession, has had an impact on the training, academia, and development of the contract management workforce. The next section will discuss NCMA in terms of its industry standard, body of knowledge, and professional certifications.

NCMA Resources and Credentials

The ability and discipline to learn can be more prized than possessing knowledge. Learning leads to agility that exploits opportunities and mitigates risk while producing stability and standardization through common language.

NCMA has developed two doctrinal publications through rigorous consensus-based processes to apply this stability and standardization through common language to learning and practicing contract management.

The first doctrinal publication is the Contract Management Standard (CMS).[2] The CMS is foundational and provides the framework to all policies, procedures, and processes relevant to acquisitions, grants, leases, orders, procurements, purchases, subcontracts, and any other type of legally enforceable contracts. The CMS presents the contract as a linear system in terms of a product life cycle.

The second doctrinal publication is the Contract Management Body of Knowledge (CMBOK).[3] The CMBOK presents how the compound effect of the continuous, cyclical application of education, training, and work experience will improve individual competence and organizational capability. Each of these publications and their affiliated certifications will be explored in this section.

Contract Management Standard

The purpose of the CMS is to describe contract management in terms of the processes created through the integration and interaction of job tasks and competencies, and the purposes they serve.

The CMS is an American National Standard (ANS) approved by the American National Standards Institute (ANSI)[4] [ANS number: ANSI/NCMA ASD 1-2019 (R2022)]. The CMS defines key contract management concepts and processes and serves as the foundation and framework for the CMBOK.

The CMS is applicable to:
- All acquisitions, grants, leases, orders, procurements, purchases, subcontracts, and

Figure 1. CMS Affiliated Credential: Certified Contract Management Associate
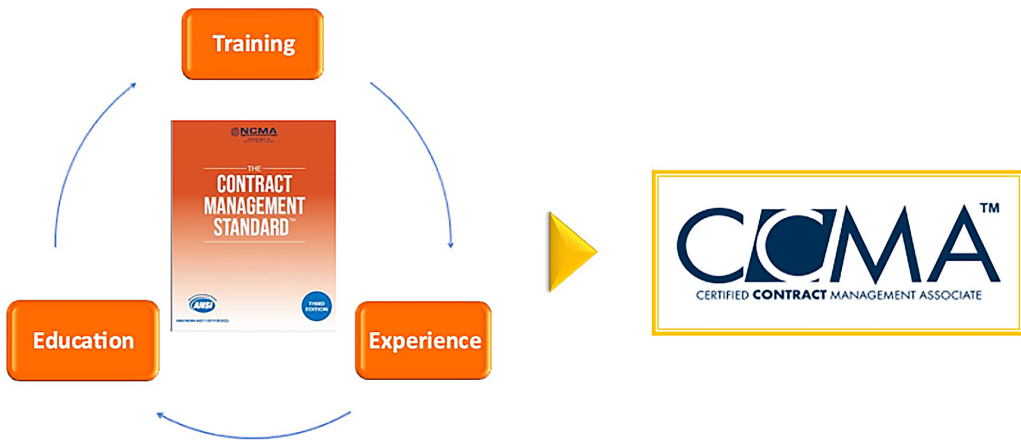
any other types of legally enforceable contracts – from credit card purchases to major system acquisitions.

- Any organization that works with any type of contract [e.g., government (federal, state, and local), industry (business-to-business, business-to-government, large business, mid-size business, small business), subcontractors (all tiers)].
- Any oversight activity involving contract procedural, regulatory, and statutory compliance (e.g., appeals, arbitration, audits, legal opinions and decisions, litigation, performance management reviews, protests, risk assessments).
- Any organization developing training courses and programs or education courses and curricula (e.g., schools, colleges, training providers, professional associations).
- Any individual interested in developing and increasing competence or any organization interested in expanding its workforce capability [e.g., focus scarce resources (personnel, money, equipment, time, etc.) to target competence gaps; achieve certification; obtain meaningful results].

Those who successfully execute the CMS do so through common language to form an intuitive, learning infrastructure that increases individual competence and organizational capability. This infrastructure not only increases the understanding of oneself (e.g., vision, mission, goals, etc.), but also increases the mutual understanding of others who successfully execute the CMS.

Without this mutual infrastructure, limitations, misalignments, and performance risks are increased. When contract management terminology, practices, policies, and processes are interpreted consistently, the likelihood of reaching agreement on matters relating to contract intent, interpretation, and performance is increased.

All contract management laws, codes, and regulations can be cross-referenced to the CMS job tasks, competencies, domains, and life cycles. Appendix 1 illustrates an example of how this is done with the with the *Federal Acquisition Regulation*,[5] the *Uniform Commercial Code*,[6] and the *North Carolina Administrative Code*.[7]

The success of buyers and sellers can be measured not only through direct interaction (e.g., negotiations or contract performance), but also when there is no direct contact (e.g., planning). Success in one function cannot occur without success in the other. Successful contract management is more likely to occur when each function has a clearer understanding of the job tasks, competencies, and deliverables of both functions.

CMS Affiliated Credential: Certified Contract Management Associate

The Certified Contract Management Associate (CCMA)[8] is bestowed to those who meet education, training, and/or experience requirements and who demonstrate knowledge of the CMS, as reflected in Figure 1. While certification presents evidence of knowledge retention, recertification presents evidence of lifelong learning.

Figure 2. Conformance Standards of NCMA Certification Requirements

Certification Requirement	Quality Conformance
Education	All academic coursework must be performed at regionally accredited colleges and universities
Training	All training must conform to NCMA's CMBOK®-based Contract Management Continuing Professional Education Guide
Work Experience	All work experience must map directly to CMS™ and CMBOK® competencies

Figure 2 presents the conformance standards for NCMA's education, training, and work experience requirements. The high standards infused into the NCMA certification requirements promulgate common language.

The CCMA is portable and can be obtained and retained whether the contract manager is a buyer or seller – or both. It is the *foundational certification* for contract management and all related practices (e.g., acquisitions, grants, leases, orders, procurements, purchases, subcontracts, and other legally enforceable agreements).

The CCMA has undergone the rigorous accreditation assessment of the ANSI National Accreditation Board (ANAB).[9] There are over 230 elements in ISO/IEC 17024:2012 (*Conformity Assessment – General Requirements for Bodies Operating Certification of Persons*) that must meet 100% conformity continuously.

To ensure conformity, ANAB performs annual surveillance assessments on every ANAB-accredited certification. NCMA must continuously demonstrate impartiality, openness, lack of dominance, balance, consensus vote, appeals, and written procedures.

Appendix 2 presents the conformity elements of ANSI *approval* of the CMS as an American National Standard and ANSI *accreditation* of the CCMA as a certification meeting conformity as determined through an international standard.

Contract Management Body of Knowledge

The purpose of the CMBOK is to instill common language within the terminology, practices, policies, and processes used in contract management. Adopting common language is process improvement and helps to ensure that innovative ideas are understood and performed successfully. The work of all contract managers is connected by language and common language greatly improves the ability to exchange ideas and improve productivity.

The CMBOK provides broader and deeper explanations of the consensus-based competencies found in the CMS. The CMS presents the contract life cycle in a linear system similar to a product life cycle, where there is a beginning, middle, and end to a contract (i.e., pre-award, award, and post-award).

The CMBOK presents the contract management profession as a circular system in terms of a competence development model. Appendix 3 presents an outline of the CMBOK competencies.

Although the CMBOK uses the CMS as its foundational publication, it also incorporates other knowledge sources such as books, articles, reports, reference documents, regulations, policies, best practices, standards, studies, and more.

Appendix 4 illustrates how the CMS and CMBOK are harmonized to present common language in policies, practices, and procedures.

CMBOK Affiliated Credential: Certified Professional Contract Manager™

The CPCM™ is bestowed to those who meet education, training, and experience requirements and who demonstrate knowledge of the CMBOK, as reflected in Figure 3. The CPCM is intended for journeyman-level practitioners and its requirements are at a higher level than other NCMA certifications. It is considered a hallmark of distinction among contract managers and their stakeholders.

As with the CCMA, the CPCM has also met the rigor of ANAB accreditation and must be continuously

Figure 3. CMBOK® Affiliated Credential: Certified Professional Contract Manager
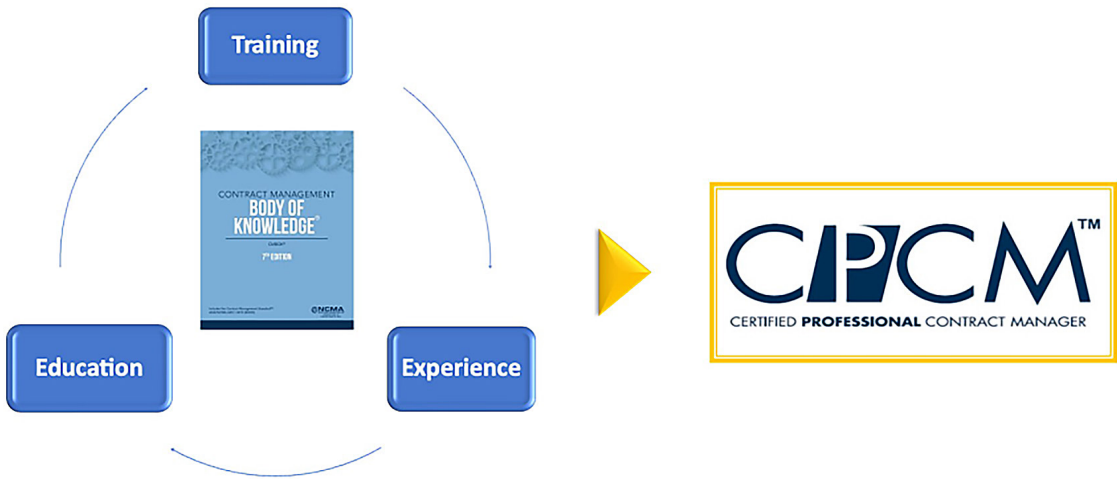
maintained by NCMA in strict compliance with ISO/IEC 17024: 2012 *(Conformity Assessment—General Requirements for Bodies Operating Certification of Persons)*.

Contract managers and their organizations with a desire to learn and a commitment to process improvement will naturally evolve to adopting common language. The more contract managers understand the total contract management system and its processes with a common language, the more they can contribute beyond the narrow confines of their job descriptions.

The CMS and CMBOK – along with the CCMA and CPCM – provide the foundational tools for workforce development and accomplishment. The next section will discuss how NCMA's CMS, CMBOK, and certifications have impacted workforce training and education.

NCMA Impact on Workforce Training and Education

It is clear to see how NCMA has had an impact on contract management workforce training. From the federal government to state government, we see the adoption of the CMS in workforce training and competency development.

In the U.S. Congress's 2020 National Defense Authorization Act (NDAA, 2019), Congress directed the Secretary of Defense to implement a professional certification program for all members of the contracting workforce that is based on standards developed by a third-party accredited program based on nationally or internationally recognized standards (NDAA, 2019).

In September 2020, the DoD Undersecretary of Defense for Acquisition and Sustainment implemented the Back-to-Basics (BtB) talent management program to be fully deployed by October 1, 2021 (Lord, 2020). This would be a major change to the contracting certification program established by the Defense Acquisition Workforce Improvement Act (DAWIA) and enacted by Congress in 1990.

In February 2021, the Office of the Undersecretary of Defense Principal Director for Defense Pricing and Contracting (DPC) published a memorandum restructuring the DoD Contracting Professional Certification Program and Contracting Competency Model. The new contracting competency model would be based on American National Standard ANSI/NCMA 1-2019 (R2022), which is sponsored by NCMA and approved by ANSI (Tenaglia, 2021).

This new contracting workforce competency model complies with the legislation requirement to base a professional certification on standards developed by a third-party accredited program (NDAA, 2019; Tenaglia, 2021). The Defense Acquisition University (DAU) has since developed mandatory contracting courses based on the ANSI approved NCMA CMS.

In addition, in January 2023, the federal government's Office of Management and Budget issued a memorandum establishing a new contracting competency model also based on the NCMA CMS (Field, 2023). Thus all the federal government executive agencies have adopted the NCMA CMS in its contracting competency model and the basis for its contracting workforce training.

Case Study: North Carolina Department of Administration Division of Purchase & Contract

To examine the impact that NCMA has had on a state-level training and certification program, we will take an in-depth examination into a case study targeting the impact on a state-level certification program in North Carolina.

At the state government level, the North Carolina state procurement organization has adopted the CMS as the basis for its training curriculum. The literature reflects research on how professional associations have impacted academic curricula. This includes collegiate programs and state certification programs.

North Carolina's Department of Administration (DOA) Division of Purchase & Contract (P&C) established its first-ever state certification program in 2019 through the North Carolina Procurement Academy (NCPA) as part of a legislative mandate. The North Carolina Contract Manager (NCCM) certification is a requirement for all state employees responsible for awarding contracts or monitoring contract compliance.

NCPA developed a rigorous contract management training and certification program for state employees based on NCMA's CMBOK and CMS. The legislative backing for a curriculum based on NCMA's CMS and CMBOK highlights North Carolina's commitment to standardizing contract management practices and emphasizing a common language.

This partnership with a nationally recognized professional organization has had a tremendous impact on the workforce training and professional development of procurement professionals throughout the state.

As an industry best practice, the program underwent a rigorous six-month pilot to gather feedback from pilot group participants aimed at modifying and improving program components based on feedback.

A central component to the NCCM program is an established professional learning community and an individualized coaching component. Program requirements include completing courses, submitting relevant assignments, and engaging with fellow participants through discussion forums.

The role of the certification coach is to encourage program participants to successfully complete their program requirements, provide feedback on course assignments and discussions, prepare participants for the certification exam, and connect participants throughout the state by providing networking opportunities.

The partnership that NCPA established with the nationally recognized professional organization NCMA provides the foundation for the NCCM certification program and heavily influenced the program development, curriculum, and program components. These components are aimed at having a positive impact on workforce training and professional development.

The program aims to connect program participants with industry standardization through exposure to the NCMA's CMBOK and CMS, industry-related professional literature, and a common language. The NCCM curriculum that was used in this case study is presented in Appendix 5.

To gauge the impact that the NCPA's NCCM program and partnership with NCMA has had on workforce training and professional development, an analysis of program data was conducted. From a discussion forum containing posts from 84 program participants from August 2022 to November 2023, 54 were randomly selected for data analysis.

The forum posts were submitted during the program from participants in cohorts with graduation dates ranging from October 2022 to January 2024. The 54 participants served as state-level procurement professionals ranging from frontline employees to those serving in supervisory or managerial positions.

The majority of the participants were not members of NCMA. However, they were exposed to NCMA's CMBOK and CMS through the NCPA program curriculum. The data analysis uncovered trends in 14 distinct categories. The categories, response rates, category definitions, and response examples are detailed in Appendix 6.

From the 54 participants included in the sample, a total of 192 responses were categorized into 14 distinct categories as shown in Appendix 6. Since the program aimed at presenting a comprehensive body of knowledge from NCMA's CMBOK, and established a professional learning community among its participants, it was no surprise to the authors that the two most frequently occurring responses were Acquired New Knowledge (ACQ) and Increased Collaboration (COL) with 72% and 70%, respectively. Based on the responses in those two categories, it was evident that participants gained new insights and shared knowledge with their colleagues, customers, and stakeholders.

It was also not surprising to us that the categories of Applied Knowledge (APP), Improved Processes (PRO), and Improved Practice (IMP) responses were all above 30%, 35%, 35%, and 31%, respectively.

As previously mentioned, the program encourages a professional learning community and emphasizes an individualized coaching component. Program components include discussions pertaining to the application of the learned information, networking opportunities to share internal processes, and opportunities to reflect on new learning.

For example, halfway through the program, participants are required to post in a discussion forum called Coursework Informing Practice and instructed to respond to at least two other fellow participants around the topic of applied learning.

Program coaches engage with participants in the forum to connect participants with similar responses regarding application of concepts, clarify misunderstanding on shared processes, and present best practices aimed at improved workplace competence. With these program components in place, the authors expected these results in the APP, PRO, and IMP categories.

We were encouraged by the responses in the categories Influenced or Impacted Others (INF), Gained Foundational or Background Knowledge (FND), Validated Current Practice (VAL), and Increased Time Efficiency (TME). These responses ranged from 15% to 9% (See Appendix 6).

It was encouraging to see responses that suggested participants were gaining foundational knowledge, validating current practices, saving time, and influencing others. These practical takeaways contributed collectively to positive impacts across the state. As one participant stated, "[The coursework] allowed me to reflect on things that we are doing well and areas we can work on."

Several categories revealed pleasantly surprising results. Through our data analysis, we did not anticipate participants noting impacts on workplace culture, personal confidence, and improved practices beyond work. Of the 54 participants, 7% indicated an increased confidence after beginning the program. As many states are struggling to retain confident and qualified professionals, this was a welcome response.

Likewise, 4% of participants indicated a change in work culture due to program impacts. The same percentage of participants suggested that involvement in the program positively contributed to changed practices in other areas beyond work. As one participant stated, "The daily demands can be overwhelming sometimes. However, I am determined to practice self-care so I can be my best." It was encouraging to see positive aspects of the program contributing to improved self-care.

Goal setting and personal reflection on new learning is a cornerstone of North Carolina's contract manager certification program. As a result, the authors were surprised by the low percentage of responses in the Set Goals (GLS) category. Only three of the 54 participants, or 6%, were represented in the GLS category. This suggests that there is a need for further study around effective ways to encourage program participants to set and reach program goals.

The final category to discuss is Increased Use of Resources and Common Language (RES). The RES category was significant because of NCPA's goal to ensure positive outcomes related to the partnership with NCMA. The CMBOK and CMS provide the foundation for North Carolina's state's contract management certification program. It was the hope of NCPA's program developers that these foundational components would positively impact workforce training and professional development.

The authors were encouraged to see that of the 54 participants, 39% were represented in the RES category. This suggests that the participants consider the CMS and CMBOK valuable resources to base their work. Further, the participants have a keen understanding of the common language and industry standardization established by NCMA's doctrinal documents.

Additionally, we were delighted to see that the participants developed habits of reading industry-related professional literature and engaged with other professional organizations such as the National Association of State Procurement Officials (NASPO). As one participant reported, "Before taking this course, I didn't even know that a professional association of contract managers existed."

The NCPA program staff is confident that their work under the NCPA to deliver the NCCM certification program in partnership with NCMA is making inroads into positively impacting the procurement workforce and training development in the state. They look forward to continuing their work with NCMA and the other professional organizations that support these efforts.

In addition to North Carolina, other state and local governments that have adopted the CMS and CMBOK for training include the District of Columbia, Hawaii, Maryland, and South Carolina.

Continuing Impact of the CMS

Finally, the CMS has also made an impact in industry. For example, industry partners such Leidos, The FedPROPEL Institute, Lockheed Martin, Federal Publications Seminars, SMX, Bidscale, and BMRA have adopted the CMS (NCMA, 2023).

Some industry partners have adopted the CMS as part of their hiring and training frameworks. This includes incorporating the CMS into corporate policies and procedures as a quality assurance guide for their contracting teams.

Other industry partners are using the CMS as the basis for developing internal training for their contract departments. They are also committed to using the terminology of the CMS in their job requisitions, training, and internal processes. This adoption supports the NCMA initiative of establishing one common language for the contract management profession. Finally, Bidscale has licensed the CMS and is building it into its Contract Lifecycle Management (CLM) software as an optional workflow (NCMA, 2023).

In addition to having an impact on the contracting workforce training, there is also evidence that academia, specifically higher educational institutions, have adopted the CMBOK and CMS in their contract management curricula.

For example, the University of California, Irvine, Division of Continuing Education has aligned its Contract Management Certificate with the competencies established in the CMS. The University of Maryland Global Campus Master of Science in Acquisition and Contract Management, and Webster University's Procurement and Contract Management for Information Technology Management program have also aligned their curricula to the competencies based on the CMS (NCMA, 2023).

The U.S. Naval Postgraduate School's graduate degree programs in contract management, both resident and distance learning, have adopted the CMBOK and CMS in their graduate curricula. As reflected in the NPS catalog, "The Defense Contract Management curriculum is an interdisciplinary program which integrates management theory, accounting, economics, finance, behavioral science, management theory, operations/systems analysis, and specific courses in acquisition and contracting. Additionally, the curriculum is aligned with the competencies established in the CMBOK and CMS. The curriculum supports preparation for the NCMA professional certification examinations including the Certified Federal Contract Manager (CFCM) and the Certified Professional Contract Manager (CPCM)" (NPS, 2023, p. 77). The NPS also offers courses preparing students for the NCMA professional certification exams.

Implications of Findings

Our findings indicate that NCMA has made an impact in several aspects of the contract management profession. In the area of workforce training, NCMA's CMS has impacted federal organizations (to include all civilian and defense agencies) as well as several state procurement agencies. The federal agencies have adopted the CMS competency model for training their contracting workforce. The FAI and the DAU have created contract management training courses based on the CMS.

Additionally, the state of North Carolina has developed a rigorous contract management training and certification program for state employees based on the CMBOK and the CMS. We also see NCMA's impact on industry, in terms of adopting the CMS in corporate hiring and training frameworks, as well as using the CMS as a quality assurance guide for their contracting teams.

Finally, we see NCMA's impact on academia, where colleges and universities have incorporated the CMBOK and CMS into their contract management curricula at both the undergraduate and graduate levels.

It should be noted that NCMA's impact on workforce training, industry, and academia has permeated throughout the contract management profession, which not only includes members of NCMA, but also includes professionals who are not members of NCMA.

Additionally, NCMA's impact also indirectly affects other well established professional associations such as the National Association of State Procurement Officials (NASPO), NIGP: The Institute for Public Procurement, and World Commerce and Contracting.

Our research findings support what was found in the literature review, that is, when professional associations develop and publish consensus-based bodies of knowledge and industry standards, these associations are more apt to have an impact on the professional workforce.

If these bodies of knowledge did not exist in a consensus-based and published form, the associations would not have the traction needed to make such an impact on governments, industry, and academia.

Additionally, when these artifacts (e.g., BOKs, standards, certifications) are accredited by a third party (e.g., ANSI), these artifacts gain credibility and will be accepted more readily by governments, industry, and academia.

However, one of our research findings does raise a significant point. Although the NCMA certifications are based on the CMBOK and CMS (i.e., CPCM is affiliated with the CMBOK, and the CCMA is affiliated with the CMS), these certifications have not received the same level of traction as the CMBOK and the CMS.

Although these NCMA certifications may be desired as reflected in recruitment notices by government, industry, and academia, they have not been adopted by any organization or deemed required in order to enter or advance in the contract management profession in any sector, compared to the acceptance of the PMP certification for the project management workforce (Winter and Thomas, 2005).

Additionally, there are some professional certifications that have been recognized as required for some career fields or adopted as equivalent to some government occupational certifications. For example, the Certified Defense Financial Manager (CDFM) certification conferred by the American Society of Military Comptrollers (ASMC) has been accepted by the DoD as being an authorized alternative for the DoD Financial Management Certification Program (DFMCP) (OUSD, 2021).

Thus, further research is needed to explore why some certifications of other professional associations have made more of an impact on their professional workforces while other certifications have not made such an impact.

Conclusion

Today's organizations have become increasingly technical and complex network systems. In addition, their workforce requires specialized knowledge and training to successfully perform their mission. These organizations and their workforces have come to rely on professional associations to provide specialized knowledge and training.

Today, professional associations represent almost every profession and provide education, training, and certifications to workforce members in professional fields. The purpose of this research was to show how NCMA has made an impact on the contract management profession with its CMS, CMBOK, and professional certifications.

The question of this research was, "How has NCMA made an impact on the contract management profession?" Our findings show that NCMA has made an impact in several aspects of the contract management profession.

In the area of workforce training and professional development, NCMA's CMS has been adopted by all federal civilian and defense agencies as well as several state procurement agencies. We also see NCMA's impact on industry, in terms of adopting the CMS in corporate hiring and training frameworks, as well as using the CMS as a quality assurance guide for their contracting teams.

Finally, we see NCMA's impact on academia, where colleges and universities have incorporated the CMBOK and CMS into their contract management curricula at both the undergraduate and graduate levels. However, in terms of professional certifications, further research is needed to explore why some certifications of other professional associations have made more of an impact to their professional workforces while other certifications have not made such an impact.

Endnotes
1   National Contract Management Association. https://www.ncmahq.org/

2   Contract Management Standard™. https://www.ncmahq.org/Web/Web/Standards---Practices/Contract-Management-Standard-Publication.aspx?hkey=5f1fdc7a-f748-437d-a5a1-3e9af7cdb83c

3   Contract Management Body of Knowledge®. https://www.ncmahq.org/Web/Web/Standards---Practices/Contract-Management-Body-of-Knowledge.aspx?hkey=601e6946-ee00-4bbe-bcbd-f266de40af71

4   American National Standards Institute. https://ansi.org/

5   Federal Acquisition Regulation. https://www.acquisition.gov/content/far-index

6   Uniform Commercial Code. https://www.law.cornell.edu/ucc

7   North Carolina Administration Code, Chapter 5 (Purchase and Contract). http://reports.oah.state.nc.us/ncac.asp?folderName=%5CTitle%2001%20-%20Administration%5CChapter%2005%20-%20Purchase%20and%20Contract

8   Certified Contract Management Associate. https://www.ncmahq.org/Web/Web/Certification/CCMA.aspx?hkey=3221f512-d78b-46c1-bde4-c4c33edf977c

9   ANSI National Accreditation Board. https://anab.ansi.org/

10 ANSI Accredited Standards Developers. https://ansi.org/american-national-standards/info-for-standards-developers/accredited-standards-developers#sort=%40titlecomputed%20ascending

11 ANSI Essential Requirements. https://ansi.org/search#q=ansi%20essential%20requirements&sort=relevancy

12 ISO/IEC 17024:2012 Conformity Assessment – General Requirements for Bodies Operating Certification of Persons. https://ansi.org/search#q=ansi%20essential%20requirements&sort=relevancy

13   ANSI ISO 17024 Accreditations (NCMA Accreditation
     Certificate). https://anabpd.ansi.org/Accreditation/
     credentialing/personnel-certification/AllDirectoryD
     etails?&prgID=201&OrgId=52350&statusID=4

14   ANSI Affiliation. https://www.ncmahq.org/Web/
     Web/Standards---Practices/ANSI-Accreditation.
     aspx?hkey=69757711-d9be-4c75-8f5b-bf667a38e859

15   Contract Management Body of Knowledge®, Seventh Edition,
     National Contract Management Association, 2023.

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Appendix 1: CMS-FAR-UCC-NCAC Matrix

This matrix cross-references the competencies and job tasks of the *Contract Management Standard*™,
Third Edition [American National Standard ANSI/NCMA ASD 1-2019 (R2022)] with the:
- Parts of the *Federal Acquisition Regulation*,
- Articles of the *Uniform Commercial Code*, and
- Sections of the *North Carolina Administrative Code*.

CMS Competency	Job Task	FAR (Part)	UCC Article (Part)	NCAC (Section)
1.0 Guiding Principles				
1.1 Skills and Roles		1	1, 2 – 9 (1)	05A.0101, 05A.0104, 05B.1803, 05D.0101
1.2 Contract Principles		1	1, 2 – 9 (1)	05A.0102, 05A.0108
1.3 Standards of Conduct		3, 9	1, 2 – 9 (1)	05B.0103, 05B.1511
1.4 Regulatory Compliance		22, 23, 24, 27, 28, 29	1, 2 – 9 (1)	05B.0301, 05B.0315, 05B.1401, 05B.1523, 05B.1601, 05B.1605, 05B.1804
1.5 Situational Assessment		17, 18, 25, 34, 35, 36, 37, 38, 39, 41, 50	1, 2 – 9 (1)	05B.0600, 05B.1602-3
1.6 Team Dynamics		1, 2, 4	NA	05B.1512-3, 05D.0102
1.7 Communication and Documentation		1 – 52	1 – 9	05A.0112, 05B.1901 & 3
2.0 Pre-Award				
2.1 Develop Solicitation				
2.1.1 Plan Solicitation	Shape Internal Customer Requirements	11	NA	05B.0200, 05B.0316-7, 05B.0701, 05B.1101-2, 05B.1105, 05B.1201, 05B.1504-6, 05B.1508-9, 05B.1521-2, 05D.0201-6
	Conduct Market Research	5, 7, 10	NA	05B.0200, 05B.0316-7, 05B.0701, 05B.1101-2, 05B.1105, 05B.1201, 05B.1504-6, 05B.1508-9, 05B.1521-2, 05D.0201-6
	Perform Risk Analysis	6, 8, 10, 15, 19, 26	NA	05B.0200, 05B.0316-7, 05B.0701, 05B.1101-2, 05B.1105, 05B.1201, 05B.1504-6,

Appendix 1: CMS-FAR-UCC-NCAC Matrix

				05B.1508-9, 05B.1521-2, 05D.0201-6
	Formulate Contracting Strategy	12, 13, 14, 15, 16	NA	05B.0200, 05B.0316-7, 05B.0701, 05B.1101-2, 05B.1105, 05B.1201, 05B.1504-6, 05B.1508-9, 05B.1521-2, 05D.0201-6
	Finalize Solicitation Plan	12, 13, 14, 15	NA	05B.0200, 05B.0316-7, 05B.0701, 05B.1101-2, 05B.1105, 05B.1201, 05B.1504-6, 05B.1508-9, 05B.1521-2, 05D.0201-6
2.1.2 Request Offers	Execute Solicitation Plan	12, 13, 14, 15	NA	05B.0100, 05B.0314, 05B.1516
	Prepare Solicitations	12, 13, 14, 15	NA	05B.0100, 05B.0314, 05B.1516
	Issue Solicitations	5, 12, 13, 14, 15	2 (2)	05B.0100, 05B.0314, 05B.1516
	Respond to Seller Communications	5, 12, 13, 14, 15	2 (2)	05B.0100, 05B.0314, 05B.1516
	Amend Solicitations	12, 13, 14, 15	2 (2)	05B.0100, 05B.0314, 05B.1516
2.2 Develop Offer				
2.2.1 Plan Sales	Conduct Pre-Sales Activities	3, 5	NA	NA
	Evaluate Solicitation	2	2 (2), 2A (2), 6	NA
	Conduct Bid/No-Bid Analysis	6, 9	2 (2) 2A (2)	NA
	Finalize Sales Plan	7, 12, 13, 14, 15	2 (2), 2A (2), 6	NA
2.2.2 Prepare Offer	Execute Sales Plan	12, 13, 14, 15	2 (2), 2A (2)	05B.0303, 05B.0304
	Develop Execution Plan	45, 46	2 (2), 2A (2)	05B.0303, 05B.0304
	Develop Risk Mitigation Plans	32, 42, 49	2 (3), 2A (2)	05B.0303, 05B.0304
	Assess Teaming Options and Partners	9, 19, 44, 51	2 (2), 2A (2)	05B.0303, 05B.0304
	Participate in Customer Communications	5	2 (2), 2A (2)	05B.0303, 05B.0304
	Finalize Offer	4, 53	2 (2), 2A (2), 6	05B.0303, 05B.0304

3.0 Award

3.1 Form Contract				
3.1.1 Price or Cost Analysis	Comprehend Offer	12, 13, 14, 15	NA	
	Evaluate Seller Terms & Their Impact on Risk	12, 13, 14, 15	3 (2)	
	Determine Reasonable Pricing	30, 31	3 (2)	
	Document Analysis Results	30, 31	3 (2)	
3.1.2 Plan Negotiations	Clarification Requests	12, 13, 14, 15	NA	05B.0307
	Document Negotiation Objectives	12, 13, 14, 15	NA	05B.0307

Appendix 1: CMS-FAR-UCC-NCAC Matrix

	Conduct Discussions	12, 13, 14, 15	NA	05B.0307
3.1.3 Select Source	Review Compliance of Offer(s)	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Source Selection	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Conduct Negotiations	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Finalize Negotiations	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Final Offer Revision	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Prepare Contract Document	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Finalize Contract Award	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
	Document Outcome of Offer	12, 13, 14, 15	2 (2 − 3), 2A (2)	05B.0305, 05B.0306, 05B.0308, 05B.0309, 05B.0310, 05B.0312, 05B.0500, 05B.1402, 05D.0208
3.1.4 Manage Disagreements	Submit Protests and Appeals	33	NA	05B.1519
	Respond to Protests and Appeals	33	NA	05B.1519
4.0 Post-Award				
4.1 Perform Contract				
4.1.1 Administer Contract	Execute Contract	12, 13, 14, 15	1 − 9	
	Conduct Post-Award Conference Meeting	42	NA	
	Maintain Contract Documentation/Files	4, 45	1 − 9	
	Provide Cost Information	30, 31	3 (2), 4, 4A, 5	
	Establish/Maintain Communications	1	NA	

Appendix 1: CMS-FAR-UCC-NCAC Matrix

	Evaluate Interim Contractor Performance	42, 47, 48	2 (2, 5, 6, 7), 2A (2, 4)	
	Manage Deliverables	12, 13, 14, 15	2 (2, 5, 6, 7), 2A (2, 4)	
4.1.2 Ensure Quality	Plan for Contract Performance Delivery	46	2 (5, 6, 7), 2A (2, 4), 3 (2)	05B.0900, 05B.1001, 05B.1507
	Plan for Contract Performance Monitoring	46	2 (5, 6, 7), 2A (2, 4), 3 (2)	05B.0900, 05B.1001, 05B.1507
	Inspect and Accept Contract Performance	46	2 (5, 6, 7), 2A (2, 3, 4), 3 (2)	05B.0900, 05B.1001, 05B.1507
4.1.3 Manage Subcontracts	Determine Supply Chain Requirements	9, 19, 44	2(2)	
	Issue Subcontracts	9, 44	NA	
4.1.4 Manage Changes	Manage Contract Changes	43	2 (2, 6, 7), 2A (2), 3 (2)	05B.1108, 05D.0207
	Conduct Contract Interpretation	2, 33	2 (1), 3(2)	05B.1108, 05D.0207
	Determine Contract Termination	49	2 (6, 7), 2A (2, 4, 5), 3 (3)	05B.1108, 05D.0207
4.2 Close Contract				
4.2.1 Close Out Contract	Validate Contract Performance	42	NA	
	Verify Physical Contract Completion	42	NA	
	Prepare Contract Completion Documents	4	NA	
	Coordinate Final Disposition of Owner-Provided Property/Equipment/Information	45	NA	
	Settle Subcontracts	44	NA	
	Reconcile Contract	4	NA	
	Make Final Payment	4, 31, 32	4, 4A, 5	
	Evaluate Final Contractor Performance	42, 47, 48	NA	
	Finalize Contract	4, 12, 13, 14, 15, 42, 52	NA	

Appendix 2: Comparison of Conformity Requirements of the CMS™ and the CCMA

Element	CMS™	CCMA
Third-Party Assessment Performed By	American National Standards Institute (ANSI) • **ANSI Executive Standards Council** • New York City, NY	ANSI National Accreditation Board (ANAB) • **ANAB Personnel Credentialing Accreditation Committee** • Washington, DC
ANSI and ANAB Preliminary Requirements to Receive Assessment	Must be an ANSI Accredited Standards Developer with written procedures to: • Develop standards based on consensus, • Allow public review and comments on draft standards, • Respond to comments, • Incorporate approved changes, and • Right to appeal.	Must sponsor a viable certification program. Each exam must: • Be psychometrically assessed to assure fairness, validity, reliability, and general performance • Have a "cut score study" conducted to establish a score to determine competence
Criteria for ANSI Approval and ANAB Accreditation	*ANSI Essential Requirements* • Must demonstrate due process, openness, lack of dominance, balance, coordination and harmonization, consideration of views and objections, consensus vote, appeals, and written procedures	ISO/IEC 17024:2012 (*Conformity Assessment—General Requirements for Bodies Operating Certification of Persons*) • Must demonstrate impartiality, openness, lack of dominance, balance, consensus vote, appeals, and written procedures
ANSI and ANAB Dates of Recognition	• April 20, 2018: NCMA becomes an ANSI Accredited Standards Developer • April 22, 2019: CMS™ is approved as an American National Standard (ANSI/NCMA ASD 2019-1)	• April 20, 2021: CPCM™ is accredited • December 6, 2021: CCMA is accredited
Compliance Audits	ANSI conducts the initial audit within two years of a standard being approved as an American National Standard. NCMA was audited in 2021. Unless requested sooner by NCMA or ANSI, subsequent audits are typically performed every 10 years. The Audit Program is intended to: • Strengthen the voluntary consensus standards system • Confirm adherence to the developer's and ANSI's procedures • Increase the credibility and the effectiveness of the process	The following annual compliance checks are required by ANAB: • Impartiality Assessment • Document Review • Legal Liability Review • Internal Audit • Management System Review • ANAB Surveillance In addition, NCMA annually checks the performance of every question and refreshes each exam

Appendix 2: Comparison of Conformity Requirements of the CMS™ and the CCMA

	• Assist developers in improving their process and detecting potential problems	
Program Governance	*Standards Consensus Body* • Members are appointed by the NCMA Board Chair for 3-year terms • Comprised of a balance of buyers, sellers, and general interest members • NCMA membership is not required	*Certification Oversight Body* • Members are appointed by the NCMA CEO for 3-year terms • Comprised of a balance of buyers, sellers, and general interest members • NCMA membership is not required
Formation	A Job Task Analysis (JTA) was performed to determine the importance and frequency of use of common job tasks of buyers and sellers	• The JTA that formed the CMS™ was used to determine the number of questions per competency in the CCMA and CPCM™ exams • All CCMA questions are sourced directly to the CMS™ and all CPCM™ questions are sourced directly to the CMBOK®

Appendix 3: CMBOK® Outline of Competencies

A. Leadership	B. Management	1.0 Guiding Principles	2.0 Pre-Award	3.0 Award	4.0 Post-Award	C. Learn
A.1 Competence	B.1 Business Management	1.1 Skills and Roles	**2.1 Develop Solicitation**	**3.1 Form Contract**	**4.1 Perform Contract**	C.1 Continuous Learning
A.2 Character	B.2 Change Management	1.2 Contract Principles	2.1.1 Plan Solicitation	3.1.1 Price or Cost Analysis	4.1.1 Administer Contract	C.2 Individual Competence
A.3 Collaboration	B.3 Financial Management	1.3 Standards of Conduct	2.1.2 Request Offers	3.1.2 Plan Negotiations	4.1.2 Ensure Quality	C.3 Organizational Capability
A.4 Emotional Intelligence	B.4 Project Management	1.4 Regulatory Compliance	**2.2 Develop Offer**	3.1.3 Select Source	4.1.3 Manage Subcontracts	
A.5 Vision	B.5 Risk Management	1.5 Situational Assessment	2.2.1 Plan Sales	3.1.4 Manage Disagreements	4.1.4 Manage Changes	
	B.6 Supply Chain Management	1.6 Team Dynamics	2.2.2 Prepare Offer		**4.2 Close Contract**	
		1.7 Communication and Documentation			4.2.1 Close Out Contract	

Appendix 4: Comparison of CMS™ and CMBOK® Characteristics

	Contract Management Standard™	Contract Management Body of Knowledge®
Purpose	Describes contract management in terms of the processes created through the integration and interaction of job tasks and competencies, and the purposes they serve.	Provides a common understanding of the terminology, practices, policies, and processes used in contract management.
Approach	Provides explanations of consensus-based domains, competencies, and job tasks in the contract life cycle.	Provides broader and deeper explanations of CMS™ domains, competencies, and job tasks, and emphasizes leadership, management, and learn competencies.
Design	Presents the contract as a linear system in terms of a product life cycle.	Presents the contract management practice as a circular, interactive system in terms of a competence development model.
Development	Job Task Analysis, SME review and drafting, peer review, and formal comment validation.	Uses the CMS™ as its foundation, SME input and review, and literature review.
Pages	18	> 400
Affiliated Certification	Certified Contact Management Associate	Certified Professional Contract Manager®

Appendix 5: NCCM Curriculum – Contract Manager Certification

Criteria	Requirement					
Education/ Job-related Experience	• Associate degree* or higher in a related field from a regionally accredited institution • Job-related experience of two or more years					
Training/Coursework	□ NCPA coursework (156 credit hours)					
Exam	□ Passing score of 75% or higher on the NCCM exam					
Course Number	**Course Prefix**	**Course Name/ Main Competency**	**Delivery Method**	**Course Type**	**Suggested Prerequisite**	**Credit Hours**
Select ALL from list below:						
□ C300	CCON	NCCM *Connect*	Online	Core		12
□ C301	LL	Leadership and Learn Competencies (A. and C.)	Online	Core		24
□ C302	MGT	Management Competency (B.)	Online	Core	C301	24
□ C303	GP	Guiding Principles (1.0)	Online	Core	C301, C302	24
□ C304	PRE	Pre-Award Life Cycle Phase (2.0)	Online	Core	C301, C302, C303	24
□ C305	AWD	Award Life Cycle Phase (3.0)	Online	Core	C301, C302, C303, C304	24
□ C306	POST	Post-Award Life Cycle Phase (4.0)	Online	Core	C301, C302, C303, C304, C305	24
Total						156 Core 156 Total

*Waiver available

Appendix 6: Participant Responses on Program Impact

Category	Response Rate	Category Defined	Example Responses
Acquired New Knowledge (ACQ)	72%	Promoted new thinking about work practices, brought awareness of new concepts/ideas, gained heightened sense of concepts, gained guidance and direction, obtained knowledge of theory and practice.	"[I] honestly never thought about them [guiding principles] in such a concise way." "Throughout this course, I realized there is much more to contract implementation than I realized." "New insights I gained from my coursework have to do with my continued learning on ethical behavior and technology in contract management."
Increased Collaboration (COL)	70%	Removed work silos, shared information with internal and external stakeholders, increased communication, promoted trust, increased documentation, provided support for internal and external stakeholders.	"One theme in several of the courses is that we are not an island and to lean on each other for help." "I have become more intentional about documenting communication with vendors [and] creating an electronic folder to 'file' conservations and decisions throughout the life cycle of the contract." "I hope to share this information with my team."
Increased Use of Resources and Common Language (RES)	39%	Increased awareness of CMS/CMBOK, engaged with articles, increased exposure to professional organizations, stayed abreast of new practices/concepts, learned common language.	"Before taking this course, I didn't even know that a professional association of Contract Managers existed." "I...enjoyed the reading reflections and articles...and I am excited to read and review the articles that are to come." "I'm...researching using the NASPO website. I will also research other resources to gain this additional knowledge..."

Appendix 6: Participant Responses on Program Impact

			"[Outcomes included] agreeing around standard language, based upon the CMBOK/CMS."
Applied Knowledge (APP)	35%	Changed practice, made plans to change future practice.	"I have been able to apply what I have learned by embracing the characteristics [of] a good leader/team member." "I will be taking what I have learned and applying it to upcoming contracts….and implementing what I can on contracts I already have in place." "I eagerly anticipate applying the wealth of knowledge I've acquired during this course."
Improved Processes (PRO)	35%	Created new processes or workflow, increased understanding of processes.	"One thing I have learned [is to have] a successful contract to be implemented from start to finish." "This coursework really helped me to see the full view of the contracting process and how each role is pivotal to the success of a contract." "I plan to completely overhaul our contract closeout file process."
Improved Practice (IMP)	31%	Practiced and refined skills, formed effective habits.	"Developing the habit of remembering to save emails and documents…is a hurdle that is easy to overcome." "The courses did cause me to implement further controls on contracts and scrutiny of proposed contracts to avoid pitfalls pointed out in the coursework." "One of my biggest takeaways has been how to be a better leader."

Appendix 6: Participant Responses on Program Impact

			"I now really look at the bid language and the specifications to make sure they are clear and concise."
Influenced or Impacted Others (INF)	15%	Increased influence among team members or organization, impacted work or teams.	"I didn't realize the impact that I could have on the success of a project through the contract life cycle and how much of an influence I can and should be among the team." "[Outcomes included] helping others to make sure they know their responsibilities and how they can accomplish them."
Gained Foundational or Background Knowledge (FND)	15%	Increased knowledge at foundational level, gained background knowledge, obtained context.	"I believe the course has given me some much needed context around how contracting works." "The NCCM program is providing a good foundation for me to build upon."
Validated Current Practice (VAL)	13%	Renewed understanding, reinforced known concepts, reflected on current practices.	"It [coursework] allowed me to reflect on things that we are doing well and areas we can work on." "The…Contract Management course has given me a renewed understanding and appreciation for the work process as a whole."
Increased Time Efficiency (TME)	9%	Increased awareness of time management, increased awareness of time saving efforts.	"The outcome [of documenting conversations] is that it saves time and does not rely on me recalling interactions with the vendor." "The amount of time it takes to delegate…can be time consuming, but it saves time on the back end." "A competent leader factors in time management, but will not let losing track of time interfere with continued learning."

Appendix 6: Participant Responses on Program Impact

Gained Confidence (CON)	7%	Increased confidence, heightened sense of self-confidence.	"As my knowledge and confidence grows, I am making improvements…" "I am more confident and better prepared to support my customers." "It gives me more confidence when dealing with difficult tasks and stakeholders." "Since taking this course…I have been able to attack my contracts with a [sic] increased amount of confidence because I have a better understanding of … how I should go about completing my contracts."
Set Goals (GLS)	6%	Increased goal setting, defined individual or organizational goals.	"One of the goals that I defined early on in this course was to delegate more." "I've [started using] goal-setting throughout the procurement and contracting processes."
Changed Culture (CUL)	4%	Increased awareness of need for culture change, uncovered systematic issues.	"…Contract administration management concepts…or the lack of knowledge and appreciation for them may be the root cause of some systematic issues we are experiencing." "I can use some of the course materials to try and illustrate where value is added, and I plan to do so but this will require a cultural change and time."
Changed Mindset or Practices in Other Areas Beyond Work (OTH)	4%	Transferred learning to personal life, improved self-care.	"I have gained the knowledge that my procurement work and skillset bleeds over into my personal life." "The daily demands can be overwhelming sometimes. However, I am determined to practice self-care so I can be my best."

NOISE ANALYSIS: VARIABILITY IN CONTRACT MANAGER DECISION-MAKING

BY JAMES RICH, MPA, Ph.D.; DR. RENE G. RENDON, CPCM, CFCM, CPSM, PMP; AND RICHARD WAHIDI, MBA

Abstract

PURPOSE: Contract managers, including contracting officers, make decisions every day in the performance of their duties, which are shaped by both individual knowledge and experience in contract management (i.e., judgment) as well as the application of rules, procedures, and checklists. In making these day-to-day decisions, contract managers are allowed wide latitude to exercise business judgment to accomplish the organization's mission. Thus, this wide latitude may result in variability in these decisions, such that agencies do not expect contract manager decisions to be consistently the same. But often, the cumulative level of variability – a concept entitled noise – in the decision-making process far exceeds that which organizational leaders would otherwise tolerate. The purpose of this research is to investigate the level of noise in contract management environment.

DESIGN/METHODOLOGY/APPROACH: The methodology for this research included the deployment of a Qualtrics-based survey to a small sample population of contract management professionals. The survey consisted of 11 short scenario questions requiring applied judgment to make an appropriate contracting decision. Each scenario included multiple options, with one option to be selected by the respondents. The scenarios and questions were structured such that there is no absolutely correct answer. After administering the survey, an analysis on the respondents' selected options to the scenarios was conducted to determine the level of noise in the respondents' answers.

FINDINGS: Because contracting officers/contract managers make decisions based on individual judgment and interpretation of contracting policies and statutes, it is impractical to expect zero variability in contract manager decisions. The problem facing organizational leaders is perhaps more of acknowledging that variability in contracting decision-making exists, analyzing the cumulative effects of variability in selected decision-making activities, and determining appropriate tolerance levels so that unwanted variability in judgment, or noise, can be managed across the organization.

ORIGINALITY/VALUE: Although this was an exploratory investigation on noise in contracting officer/contract manager decision-making with a very limited population sample, our preliminary findings indicate there is some level of variability in contracting decision-making. Managers may not be able to identify and quantify noise across the organization, but they could examine discrete, quantitative decision processes for evidence of variability. If the variance is unwarranted and unwanted, managers will have a problem to resolve, and will have gained a new lens to view the decisions made by the organization.

Keywords
noise, decision-making, contract manager, contracting officer, contract management

Contract Management Body of Knowledge® (CMBOK®) Competencies
A. Leadership
1.0 Guiding Principles
2.0 Pre-Award
3.0 Award
4.0 Post-Award
C. Learn

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Introduction

The federal government obligates billions of dollars on contracts every year for the procurement of supplies and services.[1] These contracts are planned, awarded, and administered in accordance with statutory and regulatory requirements by formally designated contracting officers who establish, administer, or terminate contracts and make related determinations and findings.[2]

In performing these duties, contracting officers must make decisions necessary for effective contract management, ensuring compliance with the terms of the contract[3] and safeguarding the public interests of the United States in its contractual relationships.[4]

While federal government contracts must comply with statutory and regulatory requirements, most contracting officer decisions are shaped by a combination of individual knowledge and experience in contract management (i.e., judgment) as well as the application of standard rules, procedures, and/or checklists.[5]

In making these decisions, contracting officers are allowed wide latitude to exercise sound business judgment,[6] which may result in variability in the decision-making process. That is, faced with the identical set of circumstances, different contracting officers may arrive at different decisions. In addition, the same contracting officer may arrive at a different decision given different situational factors such as changes in urgency of requirements or shifts in organizational guidance.

While leaders expect and accept variability in contracting officers' decision, they should be concerned when a pattern of unwanted variability, a concept referred to as "noise,"[7] persists and impacts the organization.

Research Purpose and Methodology

The purpose of this exploratory research is to investigate the level of unwanted variability (noise) in contracting officer/contract manager decisions. Our primary research question is, "To what extent does noise in decisions exist in the contracting officer/contract manager workforce?"

The methodology for this research included the deployment of a Qualtrics-based survey to a small sample population of contract management professionals. The survey consisted of 11 short scenario questions requiring applied judgment to make an appropriate contracting decision. Each scenario included multiple options, with one option to be selected by the respondents. The scenarios and questions were struc-

tured such that there is no absolutely correct answer. The survey was also voluntary and anonymous, and included demographic questions.

After administering the survey, an analysis on the respondents' selected options to the scenarios was conducted to determine the level of noise in the respondents' answers.

Organization of Paper

This paper presents our exploratory research findings on the level of noise in contracting decisions. Our paper is organized in four sections. This first section provided the introduction, problem statement, research purpose, and research question. The next section will provide a review of the literature on decision-making under uncertainty, as well as research on noise in decision-making and its application to government contracting. In the third section of our paper, we discuss the results of our contracting scenario survey, present our findings on noise, and include a discussion on the implications of our findings to government contracting. In the final section of our paper, we conclude our research and provide areas to consider for further research.

Literature Review

Decision-Making Under Uncertainty

There is extensive academic literature on decision-making under uncertainty, which has been interpreted using different perspectives. For example, Bailey defines uncertainty as characterization of an unknown future outcome and its relation to ambiguity.[8] Su and Tung characterize uncertainty as lack of perfect understanding related to access to information.[9]

Within a business administration context, Reggiani and Weerts characterize uncertainty in decision-making as making forecasts with support from cost modeling.[10] Finally, Tversky & Kahneman characterize decision-making under uncertainty as making judgment calls.[11]

Regardless of how decision-making under uncertainty is characterized, the academic literature presents decision-making under uncertainty using a combination of cognitive and behavioral approaches.[12] The cognitive-focused approach researches decision-making under uncertainty by exploring intellectual areas such as how to access and process information to reduce uncertainty.

For example, Loewenstein explored Information Gap theory,[13] Allen, Augier, and Jones researched bounded rationality and its impact on decision-making under uncertainty.[14,15,16] Additionally, Morgan, Fischhoff,

Bostrom, and Atman, explored bias, belief, and past experiences.[17] Finally, research on heuristics processes in decision-making was completed by Tversky and Kahneman.[18]

In making decisions under uncertainty, many managers rely on heuristic principles to reduce the complex tasks of assessing probabilities and predicting values to much simpler judgmental approximations.

For example, in their research on judgments and decisions in situations of uncertainty, Tversky and Kahneman described three heuristics used by decision-makers when making decisions under uncertainty: representativeness, availability of instances or scenarios, and adjustment from an anchor. They conclude that although these heuristics are economical and effective, they do lead to systematic and predictable errors. A better understanding of these heuristics could improve decisions in uncertain conditions.

The literature on decision-making under uncertainty also includes research that reflects the behavioral-focused approach. This research explores decision-making under uncertainty by investigating areas including procedures, preferences, making executive choice, and action execution.[19] For example, in the area of procedures, researchers have focused on improving decision-making by defining means and ends for steps within the decision-making process.[20]

Behavioral-focused research in the area of preference or belief includes Golman, Loewenstein, Moene, and Zarri's research on the impact of communicating preferences and beliefs as a technique that explains the phenomena that contributes to the decision-maker's preferences and knowledge.[21]

In their research on how and why managers change their minds in decision-making, Resulaj, Kiani, Wolpert, and Shadlen proposed that in the decision-making process, noisy evidence is accumulated over time until it reaches a criterion level that determines the initial decision made by the manager. Once the initial decision is made, the researchers also state that the brain tends to exploit information in its processing pipeline to subsequently either reverse or reaffirm the individual's initial decision.

The authors' model explains the frequency of changes of mind, as well as their dependence on task difficulty and whether the initial decision was accurate or erroneous.[22] In their research on bias and noise in forecasting, Satopää, Salikhov, Tetlock, and Mellers, proposed a model for disentangling the underlying processes that enable decision-makers to improve

forecasting, specifically by either reducing bias and noise in judgment or by increasing the extraction of valid information from the environment. Their model revealed that noise reduction plays a surprisingly consistent role for enhancing decision-makers' performance.[23]

Finally, in their research on contractual and trust-based governance in strategic alliances under behavioral and environmental uncertainty, Krishnan, Geyskens and Steenkamp found that contractual governance works best under low to moderate levels of behavioral uncertainty and moderate to high levels of environmental uncertainty, while it is detrimental to alliance performance when both types of uncertainty are low or high.

Trust-based governance is most effective at high levels of behavioral uncertainty and low levels of environmental uncertainty, whereas it suffers a large loss of usefulness at high behavioral uncertainty as environmental uncertainty increases.[24] Overall, while there is extensive academic literature on manager decision-making under uncertainty, there is less developed research on noise in decision-making.[25] The next section of the literature review will discuss the concept of noise in decision-making.

Noise in Decision-Making

The concepts of noise and bias in decision-making can be attributed to research conducted by Kahneman, Rosenfield, Gandhi, Blaser in 2016. In their *Harvard Business Review* article, "Noise: How to Overcome the High, Hidden Cost of Inconsistent Decision Making," Kahneman, et al., argue that although organizational leaders expect to see consistency in the decisions of their managers that require judgment, "judgments can vary a great deal from one individual to the next, even when people are in the same role and supposedly following the same guidelines."[26]

Individually, this variability in decision-making can be caused by a wide array of factors (e.g., mood, weather, disposition) that can change decisions made from one occasion to another occasion. Cumulatively, however, Kahneman, et al., emphasize that leaders are usually completely unaware when patterns of unwanted variability, called noise, persist in the organization.

Their research states that noise in decision-making can result in "successful companies losing substantial amounts of money without realizing it".[27] In a follow-on research article by Kahneman, Sibony, and Sunstein published in *Noise: A Flaw in Human Judgement* in 2021, the researchers broached new ways of explaining why people make bad judgments. Their research examined decades of data on noise, its profound impact on how people make decisions, and provided compelling reasons to identify and manage its effects. Most of all, their research revealed that organizational noise is more prevalent, persistent, and pernicious than leaders may think.[28]

At a summary level, noise is aggregated, unwanted variability in the decision-making process. Related to noise is the concept of bias, which is a type of systematic deviation relative to an accurate baseline. Kahneman et al[29] provides a readily understood example of bias. Consider a bathroom scale that consistently reflects a weight five pounds heavier than one's actual weight. If you were to weigh yourself on this scale 10 times, your weight measures may vary only slightly, but they would be systematically high and inaccurate. This directional error type is called bias.[30]

Now imagine a scale that, instead of systematic overrepresentation, outputs a different weight every time the same person steps on it. The data points might be higher or lower than the actual weight of the individual – it may even occasionally be accurate, like a watch that is stopped yet ironically correctly identifies the time twice a day. The second scale is not biased, but it is noisy.[31] Differentiating between bias and noise is a simple but compelling distinction between two types of error.

Measuring Noise

To examine its effects, noise can be measured by evaluating the judgment of two or more professionals assessing the same scenario where quantitative data is available. The differences in judgment, or variability, can measure the potential level of noise. But where does that variability come from? Some of it comes from the simple fact that individuals possess unique experiences and differ in how they apply their professional skills and judgment.

On the other hand, some judgments reflect occasion noise, which Kahneman et al define as the idiosyncratic behavior component of how we perform at a particular moment of time in our environment.[32] Consider this example: You are a contract manager on a source selection team evaluating eight proposals. On Monday, you review four proposals, and your assessments are generally very positive. On Tuesday, you are involved in a minor car accident on the way to work, which results in damage both to your car and a large

cappuccino stain on your shirt. You arrive to work late and dive into evaluating the remaining proposals.

The remaining four proposals now appear to contain more deficiencies than those you previously reviewed, an observation that is reflected in your ratings. Later in the week, the team completes their individual scoring, and they gather to compare assessments. Your assessments of the first four proposals are consistent with that of the other evaluators, but your assessments of the proposals evaluated on Tuesday are much lower than those of other team members.

The variability in this example reflects occasion noise.[33] Your mood, temperament, etc., on Tuesday may have been dramatically different than on Monday, and naturally your professional judgment varied with it. There is a chance that your assessment of the final four proposals was accurate, and the rest of the team were overly generous in their scoring – but it is more likely that you inadvertently made the process noisier.

Not all activities in the contracting organization are subject to noise. For rote and/or routine tasks you may see little noise. Furthermore, organizations develop and implement checklists to standardize best practices and produce consistent results. That said, many tasks in contract management require application of individual discretion – and with discretion comes noise.

Because exercising discretion is necessary to perform contract management duties, a degree of variability is natural and not necessarily a bad thing. Competent professionals can, and frequently do, disagree on a range of critical issues and decisions, yet still manage to produce favorable outcomes for the organization and its stakeholders.

Ultimately, what is important is that contract managers and organizational leaders know which specific activities or processes (e.g., cost estimation) have accumulated unwanted variability and become noisy. If there is a trend in variability (e.g., 10%), and management is tracking and tolerates this level of difference in decision-making across the organization, then noise may not be a problem. This, however, may not always be the case.

Contract managers who lack visibility of noise in their organizations, and thus have no baseline by which to measure these types of errors, generally remain unaware of patterns of unwanted variability and their impact on their decision-making. Similarly, unless otherwise equipped to manage noise, leaders generally remain blind to its total impact on the organization.

The data on being able to accurately guess the level of an organization's noise is also spotty at best.[34] To manage unwanted variability, or noise, leaders must first detect it. And the most straightforward method to evaluate contracting decision-making for noise is to collect the data and conduct a noise audit.

The Noise Audit

A noise audit involves choosing one discretionary contracting process, collecting results of different people performing the same process, and producing a noise index to measure variability within that overall process.[35] Again, we can frame the structure of the audit and the resultant report in the context of the contract management environment. Given similarly competent employees, the objective of the noise audit is to determine how much their judgment differs in performing the same process.

For example, if Contracting Officer A determines that the highest fair and reasonable price she will pay for a modification is $25,000, while Contracting Officer B establishes a ceiling price of $22,000, then the average value of their decisions is $23,500 and the difference between their judgment is $3,000. As a result, their noise index would be $3,000/$23,500, or approximately 13%.

Kahneman provides concise guidance on how to conduct a noise audit and cautions that organizations are likely noisier than managers may expect. However, a noise audit not only detects unwanted variability, but also bias, blind spots and other judgment factors that can help the manager develop corrective strategies to improve decision-making processes and practices in the organization.[36]

Critically, noise audits can help establish and/or recalibrate thresholds of acceptable variability. The next section discusses our specific research in investigating noise in contract management decision-making.

Investigating Noise in Contract Management Decision-Making

We applied the noise theory as developed by Kahneman, et al., by investigating the level of noise in contracting decision-making. We first developed an assessment tool that required a respondent to make a judgment-based contracting decision. We then deployed the assessment tool to a representative sample of contracting officers/managers. Finally, we analyzed the level of variability in the respondents' decisions and then discussed the implications of our findings.

Figure 1. Population Demographics

Years of CM Experience	
3 or Less	0
4 to 8	3
9 to 13	8
14 to 19	10
20 or More	21

Employment Sector	
Public (Buyer)	18
Private (Buyer)	7
Private (Seller)	20
Academia	8
CO Warrant	19

DAWIA /FAC-C Level	
None	19
I	2
II	1
III	18

Professional Certification	
CFCM	16
CCCM	1
CPCM	15

Assessment Tool Development

To investigate noise in the contract management decision-making process, we conducted an anonymous assessment of contracting officers/managers. The assessment tool consisted of 11 contracting scenarios in which the respondent was to choose one option from a series of multiple options. The contracting scenarios were designed to require the contracting officer/manager to make a subjective decision by applying judgment based on the individual's contract management knowledge or interpretation of contract management statutes or policies.

In designing each scenario, we noted that while the day-to-day contract management decision-making process tends to require implicit (if not explicit) analysis of quantitative data, contracting decisions are not often inherently quantitative so as to be objectively compared. For example, when planning to determine the optimal contract type for a specific acquisition, each contract management professional's decision process may involve a substantial amount of data analytics, but there is no way to quantify the selection of a cost-reimbursement contract over a fixed-price contract. Determining contract type is inherently a qualitative decision.

Therefore, to accurately assess for noise in day-to-day contracting decision-making, our survey consisted of scenario questions requiring applied judgment to make a qualitative decision. While computing mean, median, and standard deviation for each survey question's responses was not possible, due to the qualitative nature of the decision data, we tabulated

and graphically displayed the results to represent each survey question's modal response.

Population Demographics

The number of survey responses ranged from 40 to 43 responses. (Forty-three respondents initiated the survey, but only 40 respondents completed the survey.) Figure 1 reflects the demographics of the assessed population. We intentionally did not target a specific demographic (e.g., buyer versus seller, government versus industry) and the assessment instrument was deployed in forums that are populated largely by members of the National Contract Management Association (NCMA). NCMA is the premier professional association for the contract management profession and consists of members from both the buying and selling communities in all employment sectors.[37] Population demographics are helpful to understand and interpret the experience level of the professional practitioners represented by the data.

In terms of experience, 50% (21) of the survey population had 20 or more years of experience in the contract management field. Seven percent (3) had 4-8 years of experience and no respondent had fewer than 3 years of experience. Overall, the population had a substantial level of experience in the contract management profession. Forty-two percent (19) of respondents held a contracting officer warrant. That statistic likely understates the level of decision-making authority respondents had, because approximately 50% (27) of the sample are currently working in the private sector and may never have worked for a public sector agency as a warranted contracting officer. (It

Figure 2. Noise Analysis Findings

Scenario Number	Contract Life Cycle Phase	Decision Issue	Option A	Option B	Option C	Option D	Option E
1	Post-Award	Specification interpretation	12	1	30	N/A	N/A
2	Award	Source selection decision	3	5	35	N/A	N/A
3	Post-Award	Schedule extension determination	25	18	N/A	N/A	N/A
4	Post-Award	REA for government delay of payment and schedule	34	5	2	N/A	N/A
5	Award	Challenge to competitive range determination	11	14	16	N/A	N/A
6	Pre-Award	Contract schedule development	0	20	10	8	4
7	Post-Award	REA for increased level of effort	0	30	10	N/A	N/A
8	Pre-Award	Requesting certified cost/pricing data	19	20	1	N/A	N/A
9	Award	Contract price negotiation	16	0	19	6	1
10	Award	Determining timely receipt of proposals	2	24	16	N/A	N/A
11	Award	Determining delivery date for EOFY purchase	7	23	1	10	N/A

should be noted that although the demographic data reflected 18 public buyers, it also reflected 19 warranted contracting officers. This is an unexplained anomaly in the demographic data. Additionally, having or not having a government contracting officer warrant is unlikely to impact the contracting decision in and of itself. It is the knowledge, experience, and thought process that impacts the decision, not the warrant.)

In terms of professional certifications, 70% (32) of respondents held one or more NCMA certifications. That number appears high, but the sample, as mentioned, was weighted toward contract management professionals who were active in NCMA-related activities or forums. Over half of the population (21) were Defense Acquisition Workforce Improvement Act (DAWIA) or Federal Acquisition Certification-Contracting (FAC-C) certified. We did not attempt to measure respondents who may be enrolled in the new DAU Back to Basics single entry-level certification program.

Findings

Figure 2 reflects the results of the noise analysis. Specifically, this table shows the scenario number, the phase of the CMS™ contract lifecycle[38] that aligns with the scenario, the contracting issue of the decision to be made by the respondent, and the number of respondents that selected each option as their decision for the scenario.

Due to the qualitative nature of each survey question's decision, the survey data generated in this study is not amenable to in-depth quantitative analysis. That said, the survey data does reveal how decision makers differ when faced with a choice of solutions to common contracting scenarios requiring applied judgment.

As discussed, some variability in contracting decision-making is expected, and no one would expect all contracting survey respondents to choose the same solutions. But most of us have a feel for how much variability in decision-making is acceptable, particularly if we believe there is one correct answer. Below, we offer analysis of the responses to a few scenario-based questions to offer an example of one way to interpret the data.

In Scenario 1, the respondent is asked to review the facts about a contractor claim related to a specification interpretation and then decide whether to dismiss the claim, pay the contractor's requested amount, or decide whether the claim has merit but would require a negotiated settlement. Almost 70% (30) of the respondents said they would negotiate the claim with the contractor, but 28% (12) said they would dismiss the claim outright. If you were a manager who felt strongly that the facts in the case warranted negotiation with the contractor, you may be somewhat surprised that 12 of the contracting professionals surveyed would summarily dismiss the claim. While there is no guarantee

that a contractor will pursue further legal remedies when a claim is dismissed, the potential for a lengthy appeal process is a distinct possibility.

Scenario 3 posed a situation where the contract schedule was impacted by unusually severe weather. The severity of the weather is not in doubt as the amount of rainfall during a critical month on the schedule was three times greater than the historical average for that month. Respondents were asked if they would offer a no-cost time extension or pay the contractor additional monies to accelerate the effort and complete the contract on schedule. Although there is no way to tell which alternative is correct, given that it's unclear what a delay would cost the government, we do know that accelerating the contractor will cost $300,000. What is interesting is the distribution of responses, which suggests that 58% (25) of the respondents felt a no cost 60-day time extension was the best choice for the government. One the other hand, a sizable minority of respondents (42% or 18 respondents) valued maintaining the original schedule, even though it would cost the project an additional $300,000. One argument for the variability in decisions is that the 25 respondents prioritized cost over time, whereas the 18 respondents felt that saving schedule was more important than cost. When we are faced with a time-cost tradeoff, we all bring a conceptual framework to the decision-making process that favors either time or cost, and this may be a simple case of professionals making a judgment call based on their interpretation of the same set of facts.

In Scenario 10, an offeror submits a paper copy and an electronic copy of their proposal in accordance with the solicitation instructions to offerors. The paper copy of the proposal is timely, but the electronic submission is corrupted or otherwise unreadable. How should the government treat that offeror? Only about 5% (2) of the respondents favored disqualification of the offer, such that the decision to either allow a corrected version to be submitted or simply evaluate the paper copy strongly suggests the contractor's proposal will be evaluated without penalty. But the breakdown of the proposed government reaction is revealing. While 57% (24) of the respondents would require that a corrected electronic version of the proposal be submitted, a significant number of respondents, 38% (16), would simply evaluate the paper copy. Given that the electronic copy of the offer is a requirement of the solicitation, a decision to simply dismiss the requirement for the offeror at hand is disconcerting. We must assume that there was a reason an electronic version of the proposal was required and waiving the need for the electronic version raises questions about why the requirement was initially stated in the solicitation. If the electronic proposal requirement is waived and the offeror wins the contract, are there grounds for a post-award protest?

As reflected in Table 2, there are several other scenarios characterized by significant variation in respondents' choices. For example, Scenario 5, which is based on an offeror's challenge to being excluded from the competitive range in a source selection, shows that the selected decision varied by approximately 27% (11), 34% (14), and 39% (16) of the respondents.

In addition, in Scenario 8, which is about the government requesting certified cost and pricing data, the selected decision varied by approximately 48% (19) and 50% (20) of the respondents. Similarly, in Scenario 9, which focused on contract price negotiation, the selected decision varied by approximately 38% (16), 45% (19), and 14% (6) of the respondents.

Finally, in Scenario 11, which required a decision about determining the delivery date for an end-of-fiscal year purchase, the selected decision varied by approximately 17% (7), 56% (23), and 24% (10) of the respondents.

Implications of Findings

Although this was an exploratory investigation on noise in contracting officer/contract manager decision-making with a very limited population sample, our preliminary findings based on the decisions made by our respondents lead to several conclusions.

First, although most contracting professionals, especially government contracting officers, complete a structured and regulated contracts training program to be selected as warranted contracting officers or contract managers,[39] there appears to still be some level of variability in contracting decisions. As previously stated, contracting officers/contract managers make decisions based on individual judgement and interpretation of contracting policies and statutes. Because many contracting decisions are based on judgment and policy interpretation, it is impractical to expect zero variability among contract managers. As they exercise day-to-day judgment, some variability in professional contract manager decisions should be expected and accepted.

Second, the problem facing organizational leaders is perhaps more of acknowledging that variability in

contracting decision-making exists, analyzing the cumulative effects of variability in selected decision-making activities, and determining appropriate tolerance levels so that unwanted variability in judgment, or noise, can be managed across the organization.

Third, assessing contract management decision survey data for noise is challenging because most decision response variables tend to be qualitative, not quantitative. As we have discussed and seen, contract management decision-making frequently requires the use of business judgment and interpretation of law or policy, and even implicit and/or explicit quantitative analysis, but the output of that process – the decision itself – is typically a course of action, which is a qualitative variable.

Moreover, a qualitative variable describes an outcome that cannot be subjected to statistical analysis, such as measures of variability or spread, in a meaningful way. It would be wrong, however, to conclude that the data does not support the existence of noise in contracting officer/contract manager decision-making.

Indeed, wherever professionals exercise judgment to make recommendations or decisions in an organization, there is variability. And when the recommendations or decisions are of a quantitative nature, such as a cost estimate resulting from a deliberate cost-estimating process, organizational leaders should consider conducting a noise audit to determine whether the level of variability in the practice is acceptable or noisy enough to warrant intervention.

As we continue our research on analyzing noise in contract management decision-making, the way forward will include more scenarios involving quantitative decision-making processes, as well as increasing the sample population to acquire a higher level of validity and reliability in our findings. With an expanded population sample, we can investigate if noise level is related to respondent employment sector (buyer versus seller; public versus private), contract life cycle phase (pre-award, award, post award), type of contracting experience (R&D, production, sustainment, services, etc.), or contracting experience level (entry, intermediate, advanced).

Conclusion

Contracting officers and contract managers make decisions necessary for effective contract management, ensuring compliance with the terms of the contract, and safeguarding the interests of the United States in its contractual relationships. These contracting decisions are based on contracting officer/contract managers' knowledge and experience (i.e., judgment) as well as on rigid government rules or checklists.

In making these decisions, contracting officers/contract managers are allowed wide latitude to exercise business judgment in the interpretation of contracting policies and statutes. The purpose of this research was to investigate the level of noise in contracting decisions. Based on our research findings, this wide latitude given to contracting officers/contract managers results in variability, which may ultimately result in noise in recurring contracting decisions, albeit undetected.

The importance of noise is only revealed when organizations take the necessary steps to isolate decisions and compare them objectively and, ideally, from several different perspectives. As we have observed, noise is not always obvious or observable on the surface of a contract management organization's day-to-day operations. But it is likely present, and it may have a significant, if latent, impact on the myriad decisions that contracting professionals make in the performance of their duties.

Conducting an extensive noise audit could be an expensive and risky initiative. But there are less invasive and simpler ways to monitor noise in the organization. While you may not be able to identify and quantify noise across the organization, you could probably examine discrete, quantitative decision processes for evidence of variability. If the variance is unwarranted and unwanted, you will have a very manageable problem to mediate, and you will have gained a new lens to view the decisions made by your organization.

ENDNOTES

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CONTRACTING STRATEGIES FOR NAVY SHIP PORT VISIT SUPPORT

BY DR. ROBERT F. MORTLOCK, COL (RET.) US ARMY; ZEFERINO CORTES-RODRIGUEZ, LCDR, US NAVY; MARK ANTHONY BOOC, LCDR, U.S. NAVY; AND WILLIAM J. LYNCH, LCDR, U.S. NAVY

Abstract

PURPOSE: United States Navy ships conduct port visits for repairs, resupply, diplomatic engagement, and rest and relaxation for Sailors and Marines. Ships require extensive industrial support services (also known as husbanding services) while in port. When a ship pulls into a foreign port with limited or no U.S. Navy infrastructure, the ship receives industrial support via a contract with a husbanding support provider (HSP). The purpose of this research is to provide Navy policymakers with a model that can be used when planning future port operations. The goal of the research is to ensure the U.S. Navy uses the ship port visit support contracting framework that provides the best value to the warfighter in the current operational environment.

DESIGN/METHODOLOGY/APPROACH: The researchers analyze the various port visit support contracting frameworks and develop a model to determine the contracting support strategy that provides the optimal mix of support. This research relies on prior studies of related topics, standard operating procedures, and the authors' experience in conducting foreign port visits as supply officers and contracting officers. A qualitative comparative case study approach assesses the contracting approaches in place for three port visit support frameworks: one using husbanding service provider, one using a non-husbanding service provider, and one using a hybrid approach. The foreign ports were evaluated on five enabling factors: auditability, flexibility, reliability, vulnerability, and durability.

FINDINGS: The findings of this research show that the optimal support framework is dependent on the specific needs of the U.S. Navy. Results revealed that each framework yields advantages and disadvantages that must be considered when shaping a port's objective. The researchers concluded that there was no perfect contracting framework for every port. It depends on the mix of force enablers that are desired for each specific port. Recommendations include more in-depth market research, investments of organic capabilities in strategic locations, and a standardized policy and quality assurance processes, regardless of support strategy.

ORIGINALITY/VALUE: There is limited standardization on the port visit frameworks employed in U.S.- managed foreign ports. This research allows decision-makers to select the optimum framework to support a specific port's mission based on five enabling factors: auditability, flexibility, reliability, vulnerability, and durability.

Keywords
defense contracting, husbanding service provider, ship port visit support

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Introduction

The purpose of this research is to provide Navy policymakers with a model that can be used when developing plans for future port operations. The goal of the research is to ensure the Navy uses the ship port visit support contracting framework that provides the best value to the warfighter.

United States Navy ships conduct port visits for repairs, resupply, diplomatic engagement, and rest and relaxation for Sailors and Marines after operations. Ships require extensive industrial support services (also known as husbanding services) while entering or leaving port and while on the pier or at anchorage (Office of the Chief of Naval Operations [OPNAV], 2020).

At U.S. Navy ports on U.S. territory, these services are primarily provided via U.S. Navy assets and/or standalone service contracts (OPNAV, 2011). For this research, this type of port service is known as non-husbanding service provider (HSP) support.

When a ship pulls into a foreign port with limited or no U.S. Navy infrastructure, the ship receives industrial support via a contract with an HSP (OP-NAV, 2020). The U.S. Navy manages multiple ports in foreign territories. Units visiting or homeported at these forward-deployed bases can receive industrial support via HSPs, non-HSPs, or a combination of multiple sources.

The HSP is a part of the local business community. This allows it to function as a central liaison to coordinate/direct services for a ship while in port (Elliot et al., 2020). The HSP either provides the required service directly or subcontracts to another supplier.

The HSP program has gone under extensive review and realignment since the Glenn Defense Marine Asia (GDMA) corruption case (Naval Audit Service, 2019a, 2019b). The Navy has increased HSP program oversight and implemented greater contract competition in the process (Elliot et al., 2020). The most notable concerns are excessive port visit costs, allegations of fraud in certain ports, and operational security (OPSEC) implications in sharing ship's schedule information with non-Department of Defense (DoD) entities (Elliot et al., 2020).

An HSP port visit to a non-U.S. Navy-managed port requires input from numerous entities. U.S. Navy fleets direct ships to conduct port visits through the operational chain of command. The contracting officer representative (COR) ensures proper execution of the port visit and HSP contract. The Department of State engages with host nation (HN) counterparts to attain diplomatic clearance for the vessel. HSP contracts are managed by Naval Supply Systems Command (NAVSUP) Fleet Logistics Center (FLC) contracting officers (KOs) (OPNAV, 2020).

HSP support involves procedures to award an individual task order via a contract for every ship conducting a port visit. Comparably, a non-HSP port visit in a U.S. Navy-managed foreign port relies on organic assets and/or standalone non-HSP contracts managed by various support entities, but primarily by Commander Naval Infrastructure Command (CNIC) and Naval Facilities Engineering Systems Command (NAVFAC).

Non-HSP contracts are established regardless of whether a ship is in port or not, which alleviates the uncertainty of not knowing which vendor will be providing services. Non-HSP contracts streamline port services by cutting out the intermediary and mitigate the risk of OPSEC breaches (Oteromatos, 2015).

Problem Statement and Research Question

Following the GDMA scandal, the U.S. Navy embarked on an extensive overhaul of the husbanding port visit contracting strategies. Ships visiting or homeported at forward-deployed bases can receive service support via HSP, non-HSP, or hybrid combination approach.

No policy exists to determine which support contracting framework is best suited. The researchers study the various port visit support models to address the research question: which husbanding support contracting approach provides the Navy with the best value to meet requirements?

Research Methodology, Scope, and Limitations

This study relies on prior studies of related topics, standard operating procedures (SOPs), and the authors' experience in conducting foreign port visits as ship supply officers (SUPPOs) and contracting officers (KOs). A qualitative comparative case study approach was used to grade the support strategies in place for three ports: one using primarily non-HSP, one using primarily HSP, and one using a hybrid approach (Yin, 2017).

A research limitation includes the lack of comparable data for port visit service costs in like markets. By defining a basic framework for each support strategy, the researchers compare the benefits and drawbacks of the various support strategies. A comparison on one example port service for each framework highlights the

differences between the support frameworks, but it would require the collection of data over time for many ports to perform a comprehensive cost benefit analysis.

This research did not analyze the source selection process or the optimum source selection evaluation factors to be used in evaluating HSP offeror proposals.

Literature Review

The U.S. Navy ships visit foreign ports and require support. Exploring previous research on HSP support provided an understanding of the different support framework best practices and assisted in the development of the research framework.

This literature review includes an auditing assessment of the GDMA scandal, a summary of the current HSP Global Multiple Award Contract (GMAC), a comparison of the traditional HSP process to the commercial process, a review of the consequences of the current HSP processes, and a review on the limitation of the HSP framework during a major conflict.

GDMA Scandal Through an Auditing Lens

Whiteley et al. (2017) analyzed the GDMA scandal through an auditability lens. The authors used the "five components of the Committee of Sponsoring Organizations (COSO) Internal control framework:" control environment, risk assessment, control activities, information and communication, and monitoring activities (COSO, 2013, p. 6). Their findings indicated that control environment and information and communication components were the most prevalent deficiencies.

The recommendations included the creation of a husbanding services contracting course, protecting classified ships' schedule information, and improving monitoring activities in the administration of husbanding services contracts (Whiteley et al., 2017).

HSP Global Multiple Award Contract

Hauser et al. (2022) conducted research that focused on the cost of husbanding services and the utilization of multiple award contracts (MACs). They found that the cost of husbanding services has decreased since FY 2016, overlapping with NAVSUP's transition to the use of MACs.

The researchers performed regression analyses on a historical dataset of port visits extracted from HSPortal from October 2009 to June 2020. They found evidence of cost reduction when MACs were used instead of single award contracts (SACs) for awarding port visit task orders. Cahill et al. (2022) studied the transition from regional multiple award contracts (RMACs) to global multiple award contracts (GMACs). The authors analyzed factors such as hull type, contractor, and competition that impacted the overall effectiveness and costs of the contracts. The GMAC increased competition and decreased daily costs (Cahill et al., 2022).

Commercial Port Visit Support Approach

The husbanding support and contract management models for the DoD differ from the commercial approach, and Verrastro (1996) explored the similarities and differences. The major differences rest with the roles and responsibilities of the agent.

The DoD uses husbanding agents (HA), while the commercial industry uses ship's agents (SA). SAs work as agents for the principal (ship owner), and they have the authority to make decisions and obligations on behalf of the principal including an advance of funds to prepay for supplies and services.

On the other hand, the HA has no authority to obligate DoD funds, and no funding is provided until after supplies and services are provided. The current HSP process allows the KO to obligate funds for the government after the COR validates and endorses requirements from the ship's supply officer (NAVSUP, 2015).

Other differences exist in the contract award process and the administrative burden. When establishing new contracts, the commercial industry uses in-person, verbal contract negotiations that allow for less administrative burden and, when coupled with the advance payments, allows for significant flexibility for the SA (Verrastro, 1996).

The DoD relies heavily on written communication and lengthy contracts, which may limit competition. The final difference is the DoD requirement for security to limit knowledge of ship movements and the volatility of a Navy ship's schedule (Verrastro, 1996).

OPSEC Implications of HSP

Elliot et al. (2020) highlighted the unintended consequences of sharing ship's schedule information with HSPs and subcontractors and emphasized the threat of this lapse in OPSEC. Due to the complexities in coordinating the required supplies and services, the Navy shares sensitive information (the ship's schedule) with the HSP to enable them to coordinate the requirements. Elliot et al. (2020) stressed the need for vendor and sub-vendor vetting and examined potential vulnerabilities in the HSP process.

Figure 1. Port Visit Support Process Flows
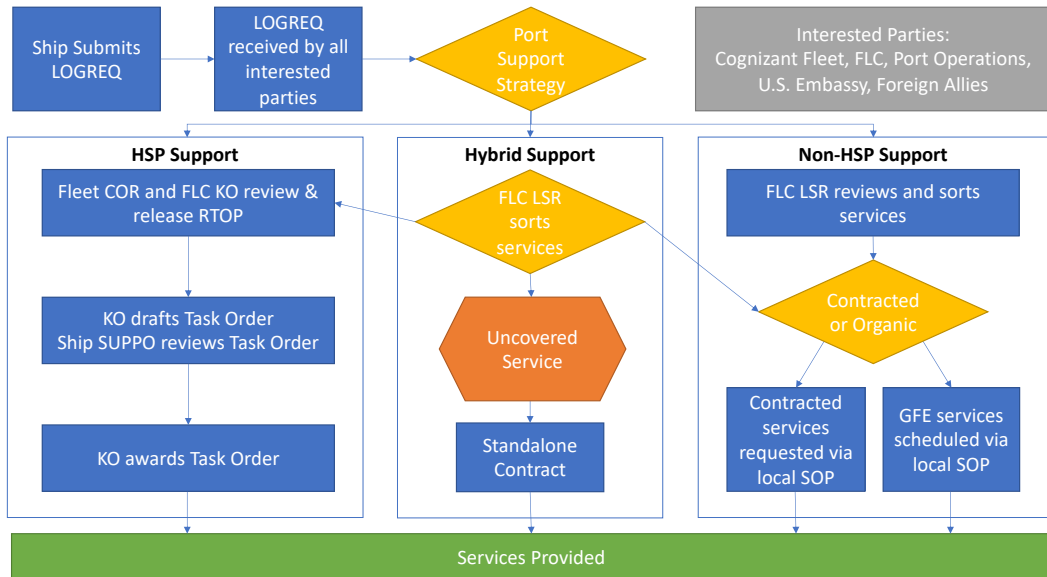
Currently, HSP support is primarily coordinated through an indefinite delivery, indefinite quantity (IDIQ), firm-fixed-price (FFP) GMAC. This contract vehicle is flexible and emphasizes competition between vendors. Examples of OPSEC failures result in catastrophic consequences, such as the bombing of the USS *Cole*, and highlight the potential threat caused by sharing information (Slater, 2008). Elliot et al. (2020) and Fanell (2019) identified the Chinese Belt and Road Initiative (BRI) as a potential OPSEC threat.

Additionally, Congress is pushing for a less globalized supply chain for military components, citing supply chain vulnerabilities that are affected by the global impact of worldwide issues such as the COVID-19 pandemic, China's acquisition of foreign ports, and growing global competition with near-peer competitors such as China or Russia (O'Rourke, 2022a, 2022b; Yung et al., 2014).

Port Visit Support During Major Theater Conflicts

Coordination of port visits are challenging during peacetime, and these challenges are often compounded in times of conflict.

Petrinovic et al. (2019) examined the current HSP-centric model for port visits through an operational lens in a major conflict. The concern is that in a major theater conflict, HSP may not be able or willing to support the U.S. Navy in ports near to the conflict. Port visits in foreign ports may not be available because these locations could "come under the threat of attack or seek to avoid becoming involved for political reasons" (Government Accountability Office [GAO], 2021, p. 18).

Although both HSP and non-HSP frameworks rely on contracted local labor, HSP-centric models contract locals as the bulk of their workforce, whereas non-HSP frameworks rely on a mixture of organic government furnished equipment (GFE), uniformed personnel, DoD civilians, and vetted local contractors to execute their services.

Research Framework
Standard Port Visit Process

Support strategies were sorted into three buckets: HSP, non-HSP, and a hybrid approach. The essential process for requesting port visit services does not vary between the frameworks.

Figure 1 depicts the process flow for the different strategies. The basic process for requesting port visit services begins with the ship's release of a naval message known as a LOGREQ. The LOGREQ contains the applicable information and services required by the ship such as the ship's schedule, number of sailors/ marines/civilians, and required services.

The LOGREQ is received by interested parties

Figure 2. HSP Support Process Flow. Source: OPNAV (2020).
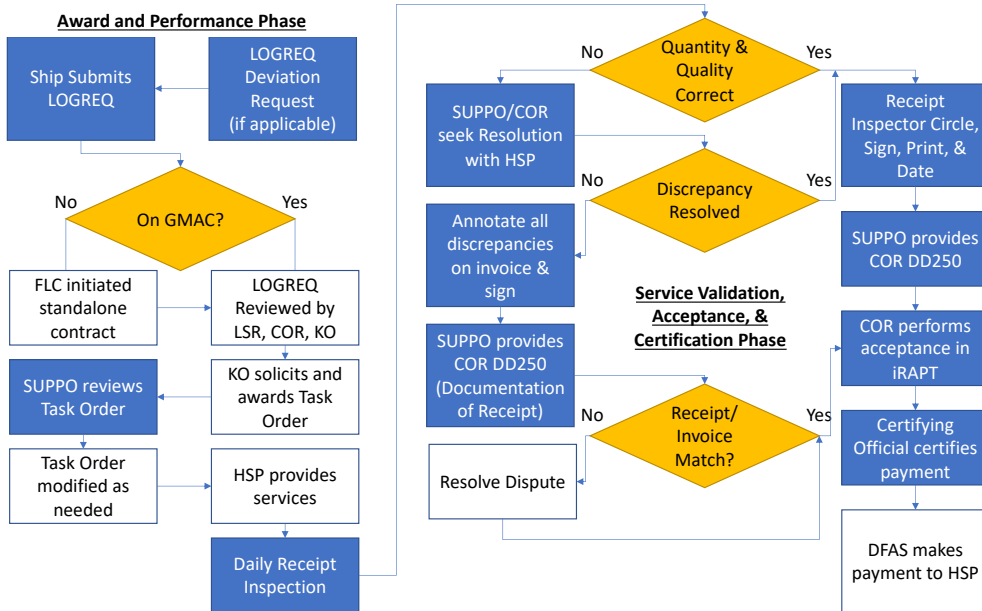
that include the ship's chain of command, the U.S. embassy in the HN, the servicing FLC, and local port operations. The last two highlight the splitting point between the two primary support strategies, HSP and non-HSP. FLCs fall under NAVSUP, and the HSP process is contracted through FLCs. U.S.-managed Port Operations is a business function of the installation's Public Works Office, which falls under CNIC and NAVFAC (referred to as non-HSP for this research).

HSP Support Framework

The HSP framework follows a reactionary port visit-centric model, meaning work is authorized after award of the individual task order-restricting "prework" to prevent potential Anti-deficiency Act violations (Limitation on Voluntary Services, 2010).

The HSP framework currently uses the GMAC, which is a 5-year, multiple-award, IDIQ contract. The GMAC supports commercial HSPs for services a ship may require during a port visit, including "force protection, water, tugs, waste removal" and provides "electricity, phone lines and transportation to a visiting ship and its crew" (Dortch, 2020). Similarly, OPNAVINST 4400.11A calls for a global standard LOGREQ that outlines the authorized services ships can request (OPNAV, 2020).

Figure 2 depicts the HSP process, which begins with the LOGREQ submission. Once authenticated

through the operational chain of command, the fleet COR, the FLC logistics services representative (LSR) and KO validate the requested services. The KO then releases a request for bids to vendors on the GMAC and awards a task order to one vendor to provide all services to the requesting ship. The supply officer reviews the task order for any changes or modifications required. The KO makes any necessary modifications to the task order, and the vendor prepares for the ship's arrival.

Upon arrival, the HSP provides the services in accordance with the task order. During the event, the vendor, supply officer, and COR conduct daily reconciliation of the services provided. Prior to the departure, a final reconciliation ensures quantities and quality meet the requirements in the task order. Upon departure, the vendor provides an invoice to the KO for services rendered.

The ship's supply officer prepares the Port Visit Checklist, and the supply officer and COR fill prepare the material inspection and receiving reports (via a DD Form 250), which are documented in HSPortal. The KO completes the contract, and the vendor is paid via the Defense Financial Accounting System (DFAS).

Non-HSP Support Framework

While the HSP framework uses one vendor to provide the services for a specific port visit, the non-HSP framework uses a variety of vendors. The non-HSP

Figure 3. Generic Non-HSP Process Flow
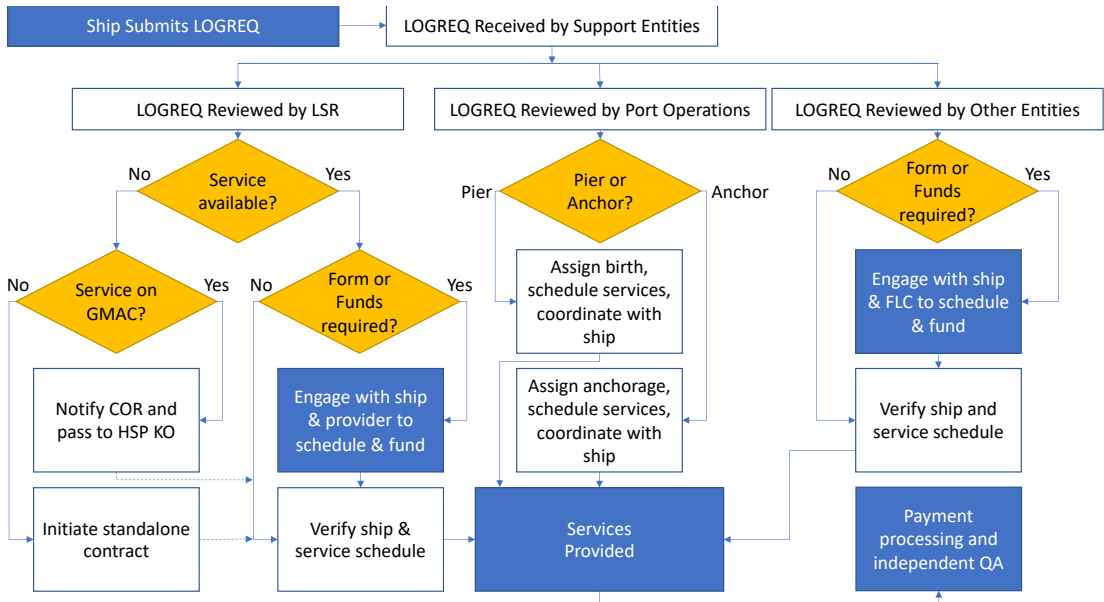
sources of service are bucketed into two subcategories: organic or contracted.

Organic services include GFE, DoD civilian and military labor, and the ship's embarked equipment and/or labor. Examples include civilian-operated cranes that are property of the DoD and shipboard forklifts operated by ship's forces. In addition, some ports utilize GFE operated by contracted labor.

Vendors are contracted to provide services when the organic infrastructure is unable to support. The primary support coordinator for non-HSP port visits is NAVFAC through Port Operations and Public Works offices. The non-HSP contracting model is preemptive and service-centric. It is preemptive in that it relies on long-term forecasting to contract for an individual service in advance. It is service-centric in that the contracts are written to provide a specific service anytime during the contract's period of performance.

Non-HSP service contracts are included in existing base service contracts, known as Base Operating Support (BOS) contracts. Port visit support from BOS-related contracts allows for contract management to be consolidated by the BOS provider.

Figure 3 contains a flow chart example of a generic non-HSP port visit. In the non-HSP framework, services can be provided through multiple entities that include the following: Regional NAVSUP FLC LSR (for food, mail, hazmat, and fuel); Defense Logistics Agency

(DLA) (for materiel movement); Moral Welfare and Recreations (MWR) (for crew support); and CNIC and NAVFAC (for installation and industrial support).

The primary liaison between a ship and the support entities is an FLC LSR. Upon receipt of a LOGREQ, an LSR is tasked with supporting the ship's logistics requirements while in port. LSRs perform many of the same functions an HA provides during an HSP-supported port visit; their primary role is communicating and coordinating with the ship and the various support entities.

Hybrid Support Framework
Hybrid models are often the norm for U.S.-managed foreign ports. The complexities of supporting ships in port vary so much that it is impossible to cover all eventualities, and a mix of support strategies evolves to become the SOP for the port. Figure 4 contains a flow chart example of a generic hybrid port visit.
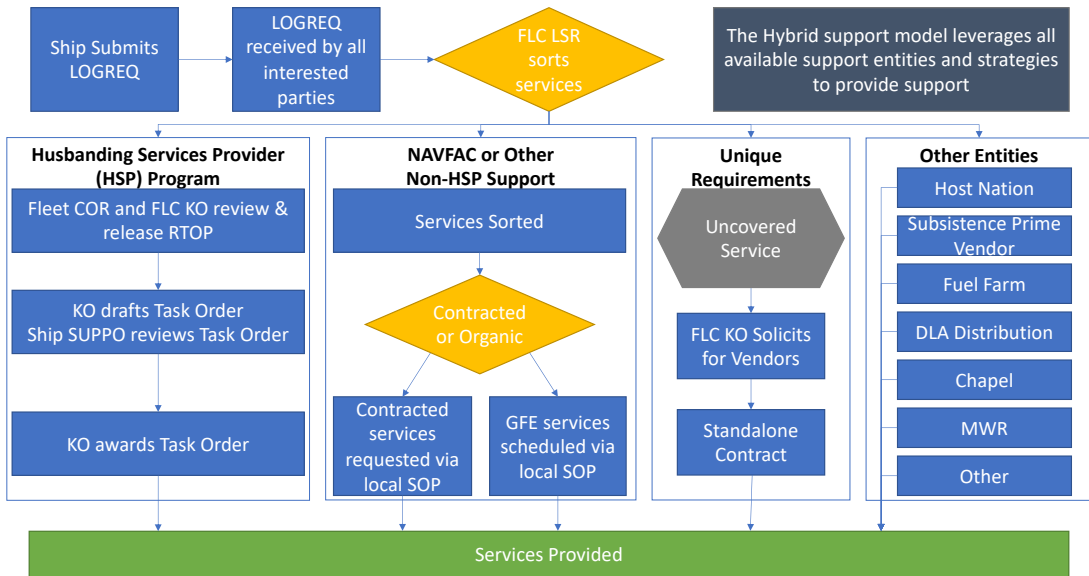
Case Study Comparison Framework
The researchers selected the following ports for use in a comparative case study approach:

- HSP: Mina Salman Port, Bahrain
- Non-HSP: Sasebo Port, Japan
- Hybrid: Souda Bay Port, Greece

The port visit support evaluation criteria included *auditability*, *flexibility*, *reliability*, *vulnerability*, and

Figure 4. Generic Hybrid Process Flow

durability. These criteria components provided specific enabling abilities to the U.S. Navy and the units receiving the services. Table 1 depicts the grading scale for the port visit support criteria.

The auditability criterion analyzes the three ports through the lens of the auditability triangle, which encompasses the five components of COSO's internal controls, as well as key personnel and processes. Auditability is a key measure for the Navy to ensure accountability, transparency, and integrity of the acquisition process.

Auditability theory emphasizes the importance of maintaining "effective Internal Controls, Capable Processes, and Competent Personnel" (J. Rendon & R. Rendon, 2015a, p. 715). These three pillars are essential for the Navy to retain and improve public trust.

According to Rendon and Rendon (2015a), the *process* aspect of auditability refers to "the capability of organizational processes for performing procurement related activities" (p. 716), emphasizes institutionalized processes that are monitored, refined, and integrated into the day-to-day business of the organization (Rendon, 2008). Rendon and Rendon (2015b) described the *personnel* leg focused on the training and capability of the people performing the audited functions. The *internal controls* aspect comprises five internal control components established by the COSO (2013) of the Treadway Commission (Tan, 2013).

Flexibility is measured by a support framework's ability to support the dynamic schedules that are hallmarks of Naval operations; therefore, a support structure's ability to support shifts in requirements is imperative. There are two primary subcategories of flexibility: the ability to support *short-notice port visits* and the ability to support *changes in requirements.* Ship and port schedules are variable, and the support framework's ability to flex to support the emergent port visit is a key factor.

The HSP flexibility sub-scores are determined through a combination of quantitative analysis of HSPortal data from FY2021 to FY2022, applicable guidance, and historical port visit reviews. The primary quantitative measure used the average speed to award for last-minute port visits by comparing the LOGREQ message release date and the task order award date. Due to the lack of dedicated port visit data sets for non-HSP, the scoring for flexibility is qualitative in nature, based on interpretations of flexibility regarding established policy.

Reliability is defined as consistent satisfactory performance and focuses on the expectation that support for the port visits will perform as required. A reliable port visit framework is one that can support the requested port visit without disrupting shipboard operations. Reliability of the HSP, non-HSP, and hybrid frameworks are evaluated based on quality assurance (QA) data and factors that impact performance.

The *Federal Acquisition Regulation (FAR)* directs KOs to evaluate contractors' past performance based

Table 1. Grading Scale

1	2	3	4	5
Auditability				
Unsatisfactory Auditability Average	Marginal Auditability Average	Satisfactory Auditability Average	Very Good Auditability Average	Exceptional Auditability Average
Flexibility				
Unsatisfactory Flexibility Average	Marginal Flexibility Average	Satisfactory Flexibility Average	Very Good Flexibility Average	Exceptional Flexibility Average
Reliability				
Unsatisfactory Reliability	Marginal Reliability	Satisfactory Reliability	Very Good Reliability	Exceptional Reliability
Vulnerability				
Full Reliance on Contractors	Heavy Reliance on Contractors	Balanced Reliance on Contractors	Low Reliance on Contractors	No Reliance on Contractors
Durability				
Unable to Support	Standard Support Limited	Unable to Surge Support, Standard Support Available	Limited Surge Capacity Beyond Standard Support	Fully Support, to Include Surge Capacity

on historical performance on other U.S. government contracts. The trends found in this data must be considered when evaluating past performance (FAR 15.305, 2023).

Contractors submit a Quality Control Plan (QCP) in their proposals to document the management and quality control actions. A Quality Assurance Surveillance Plan (QASP) is implemented to monitor the contractor's quality control efforts and ensures QA metrics in accordance with the contract through inspections and customer satisfaction surveys.

In addition to services contracted through the Navy base IDIQ contracts, non-HSP support may also include organic support. There is no standardized QA data collection source for organic support. Therefore, the authors' experiences are used to evaluate the organic support reliability score.

Vulnerability to OPSEC threats is a concern that must be considered when evaluating port visit support strategies. "OPSEC Vulnerability [is] a condition in which friendly actions provide OPSEC indicators

that may be obtained and accurately evaluated by an adversary in time to provide a basis for effective adversary decision making" that could lead to successful espionage or subversive actions (National Defense University, 2012, p. II-1).

OPSEC indicators are "detectable actions and open-source information that can be interpreted or pieced together by an adversary to derive critical information" (National Defense University, 2012, p. II-1). Elliot et al. (2020) described events that displayed the tenacity of our enemies to exploit the gaps in security rendered by port visits. These risks increase when the HN is known to be internally corrupt, or harbors known terrorist groups (p. 280).

Additionally, host nations with Chinese loans face a China debt trap that results in pressures that could extort or coerce an HN's government or population to undermine the presence of the United States by sharing sensitive information in exchange for loan forgiveness or deferment (Dobbins et al., 2018; Kube & Lee, 2023; Wang, 2022; Kern & Reinsberg, 2022).

Contractors are an important asset to the DoD. According to Peters (2023), "the Department of Defense (DoD) has relied on contractors to support a wide range of military operations ... and providing a surge capability to quickly deliver critical support functions tailored to specific military needs." (p. 1) The risk associated with contractors and their subcontractors is that they employ foreign nationals from third countries.

A defense contractor is defined as "any individual, firm, corporation, partnership, association, or other legal non-Federal entity that enters into a contract directly with the DoD to furnish services, supplies, or construction" (Operational Contract Support, 2011, p. 682). Once vetted successfully, foreign nationals receive base access (DoD, n.d.), but a concern exists if their loyalty does not lie with the United States interests. Vetting contractors in port visit frameworks like "HSPs and gaining a true understanding of a vendor's intentions and background is difficult" (Ferrer, 2019, p. 4).

Mitigations exist to control access to sensitive information such as the establishment of the NOFORN (no foreign national) policy (DoD, 2020).

For HSP support, contractors that seek base access must obtain Defense Biometrics Identification System (DBIDS) credentials (CNIC, n.d.-a). Through the vetting process, these contractors are also subjected to intelligence-based threat assessment with requirements for background checks and security credential issuance (GAO, 2009, 2017).

Some of the OPSEC risks lie with subcontractors that do not have to enter a U.S. base or port to conduct port visit support. For example, a subcontractor may provide vehicles to a prime contractor that will deliver them to the visiting ships. Although the prime contractor is credentialed to drive the vehicles to the base and deliver them to the ships, the subcontractor must be informed of the ship's schedule to provide the service. "Since there is not a requirement to disclose which subcontractors a vendor will employ for a task order, there is no screening of the subcontractors." (Elliot et al., 2020, p. 280).

The durability criterion is defined as the husbanding framework's potential for surge capacity. The key to success in these ports is the ability to expand support to an influx of ships of different classes and maintain that support for an extended period. Through this lens, the case study ports are analyzed and rated based on historical insights and the current geopolitical context.

In times of major theater conflict, power projection is one of the most critical naval capabilities. It is the Navy's ability to "threaten or direct strikes – from ballistic-missile attacks to amphibious assaults – against targets ashore for sustained periods" (Masters, 2021, para. 11). It is a capability that offers significant operational advantage and must be considered in the enemy's calculus by providing defenses protecting that capability. However, the proximity and support of forward-deployed foreign ports are required to sustain power projection. The durability of a foreign port and its port visit framework is critical in the power competition.

Case Study Analysis and Results
Auditability
The internal controls of HSP in Bahrain have been revamped since the GDMA fraud scandal. NAVSUP successfully transitioned from SAC IDIQs to MAC IDIQs to GMAC IDIQs. OPNAVINST 4400.11A guides the control environment component calling the program's oversight "Commander's business" (OPNAV, 2020, p. 2). HSP guidance directs intentional segregation of duties in which all requirements from the supply officer are validated by the COR before the KO can approve them. The HSPortal serves as "the official repository for all HSP data" (OPNAV, 2020, p. 4).

HSP OPNAV quarterly metrics are periodically reviewed, and designated commands also track their assigned metrics for compliance and efficiency. The HSP support framework effectively leverages all five COSO internal control components and received a score of 5.

The non-HSP support framework utilized in Sasebo does not have an overarching OPNAV policy. However, OPNAVINST 5450.339 covers the mission and functions of CNIC (OPNAV, 2011). The control environment in Sasebo is set by the local CNIC and NAVFAC commands. The information and communication component of non-HSP is not transparent because it lacks an official repository for port visit support such as HSPortal. However, non-HSP contracts are managed by contracting professionals.

Overall, the non-HSP framework scores 3 for internal controls. Souda Bay's hybrid framework includes aspects of both HSP and non-HSP that are equal, scoring 4 for internal controls.

The current HSP process may be broken down into planning, contracting, oversight, and payment phases.

NAVSUP is responsible for the "acquisition and contracting policy and oversight for all HSP procurements" (OPNAV, 2020, p. 4). NAVSUP specifies the procedures

for the contracting process via the NAVSUP contracts handbook (Naval Supply Systems Command, n.d.). Fleet CORs are responsible for utilizing HSPortal to document a QA file for each port visit, and the QA data is available to stakeholders. An HSP working group meets monthly, an HSP audit committee meets quarterly, and the HSP board of directors provides oversight.

The HSP process is fully established providing stakeholders with capable procurement processes assessed – scoring 5 for processes.

The non-HSP process is also fully established and capable of supporting port visits by utilizing existing contracts. The non-HSP framework in Sasebo relies on separate IDIQ contracts, which include essential port visit services. The planning, execution, and implementation of the separate IDIQ contracts allows for a specific contractor to get established and monitored over time. However, the non-HSP framework in Sasebo lacks a customer-driven QA process to identify such areas for improvement and is scored 4 for processes.

Souda Bay's hybrid framework includes aspects of both HSP and non-HSP, scoring an average grade of 4.5 for process auditability.

Supply officers receive introductory HSP training during the Supply Corps Basic Qualifications Course, and they receive more thorough training during the Supply Officer Department Head Course. Despite training opportunities, the variability of operational schedules and missions results in varying levels of experience for supply officers. Therefore, personnel scored 4 for the HSP framework.

For non-HSP port visits, supply officers follow local NAVFAC SOPs to perform most of the coordination and administrative requirements. For example, supply officers in Sasebo follow local NAVFAC procedures to request port visit support, and NAVFAC personnel make the necessary arrangements. Supply officers provide funding documents for NAVFAC contracts, but the administrative requirements for ship personnel are less than an HSP port visit. Therefore, personnel scored 5 for non-HSP framework.

Souda Bay's hybrid framework includes aspects of both HSP and non-HSP, scoring an average of 4.5.

With respect to auditability, the HSP has improved since the GDMA scandal, and this research indicates that the HSP framework is auditable based on trained personnel, established procedures, and effective internal controls.

The non-HSP framework is also auditable but offers less transparency to the customer because all adminis-

trative functions are outside of the supply officer's role.

The ports' support frameworks received the following scores for the auditability port visit support criterion: Out of a possible score of 5, HSP Average Auditability Score is 4.66, Non-HSP Average Auditability Score is 4, and Hybrid Average Auditability Score is 4.33.

Flexibility

The current GMAC and OPNAVINST 4400.11A policies allow for significant flexibility in supporting changes in schedule and requirements. OPNAVINST 4400.11A established LOGREQ timeline goals: LOGREQ submission (30-plus days prior to arrival); LOGREQ processing by COR (15-plus days prior to arrival); and task order awarded by KO (seven-plus days prior to arrival) (OPNAV, 2020).

The timeliness of LOGREQ has improved, but short-notice port visits still occur. HSPortal considers a port visit as "short notice" if the port visit requirement is entered in HSPortal by the COR within 10 days of the requested arrival date.

Three key features exist that enable the HSP framework to operate rapidly in response to short-notice port visits. First, the availability of central funding prevents delays. Second, the HSP program allows the KO to award a task order with a minimal request for task order proposal (RTOP) timeline within hours shortening the solicitation period. Lastly, the GMAC includes well-established contractors that tend to have resources or subcontractors available at short notice.

During FY2021 and FY2022, the HSPortal collected data on 74 port visits to Mina Salman. Of the 75 port visits, 45 were categorized as short notice. The average speed to award from LOGREQ release date to task order award was 5.2 days with a maximum of 10 days. Following the review of the established policy and quantitative analysis, NSA Mina Salman scored a 5 for flexibility in supporting short-notice port visits.

The non-HSP framework differs from HSP regarding supporting short-notice port visits. CNIC is required to support operationally relevant port visits, and, whether it be contracted, organic, or a combination thereof, the support is designed to be flexible. OPNAVINST 5450.339 established policy that delegated authority to CNIC to provide port operations support. If a berth or anchorage is available, CNIC is required to support operationally relevant port visits and non-HSP's forecasted support model allows the framework to offer support with little additional administrative burden.

The Sasebo BOS contracts and organic assets owned

and operated by NAVFAC provide all services for the base and homeported and visiting ships. The non-HSP framework in Sasebo consists of separate NAVFAC IDIQ contracts with varying periods of performance extending up to 8 years. NSA Sasebo's non-HSP support structure is resilient and supportive of unforeseen port visits. Homeported ships are assigned semi-permanent berths and non-homeported units use vacant berths and unutilized berths/anchorages.

Due to the requirement for CNIC to support and the built-in flexibility of the BOS contracts and organic support offered by Sasebo, the port and therefore the non-HSP support framework scored 5 for flexibility in supporting short-notice port visits.

Souda Bay shares the factors that provided perfect scores for both HSP and non-HSP and therefore scored 5 for flexibility in supporting short-notice port visits.

Examples of unforeseen changes in requirements include the following: brows shifting, short-notice crane operations, potable water pumps failing, pandemics hitting, and heavy equipment breaking. These changes in requirements are routine, and they can range from last-minute requests to requirements that go beyond the contract scope.

A port visit framework's ability to flex to support requirement changes is a significant enabler. Within the HSP framework, once the task order is awarded, the need to adjust the task order is limited. The GMAC enables KOs to make changes if the requirements are within the original contract scope (FAR 52.243-1, 1987). Oral authorizations without a formal contract modification are considered authorized-to-proceed approvals and must be formalized via a contract modification within three business days to quickly respond to support new requirements.

In addition, the HSP program acknowledges that the commanding officer retains authority to act without prior approval to prevent loss of life or limb. Emergency requirements are to be relayed to the KO via the COR as soon as possible.

Due to the multiple ways in which the HSP program can support changes in requirements, NSA Bahrain scored 5 for flexibility in supporting changes in requirements.

For Sasebo port, the flexibility in supporting short-notice port visits described in the previous section also applies to changes in requirements. The BOS contracts managed by NAVFAC are forecasted to provide support based on predicted demand. Due to the nature of the non-HSP framework, some services require minimum request time frames, such as three business days to schedule crane operations or scheduled times for trash removal.

The framework allows for expedited support for emergency situations, but not all requirements can be met within the minimum time limits, and some requirements are not supported. Requirements beyond what was forecasted in the yearly NAVFAC task orders require additional funding and/or individual task orders to support. This additional administrative burden may delay services, and some requirements may even be outside of scope and require standalone contracts. For that reason, Sasebo scored 4 for flexibility in supporting changes in requirements.

The hybrid framework's dual-path approach allows the HSP to cover down if a requirement is not covered or not available via the non-HSP. Therefore, the HSP sub-framework in Souda Bay outweighs the limitations of the non-HSP sub-framework, giving Souda Bay a score of 5 for flexibility in supporting changes in requirements.

Having a port visit support framework that can provide adequate assurance that all requirements will be met within a reasonable time frame is highly desirable. Flexibility is a key enabling factor for every port visit. The ports and, in turn, their support frameworks received the following score for the flexibility port visit support criterion: out of a possible score of 5, HSP Average Flexibility Score is 5, Non-HSP Average Flexibility Score is 4.5 out of 5, and Hybrid Average Flexibility Score is 5 out of 5.

Reliability

The HSP program includes QA measures that track and grade vendors on the DoD's confidence in them to provide quality and reliable services. In Bahrain, QA is a collaborative process between the ship's Supply Officer (SUPPO), COR, and KO. OPNAVINST 4400.11A requires every port visit to include a QA report, which provided a 4400/4 Port Visit Checklist monitoring quality and reliability compliance. The COR performs an assessment of the contractor's performance based on contractual obligations, and the KO determines the QA ratings (OPNAV, 2020, p. 4).

The QA assessment includes the following six performance objectives: quality, schedule, management, regulatory compliance, cost controls, and utilization of small businesses. Each performance objective is graded on a scale of 1 to 5, where 1 is unsatisfactory, 2 is marginal, 3 is satisfactory, 4 is very good, and 5 is exceptional.

Through a review of 76 port visits to Mina Salman from FY2021 to FY2022, an average QA score was calculated as 4.053 out of 5. HSPs servicing ships visiting Mina Salman provided quality that is slightly above the global average of 4.040 for 550 port visits.

A port visit QA rating becomes historical QA data for the corresponding contractor and tracked in HS-Portal. The vendors' scores impact their future business prospects as task orders are awarded based on three factors: technical acceptability, past performance, and price. The past performance and price of technically acceptable proposals will then be subject to the best value trade-off process, with past performance being more important than price (Naval Supply Systems Command, n.d.).

Due to potential volatility in the husbanding market and considering the average QA score of 4.053, Mina Salman scored 4 for reliability.

The non-HSP framework in Sasebo consists of organic services and contracted services. The most common organic services include crane, forklift, manlift, shore power, and sewage barge services. Contracted base services consist of separate NAVFAC IDIQ contracts with yearly task orders.

The service contracts include their own QA reporting, but three factors exist that limit their applicability. First, the services are not specific to supporting ships while in port; therefore, it is not possible to assign a port visit–specific score. Second, the non-HSP base task orders span a full year, rather than just a few days to cover a specific port visit. Last, the base contract performance ratings are assigned without direct input from the customer, specifically the ship.

For those reasons, the QA data for base services contracts were not included in the reliability scoring of non-HSP port visit support in Sasebo. Scoring for the reliability of port visit support in Sasebo follows similar logic to that used in the flexibility scoring. In Sasebo, NAVFAC provides those services through organic equipment and infrastructure, and base operating contracts. With the lack of a non-HSP port visit–specific QA tracking system, the scoring is based on similar criteria to that used to grade HSP during an HSP-supported port visit.

Considering this – and assuming that services must be at least satisfactory for a non-HSP port visit – Sasebo, and the non-HSP framework, scored 3 for reliability.

The hybrid framework utilized in Souda Bay, Greece, shares the same benefits and drawbacks highlighted in the HSP and non-HSP frameworks. Out of 186 port visits from FY2021 to FY2022, Souda Bay's average QA score from the HSPortal was 4.05. Considering the hybrid framework's ability to leverage the HSP's reliability and the quantitative score drawn from HS-Portal, Souda Bay and the hybrid framework scored a 4 for reliability.

Vulnerability

Although the United States manages a significant portion of Mina Salman, the limited NAVFAC footprint translates to a small portfolio of base support contracts, and ships rely on HSPs for support.

Visiting ships use the GMAC, which are competed among 21 eligible GMAC contract holders in Bahrain. The GMAC contractors in Bahrain may use the same or a different pool of subcontractors. This award process reduces the chance of familiarity between the ships and the prime contractor but increases the interaction between different subcontractors and the ships and poses an increased OPSEC breach risk and OPSEC threat susceptibility.

Bahrain has security and vetting steps established, but the significant footprint of contractors poses a significant threat to OPSEC, and for those reasons, Mina Salman scored 2 for vulnerability.

Ships that pull into Sasebo are primarily supported through a non-HSP framework. Contracted services are provided through NAVFAC-managed contracts for base-wide services that are extended to homeported and transient ships. NAVFAC support also includes organic equipment such as cranes and transport vehicles operated by Japanese nationals.

The non-HSP employees are local foreign nationals and contractors who are vetted through security and granted base access. Sasebo relies heavily on local employees, and to a lesser extent on contractors, but due to the long-term nature of the NAVFAC base support contracts and the robust vetting process, the impact and potential OPSEC threat is significantly lower than Mina Salman. Therefore, Sasebo scored 4 for vulnerability.

NSA Souda Bay utilizes a balanced portfolio of organic and contracted base services as well as HSP support. Although using the organic and long-term contracts limits the impact of vulnerabilities posed by HSPs and their subcontractors, the threat they pose remains. In addition, the uncertainty of sharing ship schedule information with ever-changing contractors means that the OPSEC threat seen in the HSP framework is not diminished.

Therefore, Souda Bay and the hybrid framework scored 3 for vulnerability.

Durability

Despite the Navy's experience with defense contract administration and port visit contracts, little evidence exists that demonstrates the HSP framework could support surge requirements.

According to Ferrer (2019), the challenges of a port visit during a major theater conflict would prove problematic and could jeopardize the mission of the U.S. Navy. Geopolitical factors might come into play, and the HN and its population may choose not to support the United States in the surge. HSP contractors may lack capital, trained personnel, assets, and infrastructure compared to the DoD to support a surge. Finally, the influx of surge deployers arriving at an unfamiliar port with specific protocols, like Bahrain, may strain the HSP's limited resources to manage. Therefore, Mina Salman scored 3 for durability.

For the non-HSP framework, although the United States still commands a significant presence in Sasebo, it may not be enough to support surge requirements. If a conflict ever arose with China in the Indo-Pacific region, the U.S. organic footprint in Sasebo may only be enough to support a limited surge and would have to wait for reinforcements to fully surge. For these reasons, Sasebo scored 4 for durability.

The advantage of a hybrid framework is that it allows HSP to be a stop-gap support while non-HSP support manages the surge. The deployment of assets, materiel, reorganization, and new construction to handle the large influx of ships and submarines requires time.

Souda Bay's balanced portfolio of port visit frameworks is well-poised to surge demand signals. In fact, the port is accustomed to increased operational tempo requirements, servicing surge deployers in support of Operation Iraqi Freedom and the Global War on Terror because it "presents an ideal centralized location to maintain rapidly deployable surge capacity" (The Jewish Institute for National Security of America, 2021, p. 19).

Conclusions and Recommendations

The researchers analyzed the port visit support frameworks at NSA Bahrain's Mina Salman port, NSA Japan's Sasebo port, and NSA Greece's Souda Bay port to assess the three primary support frameworks: HSP, non-HSP, and hybrid. The research highlighted the importance of considering the unique requirements of a specific port and the geopolitical environment in determining the best support framework to achieve the desired end state from that port.

Five components were identified as enabling factors for port visits: *auditability, flexibility, reliability, vulnerability, and durability.* The results indicate that each of the three support frameworks has its strengths and weaknesses when evaluated based on these metrics. The findings of this research show that the optimal support framework is dependent on the specific needs of the U.S. Navy. Table 2 displays a summary of the enabling criteria scoring for each port.

The research revealed that the HSP framework has evolved over the last two decades to become the prevailing support framework enabling the U.S. Navy to project power overseas. It is important to note that this reliance on HSP has occurred within operational areas not experiencing major conflicts.

The HSP has improved in auditability, which is accredited to increased oversight, transparency in contracting, reinforced efforts to enable competition, and extensive policy and training implementation. The HSP framework is best suited for ports that demand flexibility and reliability but falls short in the enabling factors of vulnerability and durability.

The OPSEC threat is more difficult to defend against using the HSP framework, and the potential for interruptions in support during a major theater conflict is always present when relying on contracted support rather than organic enablers. The non-HSP framework is less susceptible to OPSEC concerns and able to support more surge capacity than HSP. However, its ability to deliver on other factors is hindered by the bureaucratic nature of the framework.

The primary benefit of the non-HSP framework is that it is primarily controlled by DoD personnel, so units get what they need, but it may take longer, and the framework may not be able to support requests that are beyond the minimum requirement.

The hybrid framework combines elements of both HSP and non-HSP and provides a balance between security and flexibility, making it a viable option for ports with varying requirements. However, the implementation of a hybrid framework can be complex and requires careful planning and execution to ensure the best possible outcomes.

Overall, this research emphasizes the importance of carefully evaluating the specific needs of U.S. forces around the world. The decision-making process should take into consideration the five crucial factors, as well

Table 2. Summary Results of Comparative Case Study

1	2	3	4	5
Auditability				
Unsatisfactory Auditability Average	Marginal Auditability Average	Satisfactory Auditability Average	Very Good Auditability Average	Exceptional Auditability Average
				HSP
			Non-HSP	
			Hybrid	
Flexibility				
Unsatisfactory Flexibility Average	Marginal Flexibility Average	Satisfactory Flexibility Average	Very Good Flexibility Average	Exceptional Flexibility Average
				HSP
			Non-HSP	
				Hybrid
Reliability				
Unsatisfactory Reliability	Marginal Reliability	Satisfactory Reliability	Very Good Reliability	Exceptional Reliability
			HSP	
		Non-HSP		
			Hybrid	
Vulnerability				
Full Reliance on Contractors	Heavy Reliance on Contractors	Balanced Reliance on Contractors	Low Reliance on Contractors	No Reliance on Contractors
	HSP			
			Non-HSP	
		Hybrid		
Durability				
Unable to Support	Standard Support Limited	Unable to Surge Support, Standard Support Available	Limited Surge Capacity Beyond Standard Support	Fully Support, to Include Surge Capacity
		HSP		
			Non-HSP	
				Hybrid

as other relevant factors such as cost, scalability, and ease of implementation. By doing so, planners and decision-makers can choose the most appropriate support framework to achieve their desired end state and ensure the United States gets what it needs out of these ports when using the military as an instrument of national power.

The benefit of having organic assets positioned at strategic locations around the globe is significant. By utilizing organic assets, the DoD would not be limited by contractual requirements or timelines. In addition to determining where those assets deploy, the question of who will be operating them factors into the discussion.

Contracted operators allow for more reliability and are less of a burden on the military workforce, but they may not be as flexible. In addition, they may be threat vectors that an enemy can exploit to impact OPSEC, and their reliability could be questionable during a major theater conflict. Although it would require a high initial investment of funds and labor, the tangible benefits of having those assets and trained personnel would be bolstered by the intangible benefit of knowing the port's support framework is durable to surge requirements.

The spectrum of port visit support frameworks reviewed highlighted that there is not a one-size-fits-all answer for the Navy regarding optimum contracting strategies supporting port visits. For frequently visited ports with limited desire to invest in organic capabilities, shifting to a more service centric framework may allow for cost savings. The service centric framework seen in non-HSP support contracts limits the reliance on HSPs. Contracting directly with the vendors for specific services allows for longer-term contracts that tend to be easier to manage. These services could also be included in already established BOS contracts, allowing for less redundant contracting efforts.

The primary benefit of using an HSP is that the HA is the sole point of contact. This is beneficial in seldom-visited ports with limited U.S. presence. The other major benefit is the HA's knowledge of the local economy, culture, and language.

Recommendations

Based on the research conducted, several recommendations are made regarding the use of port visit support frameworks by the U.S. Navy. These recommendations are as follows:

1. Conduct research using the scoring model developed in this study for more ports over time and include surveys of contracting officers and other subject matter experts.
2. Conduct research for ports under consideration for changes in their support framework to provide insights into the strengths and weaknesses of different port visit support frameworks and potential consequences of changing the support framework.
3. Consider investments in organic capabilities in strategic locations. This research highlighted the importance of having organic capabilities in strategic locations, such as port security forces and port operations equipment. This will mitigate OPSEC vulnerabilities and ensure continuity of operations during a major theater conflict.
4. Standardize policy and QA processes for all port visits to ensure consistency and quality service. The research found variations in QA processes between different port visit support frameworks, which can lead to inconsistency in the level of service provided.
5. Conduct further research into applying the HSP contract model frameworks to improve source selections and extending the models by adding descriptors to the five enabling factors (auditability, flexibility, reliability, vulnerability, and durability) indicating their relative importance, such as "more important than," "equal to," or "less important than."

The findings of this research provide valuable insights into the strengths and weaknesses of different port visit support frameworks. The recommendations provided can inform planners and policymakers in deciding which support framework, or combination thereof, is best suited for a given port, and help the U.S. Navy improve its port visit support capabilities.

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