NPS-CM-24-011

ACQUISITION RESEARCH PROGRAM
SPONSORED REPORT SERIES

Comparison of Source Selection Strategies Between the United States and Taiwan's Shipbuilding Procurement

December 2023

LCDR Si-yun Yang, Taiwan Navy

Thesis Advisors: Dr. Rene G. Rendon, Associate Professor
CDR Michael R. Schilling, Lecturer

Department of Defense Management

Naval Postgraduate School

Prepared for the Naval Postgraduate School, Monterey, CA 93943

ACQUISITION RESEARCH PROGRAM
DEPARTMENT OF DEFENSE MANAGEMENT
NAVAL POSTGRADUATE SCHOOL

The research presented in this report was supported by the Acquisition Research Program of the Department of Defense Management at the Naval Postgraduate School.

To request defense acquisition research, to become a research sponsor, or to print additional copies of reports, please contact the Acquisition Research Program (ARP) via email, arp@nps.edu or at 831-656-3793.

Acquisition Research Program
Department of defense management
Naval Postgraduate School

ABSTRACT

The purpose of this research is to identify and analyze the source selection strategy of shipbuilding procurement by comparing source selection approaches, processes, team structures, evaluation factors, contract types, and small business participation requirements between the U.S. Navy and Taiwan's Navy. I collected data from the System for Award Management (SAM.gov) website for U.S. shipbuilding solicitations and Taiwan's Government e-Procurement System website for Taiwan's shipbuilding solicitations. Based on the comparative analysis and implications of findings, I identified that most of the shipbuilding solicitations conducted tradeoff as a source selection approach in both countries. However, the source selection processes, source selection team structures, contract types, evaluation factors, and small business participation requirements are different. To maximize the overall benefit for the U.S. Navy and Taiwan's Navy, this thesis provided five recommendations for future shipbuilding procurement. These recommendations included revealing budget amount in the U.S. solicitations, increasing transparency and diversity in the U.S. Source Selection Evaluation Board (SSEB), enhancing qualitative assessment in the U.S. evaluation rating method and streamlining the rating process in Taiwan, increasing the use of various payment methods in Taiwan's shipbuilding procurement, and developing thorough support policy for Taiwan's small business.

THIS PAGE INTENTIONALLY LEFT BLANK

ABOUT THE AUTHOR

LCDR Si Yun Yang is a Procurement Officer in Taiwan. She graduated from Chung Ching Institute of Technology, National Defense University, where she received a bachelor's degree in 2013. After graduating from the Naval Postgraduate School in 2023, she is assigned to serve in the Procurement Office in Ministry of National Defense as a Procurement Officer.

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

First, I would like to express my sincere appreciation to my advisors, Dr. Rene G. Rendon and Michael R. Schilling, for their guidance that helped me overcome challenges throughout the entire process of this research. Second, special thanks to Lauren at the Graduate Writing Center, the Thesis Processing Office, the library liaison, and the Acquisition Research Program in the Naval Postgraduate School for conscientious coaching that make this research more informative. Additionally, I would like to extend my deepest gratitude to my supervisors in the Defense Procurement Office of Taiwan's Ministry of National Defense for offering me the precious opportunity to attend this MBA course. Last, my gratitude also goes out to my family, friends, and colleagues for their encouragement throughout the journey that made the impossible, possible.

THIS PAGE INTENTIONALLY LEFT BLANK

NPS-CM-24-011

ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

Comparison of Source Selection Strategies Between the United States and Taiwan's Shipbuilding Procurement

December 2023

LCDR Si-yun Yang, Taiwan Navy

Thesis Advisors: Dr. Rene G. Rendon, Associate Professor
CDR Michael R. Schilling, Lecturer

Department of Defense Management

Naval Postgraduate School

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CLIN	Contract Line Item
CMS	Contract Management Standard
CMBOK	Contract Management Body of Knowledge
CPFF	Cost-Plus-Fixed-Fee
CRS	Congressional Research Service
DFARS	Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
FAR	Federal Acquisition Regulation
FFP	Firm-Fixed-Price
FPIF	Fixed Price Incentive Firm
FP-EPA	Fixed Price with Economic Price Adjustment
FSA	Force Structure Assessment
FY	Fiscal Year
GPA	Government Procurement Act
GPE	Governmentwide Point of Entry
HPV	High-Performance Vessel
HTRO	Highest Technically Rated Offeror
IDS	Indigenous Defensive Submarine
LPD	Landing Platform Dock
LPTA	Lowest Price Technically Acceptable
MND	Ministry of National Defense
NAIC	North American Industry Classification System
NAVSEA	Naval Sea Systems Command
NCMA	National Contract Management Association
OFPP	Office of Federal Procurement Policy
PALT	Procurement Administrative Lead Time

PCC	Procurement and Public Construction Commission
PGI	Procedures, Guidance, and Information
PLT	Procurement Lead Time
PSC	Product and Service code
RFP	Request for Proposals
ROC	Republic of China
SAT	Simplified Acquisition Threshold
SSA	Source Selection Authority
SSAC	Source Selection Advisory Council
SSEB	Source Selection Evaluation Board
SST	Source Selection Team
WTO	World Trade Organization

I. INTRODUCTION

The purpose of this chapter is to provide background information about the U.S. and Taiwan's shipbuilding procurement trends and approaches to compare shipbuilding solicitations between the U.S. and Taiwanese militaries. To begin, this chapter will provide background information related to the long-term shipbuilding plans and the importance of shipbuilding procurement. Next, I will address a problem statement concerning a fraudulent incident that triggered this research. Additionally, I will introduce the research questions and the methodology for analyzing solicitations from the U.S. Navy and Taiwan's Navy. Then, this chapter will explore the benefits, limitations, and outline of this research to present a comprehensive framework of this thesis. To finalize this chapter, I will present a brief summary.

A. BACKGROUND

In 2016, the Taiwan Ministry of National Defense (MND) announced 12 shipbuilding programs with a timeline from 2017 to 2040 at roughly $14.7 billion to enhance military power and support the self-reliant military establishment (Minnick, 2016). According to the National Defense Report from the Republic of China (ROC) in 2021 (Ministry of National Defense [MND], Taiwan, 2021), Taiwan's Navy had started shipbuilding construction for the Indigenous Defensive Submarine (IDS) program, High-Speed Minelayers, a new Landing Platform Dock (LPD), High-Performance Vessel (HPV) follow-up ships, as well as a new rescue and salvage ship. These plans demonstrated that Taiwan's shipbuilding procurement is committed to indigenous production instead of foreign ship purchases (Global Taiwan Institute, 2022). Thus, with increasing demands on indigenous shipbuilding in Taiwan, the procurement strategy of shipbuilding would be critical to select the most advantageous tenders and maximize the overall benefit for Taiwan's Navy.

Meanwhile, according to the Congressional Research Service (CRS), following the Force Structure Assessment (FSA), which called for increasing future fleet numbers, the U.S. Navy released a "355-ship force-level goal" in 2016 (O'Rourke, 2023, p. 2). Then, the U.S. Navy realized that a more diverse fleet structure and unmanned vehicles

would be needed to reflect the current national defense strategy. Thus, the CRS report illustrates that the Navy released a "FY2023 30-year (FY 2023–2052) shipbuilding plan" on the studies of "321 to 404 manned ships and 45 to 204 large UVs" as a potential new "force-level goal" (O'Rourke, 2023, p. 7). For Fiscal Year (FY) 2024 budget requests, the U.S. Navy proposed $32.8 billion in shipbuilding funding. The shipbuilding plans are focused mainly on procurement of nine new ships, including "one Columbia (SSBN-826) class ballistic missile submarine, two Virginia (SSN-774) class attack submarines, two Arleigh Burke (DDG-51) class destroyers, two Constellation (FFG-62) class frigates, one AS(X) submarine tender, and one John Lewis (TAO-205) class oiler" (O'Rourke, 2023, p. 2). Furthermore, along with the retiring ships program, the U.S. Navy estimated that the ship force would be comprised of "293 battle force ships at the end of FY2024 and 291 battle force ships at the end of FY2028" (O'Rourke, 2023, p. 2). Thus, the U.S. Navy released the FY2024 30-year shipbuilding plan and three alternatives to increase vessel numbers as well as the capability of warfighters on the sea (O'Rourke, 2023).

B. PROBLEM STATEMENT

The problem that prompted this research is that the contracting methods for shipbuilding contracts have not been well established to avoid vulnerabilities to inefficiency, fraud, waste, and incompetence. Through the lens of auditability theory, Rendon and Rendon (2015) stated that "the lack of trained personnel, capable processes, and effective internal controls results in the DoD having a higher level of vulnerability for procurement fraud" (p. i). Huang (2019) built upon Rendon and Rendon's work and applied auditability theory and demonstrated that most of the alleged fraud incidents occurred in the "source selection" and "contract administration" phases, which points out the most fragile areas that Taiwan's government could improve (Huang, 2019). Additionally, Huang concluded that there is a need for future research on comparing the contracting processes and regulations between the U.S. Department of Defense (DoD) and the Taiwan MND. Thus, the problem to be solved is to determine how the U.S. DoD and the Taiwan MND shipbuilding source selection strategies and regulations compare with each other by analyzing selected shipbuilding solicitations and source selection processes and organizational structures.

C. PURPOSE STATEMENT

The purpose of this research is to analyze the differences in source selection strategies between the U.S. Navy and Taiwan's Navy by comparing source selection approaches, processes, team structures, evaluation factors, contract types, and small business policies. I will focus on analyzing negotiated shipbuilding solicitations retrieved from the U.S. SAM.gov and Taiwan's Government e-Procurement System websites, then compare the most common approaches both countries use. My intent is to highlight the difference in certain methods applied by the U.S. Navy and Taiwan's Navy and provide recommendations on methods that could be adopted for the U.S. government and Taiwan's government in future procurement.

D. RESEARCH QUESTIONS

This research will address the following questions:

1. **How do source selection strategies, including team structures and processes for shipbuilding procurement, differ between the U.S. Navy and Taiwan's Navy?**
2. **How do evaluation factors and relative importance of factors for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?**
3. **How do contract types for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?**
4. **How do small business subcontracting opportunities and set-asides for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?**
5. **Based on the comparison and analysis, what insights could be presented to the U.S. Navy and Taiwan's Navy?**

E. BENEFITS OF RESEARCH

The contribution of this study could be insightful from both the United States' and Taiwan's contract management perspectives because it provides different perspectives on the current source selection strategies for shipbuilding procurement. Contracting professionals would be able to adopt new approaches on source selection strategies that maximize efficiency and balance the risk when forming procurement plans. The findings of this research could point out the key differences between the U.S. Navy and Taiwan's

Navy shipbuilding source selection strategies and serve as recommendations that could maximize the best value for the U.S. government and Taiwan's government.

F. LIMITATIONS OF RESEARCH

The scope of this research is mainly limited in two ways. One of the limitations is related to data collection constraints. First, I will only collect data from the U.S. SAM.gov website and Taiwan's Government e-Procurement System website. By using the advanced search function on the SAM.gov website, I will focus on the U.S. Navy and Taiwan's Navy shipbuilding solicitations during FY2013 to FY2023. Solicitations from other government agencies will not be analyzed. Furthermore, this research will only focus on negotiated solicitations that contain source selection information related to Federal Acquisition Regulation (FAR) Part 15.

The other limitation is that this research is limited to analysis in the pre-award phase. Without the outcome of awarding and post-award performance, this research only provides recommendations based on analysis of solicitations and regulations. Thus, for this research, the quality of the findings and conclusions are limited by the accuracy of data on public websites and the consistency between solicitations and contracts.

G. METHODOLOGY

The research methodologies include descriptive analysis and comparative analysis of data available on public websites that provided solicitations for procurement from the U.S. government and Taiwan's government. To focus my research on the U.S. Navy shipbuilding solicitations, I will use the advanced search on SAM.gov website to filter by North American Industry Classification System (NAICS) codes and Product and Service Codes (PSCs) for U.S. shipbuilding data. For Taiwan's shipbuilding information, I will focus on indigenous shipbuilding plans displayed in the 2021 National Defense Report and find corresponding solicitations on Taiwan's Government e-Procurement System website.

After collecting data, I will apply proper filters on solicitations for analysis and details for data selection. Then, I will analyze source selection strategies for both countries conducted on shipbuilding procurement. The analysis will focus on the

difference of these source selection strategies that are applied by the U.S. Navy and Taiwan's Navy. I will provide a more detailed explanation of the methodology in Chapter III.

H. OUTLINE OF REPORT

The research is organized into five chapters.

Chapter I provides foundational information regarding shipbuilding procurement from the U.S. and Taiwanese militaries. Then, this chapter will discuss the problem statement, a purpose description, and research questions on source selection strategies, followed by a comprehensive explanation of methodology. Additionally, I will provide the advantages and limitations of this research, then I will present the overall structure and organization of this study. To finalize this chapter, I will present a brief summary.

Chapter II offers a literature review that addresses source selection approaches, processes, team structures, contract types, and small business policies in the U.S. and Taiwan's regulations. In addition, Chapter II establishes an overview of the previous research on source selection. Finally, this chapter concludes with a brief summary.

Chapter III provides methods on data collection, data selection, data analysis and lists the solicitations used in this research.

Chapter IV compares variables in solicitations between the U.S. Navy and Taiwan's Navy and explain the difference in source selection strategies on shipbuilding procurement. Additionally, Chapter IV provides analysis and implications of the findings based on the comparison between both countries. Finally, Chapter IV offers recommendations and a summary for this research.

Chapter V presents summary and conclusions on source selection strategies for shipbuilding procurement, along with possibilities for further research.

I. SUMMARY

The purpose of this chapter was to provide background information about the U.S. and Taiwan's shipbuilding procurement trends and approaches to compare shipbuilding solicitations between the U.S. and Taiwanese militaries. To begin, this research provided

background information related to the long-term shipbuilding plans and the importance of shipbuilding procurement. Next, I addressed a problem statement concerning a fraudulent incident that triggered this research. Additionally, I introduced the research questions and the methodology for analyzing solicitations from the U.S. Navy and Taiwan's Navy. Then, this chapter explored the benefits, limitations, and outline of this research to present a comprehensive framework of this thesis.

Chapter II presents a literature review on agency theory, the Contract Management Standard (CMS), the FAR, the DFARS, and Source Selection Procedures memorandum. Also, the literature review includes the regulations that governs Taiwan's government procurement such as Government Procurement Act, Regulations for Evaluation of the Most Advantageous Tender, and Regulations Governing the Organization of Procurement Evaluation from Taiwan.

II. LITERATURE REVIEW

The purpose of this chapter is to provide a comprehensive review of scholarly literature that serves as the research's foundation. This literature review will discuss agency theory, the CMS, the source selection process and team structure, contract type, and small business policy for the U.S. government and Taiwan's government. First, I will introduce the theoretical framework underpinning the CMS as reflected in agency theory. Then, I will present how the CMS is aligned with the FAR and Taiwan's GPA. Additionally, I will discuss the source selection process and team structure regulated by the DFARS and the Source Selection Procedures memorandum in the United States. Also, I discuss the tendering procedures and the most advantageous methods governed by Taiwan's GPA and related regulations. Furthermore, I provide information concerning contract type and small business policy, both of which are variables in the solicitations analyzed in this research. Finally, this chapter concludes with a summary of the chapter content.

A. AGENCY THEORY

The concept of agency theory, also called principal–agent theory, can be used to introduce the relationship between two primary roles, which refers to buyer and seller in a contract (Rendon, 2015). Rendon additionally explains that the problems in this relationship stem from the "conflicting objectives" and "asymmetric information" (Rendon, 2015, p. 1484) between the principal and agent. The example of conflicting objectives occurs when the government pursues fair and reasonable prices while the contractor seeks substantial profits. An instance of asymmetric information arises when the government holds more information on mission requirement and available budget, while the industry knows more about technical capability and cost factors. These assumptions lead to problems of "adverse selection" and "moral hazard" (Eisenhardt, 1989, p. 61). Warburton (2022) further states that "adverse selection" occurs when "the offeror is hiding information" from the government. "Moral hazard" occurs when "the contractor is hiding behavior" (Warburton, 2022, p. 7) rather than performing in accordance with the contract. The methods for the government to address these issues

include conducting market research, requesting information in the solicitation, establishing proper methods for selecting the contractor, and overseeing how contractors perform (Rendon, 2015). Thus, agency theory is one of the basic theories for "how contracts are planned, structured, awarded, administered, and closed out" (Rendon, 2015, p. 1484). These activities are part of the common tasks in the contract management process within the contracting life cycle. In the next section, I will elaborate on the overall contract management framework.

B. CONTRACT MANAGEMENT FRAMEWORK

The contract management framework presents the contracting relationship between the buyer and seller in the United States and Taiwan. It is founded on the CMS which provides basic knowledge of the principles of contract management.

1. Contract Management Standard

The CMS is an accredited American National Standard that introduces contract management structure, life cycle, and processes that could be applied by all the organizations in the government and industry (National Contract Management Association [NCMA], 2022). It also provides the basic understanding of the overall contract management process through "consensus-based activities" (NCMA, 2022, p. 1) in contracting life cycle phases.

According to the CMS, there are three phases, which are pre-award, award, and post-award in the contract life cycle (NCMA, 2022). Within these three phases, there are five domains from "develop solicitation" to "close contract," which categorize and outline activities and tasks for buyers and sellers as depicted in Figure 1.

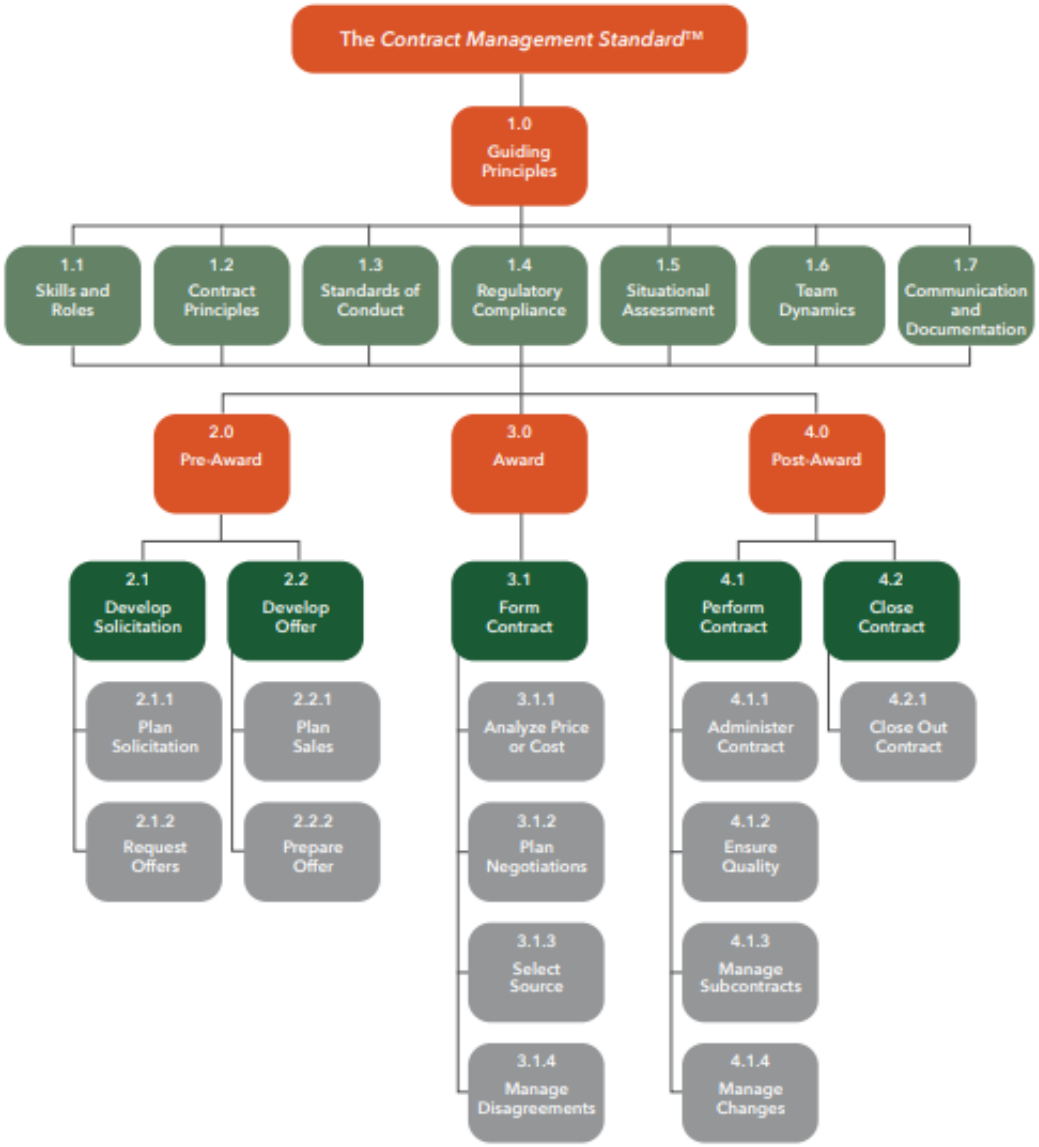

Figure 1. Contract Management Standard. Source: NCMA (2022, p. 3).

In the pre-award phase, the primary task for buyers is "developing solicitations," which includes "planning solicitations" and "requesting offers" (NCMA, 2022). Planning solicitations is a process that builds the contracting strategy for obtaining the requirements of buyers. Requesting offers is the action that asks the seller to provide proposals. Additionally, the NCMA notes that the result of the pre-award phase directly impacts the following process, which refers to the outcome of the award and post-award life cycle phases.

The second phase is the award phase. As described in the CMS, "both the buyer and seller" work together to produce "an awarded contract" based on the requirements

stated in the solicitation, which includes all the activities related to forming the contract (NCMA, 2022). According to the NCMA, these activities include "analyzing price or cost," "planning negotiations," "selecting source," and "managing disagreements" (NCMA, 2022). The NCMA further explains that, on the one hand, price analysis evaluates if the proposed price is reasonable compared to the market price and historical data, and on the other hand, cost analysis evaluates the breakdown cost elements including profit and fee. Additionally, the CMS defines planning negotiations as an interaction process in which both parties collaborate to reach consensus through clarification, modification, and compromise. Moreover, it is important to note that the CMS defines source selection as the process where the buyer analyzes proposals provided by offerors that meet the best interest of agencies with reasonable price and risk. Finally, the process of managing disagreement focuses on "the ability to resolve issues related to the solicitation or source selection process" (NCMA, 2022, p. 13).

Last, the post-award phase is comprised of two steps, which begins with the process of performing contract and concludes with closing out the contract (NCMA, 2022). Activities of performing contract includes "administering contract," "ensuring quality," "managing subcontracts" and "managing changes." Overall, this phase represents the accomplishment of the contract and reflects the overall performance of the contractor (NCMA, 2022).

The CMS can be applied in different contexts and organizations, one of the applications is the U.S. government as reflected in the FAR.

2. Federal Acquisition Regulation

The origin of the FAR can be linked to the creation of the Armed Services Procurement Regulation in 1947, which constitutes an extensive and intricate collection of regulations that oversee the federal government's purchasing procedures (Federal Deposit Insurance Corporation, n.d.). Furthermore, the FAR was established based on a 1979 statute directing the Office of Federal Procurement Policy (OFPP) to develop and implement a uniform procurement system for federal agencies (Manuel et al., 2015). Furthermore, the U.S. government issued the FAR in 1983, and codified Parts 1 through 53 of Title 48 of the Code of Federal Regulations (CFR) in 1984.

Although the FAR is not organized in a process-oriented framework, the various policies in the FAR can be aligned with the process-oriented CMS. Table 1 depicts the cross reference matrix, which shows how the competencies and job tasks in CMS align with the policies from the FAR.

Table 1. CMS–FAR Cross Reference Matrix. Adapted from NCMA (n.d.).

Contract Management Standard–Federal Acquisition Regulation Cross Reference Matrix	
CMS Competency	**FAR Part**
1.0 Guiding Principles	
1.1 Skills and Roles	1
1.2 Contract Principles	1
1.3 Standards of Conduct	3, 9
1.4 Regulatory Compliance	9, 22–24, 27–29
1.5 Situational Assessment	17, 18, 25, 34–39, 41, 50
1.6 Team Dynamics	1, 2, 4
1.7 Communication and Documentation	1–52
2.0 Pre-Award	
2.1 Develop Solicitation	
2.1.1 Plan Solicitation	5–8, 10–16, 19, 26
2.1.2 Request Offers	5, 12–15
2.2 Develop Offer	
2.2.1 Plan Sales	2, 3, 5–7, 9, 12–15
2.2.2 Prepare Offer	4, 5, 9, 12–15, 19, 32, 42, 44–46, 49, 51
3.0 Award	
3.1 Form Contract	
3.1.1 Price or Cost Analysis	12–15, 30, 31
3.1.2 Plan Negotiations	12–15
3.1.3 Select Source	12–15
3.1.4 Manage Disagreements	33
4.0 Post-Award	
4.1 Preform Contract	
4.1.1 Administer Contract	1, 4, 12–15, 30, 31, 42, 45, 47, 48
4.1.2 Ensure Quality	46
4.1.3 Manage Subcontracts	9, 19, 44
4.1.4 Manage Changes	2, 33, 43, 49
4.2 Close Contract	
4.2.1 Close Out Contract	4, 12–15, 31, 32, 42, 44, 45, 47, 48, 52

3. Taiwan's Government Procurement Act

Besides the FAR for the U.S. government, another application of the CMS is the GPA in Taiwan. According to the Public Construction Commission Executive Yuan, which is the "responsible entity" referred to in the GPA, the origin of this act is one of the efforts made by the Taiwan's government to join World Trade Organization (WTO). During the consultation process for Taiwan to join the WTO, various countries insisted that Taiwan should sign the "Agreement on Government Procurement" of the WTO and adopted Taiwan's regulations to establish a robust and open procurement environment. Subsequently, after several discussions and briefings with scholars, experts, and party members, the Legislative Yuan finally passed and brought into effect Taiwan's GPA in May 1999 (Public Construction Commission Executive Yuan, 2021).

Although the GPA is not organized in a process-oriented framework, the various policies in the GPA can be aligned with the process-oriented CMS. Table 2 depicts the cross-references matrix which shows how the competencies and job tasks in CMS align with the policies from the GPA.

Within the award phase of the contracting life cycle, one of the critical tasks is source selection, where the buyer evaluates the seller's proposal and makes a contract award decision. The next section will introduce the process of source selection.

Table 2. CMS–GPA Cross Reference Matrix. Adapted from Public Construction Commission Executive Yuan (n.d.).

Contract Management Standard–Government Procurement Act Cross Reference Matrix	
CMS Competency	**GPA Article**
1.0 Guiding Principles	
1.1 Skills and Roles	8–10, 95
1.2 Contract Principles	2, 7
1.3 Standards of Conduct	6, 15, 38, 112
1.4 Regulatory Compliance	3, 34, 96–99
1.5 Situational Assessment	17, 104–106
1.6 Team Dynamics	94, 95, 108
1.7 Communication and Documentation	11, 107
2.0 Pre-Award	
2.1 Develop Solicitation	
2.1.1 Plan Solicitation	18–23
2.1.2 Request Offers	18–23
2.2 Develop Offer	24–27
2.2.1 Plan Sales	24–27
2.2.2 Prepare Offer	24–27
3.0 Award	
3.1 Form Contract	
3.1.1 Price or Cost Analysis	46, 47, 111
3.1.2 Plan Negotiations	55, 57
3.1.3 Select Source	48, 49, 52, 56
3.1.4 Manage Disagreements	50, 51, 58, 59, 74–86
4.0 Post-Award	
4.1 Preform Contract	
4.1.1 Administer Contract	61–63
4.1.2 Ensure Quality	70
4.1.3 Manage Subcontracts	65–67
4.1.4 Manage Changes	64
4.2 Close Contract	
4.2.1 Close Out Contract	71–73

C. SOURCE SELECTION PROCESS

As described in the CMS, source selection is a process that analyzes "submitted offers in accordance with the solicitation evaluation criteria to select the source that has the highest probability of satisfactory contract performance" (NCMA, 2022, p. 13). This

process is applied by the U.S. government in the FAR and the DFARS, which will be discussed next.

1. The United States

According to FAR 15.101, the government intends to award the contract to the contractor that provides the "best value" of products and services to the government in the "negotiated acquisitions" (FAR 15.101, 2023). The best value is defined differently based on the situations as reflected in the "best value continuum" (FAR 15.101, 2023). To be more specific, the FAR shows that the best value could be considered as "the lowest price technically acceptable" (LPTA), "tradeoff," or "the highest technically rated offeror" (HTRO; FAR 15.101, 2023). Furthermore, these source selection approaches depend on the relative importance of cost and non-cost factors as depicted in Figure 2.

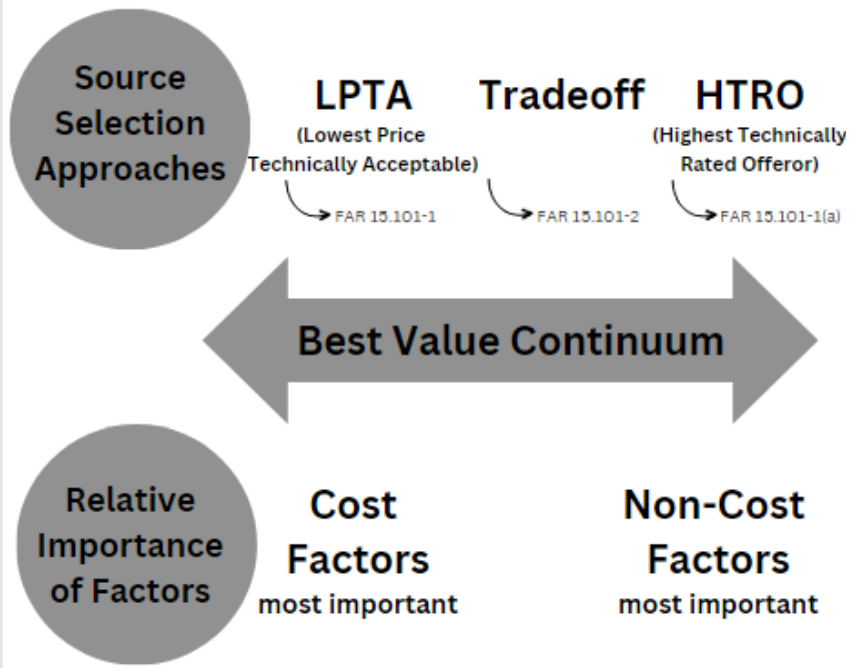

Figure 2. Best Value Continuum. Adapted from FAR 15.101 (2023).

As mentioned in the memorandum of DoD source selection procedures, which linked to DFARS Procedures, Guidance, and Information (PGI) 215.300, the LPTA is appropriate when "requirements are well defined; risk of unsuccessful contract performance is minimal; and there is no value, need, or willingness to pay for higher performance" (DoD, 2022, p. 3). Additionally, the HTRO allows the government to

"award to the highest technically rated offer also found to have a reasonable price without using trade-offs between cost or price and technical" (DoD, 2022, p. 37). Furthermore, the DFARS notes that the tradeoff is where non-price-related factors are more important than price. Although the methodology of these source selection approaches varies, which lead to different procedures when evaluating the offeror's proposal, they could all share the general "competitive source selection process" (Rumbaugh, 2010), as depicted in Figure 3.

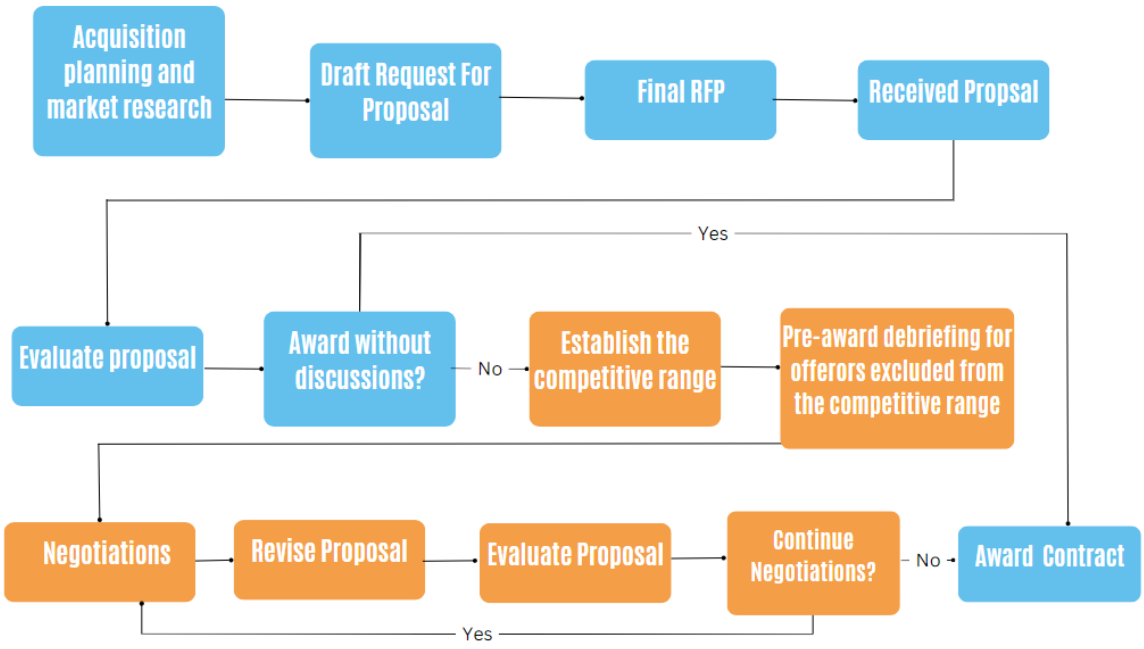

Figure 3. The Competitive Source Selection Process. Adapted from Rumbaugh (2010).

The process of "establishing the competitive range" (FAR 15.306, 2023) is conducted only when the discussion process is applied. Additionally, the contracting officer "may determine that the number of most highly rated proposals that might otherwise be included in the competitive range exceeds the number at which an efficient competition can be conducted" (FAR 15.306, 2023). The contracting officer could also limit the number of proposals to enhance the efficiency of the source selection process. However, Taiwan's government employs a slightly different approach on selecting the offerors, which will be described in the following section.

2. Taiwan

Taiwan's GPA categorized the principles of awarding into four principles in Article 52 (GPA, 2019). The GPA further describes that the tender needs to "meets the requirements set forth in the tender documentation" in each principle (GPA, 2019). Besides this condition, the first principle happens when the "government estimate is set" and when the tender is "the lowest price within the government estimate price" (GPA, 2019). The second principle occurs when "no government estimate is set" and when the tender is "the lowest price within the government budget amount" (GPA, 2019). Additionally, the third principle is "the most advantageous tender," which is like the concept of tradeoff in the best value continuum in FAR Part 15. Last, the fourth principle is the "multiple award" that still needs to follow the spirit of "the lowest price" or "the most advantageous tender" (GPA, 2019).

According to Article 56 of GPA, the "most advantageous tender" depicted in subparagraph 3 of paragraph 1 of Article 52 is determined by "comprehensively evaluating the technology, quality, function, commercial terms, or price of the tenders with ranking or score" (GPA, 2019). Furthermore, it states that "if the most advantageous tender is unable to be determined, negotiations may be conducted, and then make another comprehensive evaluation to determine the most advantageous tender" (GPA, 2019). Thus, the negotiations process will only happen under the aforementioned circumstance. After the government receives the proposals, the proposals from the tenderers that meet the "basic qualifications" or "specific qualifications" would be evaluated. Figure 4 demonstrates the overall process of the most advantageous tender approach.

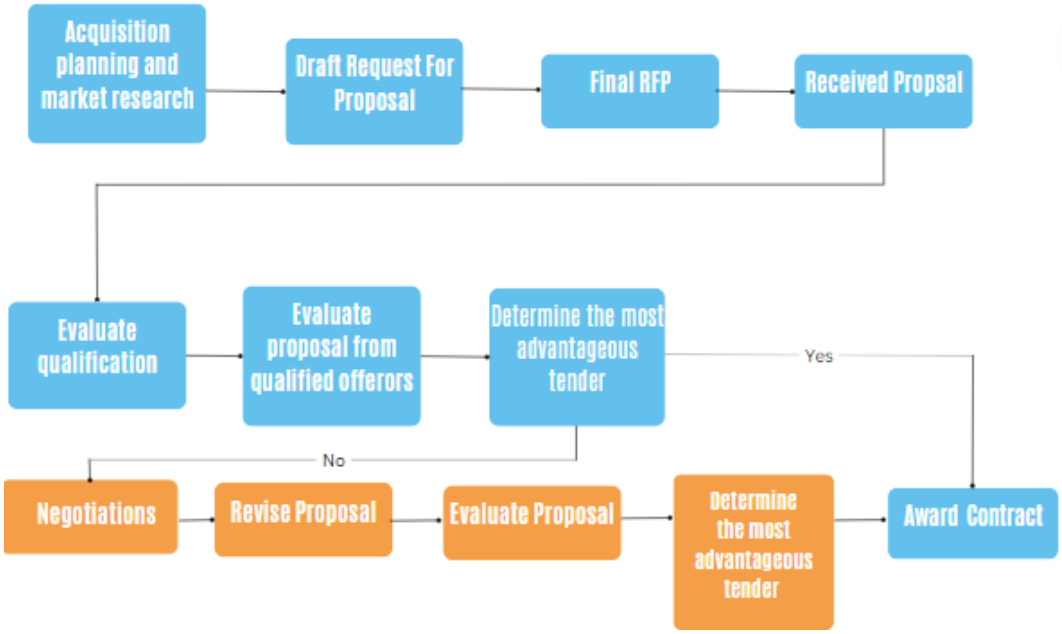

Figure 4. The Most Advantageous Award Process. Adapted from GPA (2019).

The GPA adds that when the most advantageous tender could not be determined, the negotiations process could provide opportunities for tenders to revise proposal and reevaluate. However, only the items that are mentioned as "negotiable" in the tender documentation could be the "subject of negotiation" (GPA, 2019). After the abovementioned comprehensive evaluation, the GPA further notes that if "the most advantageous tender still cannot be determined, the tendering procedure shall be nullified" (GPA, 2019).

The source selection process discussed in this section is conducted by the specific specialized team called the source selection team (SST), which will be discussed in the next section.

D. SOURCE SELECTION TEAM

As mentioned in the guiding principle of CMS, "The contract management team combines the functional disciplines of buyers and sellers for the common purpose of satisfying the customer need" (NCMA, 2022). One of the teams is referred to as the SST, which plays a key role in the source selection process.

1. The United States

According to the DoD source selection procedure linked to the DFARS PGI215.300, the SST is comprised of professionals that are familiar with specific areas of the acquisition process (DoD, 2022). The creation of SST requires careful and thorough consideration of team members in order to ensure that there are appropriate experts from specific functional areas. Also, the complexity of the acquisition will determine the type of source selection team structure. Generally, procurement with a total estimated value of $100 million or more consists of three tiers in the SST. These tiers include "Source Selection Authority (SSA)," "Source Selection Advisory Council (SSAC)," and "Source Selection Evaluation Board (SSEB)," which are depicted in Figure 5 (DoD, 2022).

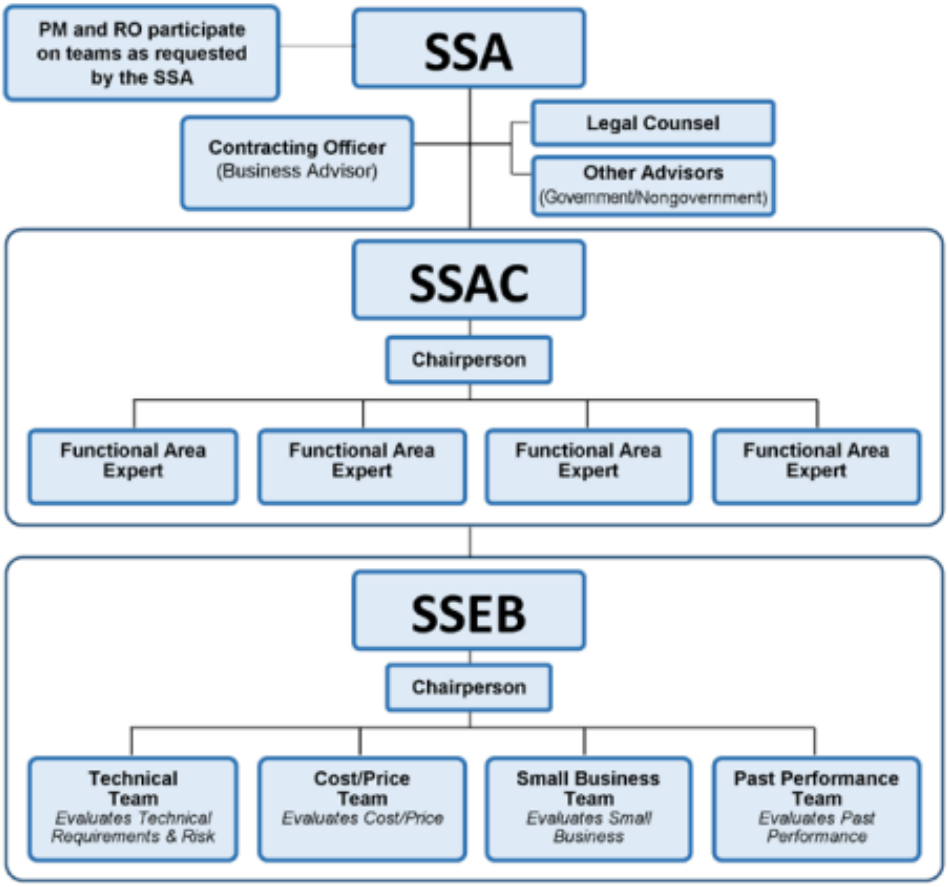

Figure 5. Typical SST Structure for Solicitations Greater Than $100 Million. Source: DoD (2022).

The responsibility of SSA is to make the final decision on selecting offerors whose proposals provide best value to the government based on the requirement in the

solicitation (DoD, 2022). The SSAC is comprised of experts from specific areas. The goal of the SSAC is to provide support and recommendation for the SSA as well as oversight of the SSEB in the entire process. Then, the purpose of SSEB members is to provide reports with "consolidated evaluation results" (DoD, 2022) according to the evaluation factors.

2. Taiwan

The team that selected the most advantageous tender in Taiwan's Procurement Act is called the "Procurement Evaluation Committee." According to Article 4 of Regulations Governing the Organization of Procurement Evaluation Committee (2021), "the Committee shall be not less than five members with relevant professional knowledge on procurement matter, who shall be appointed within or outside the entity." Also, there shall be one third of the members who are "experts or scholars" and "not be incumbent staff members of any government agencies." Furthermore, the missions of the committee are:

- setting or approving the evaluation items, the evaluation criteria, and the evaluation method set forth in the tender documentation;
- conducting the evaluation of suppliers; and
- assisting the entity in explaining matters in relation to the evaluation criteria, the evaluation process, or the result of evaluation (Regulations Governing the Organization of Procurement Evaluation Committee, Article 3, 2021) .

The other team that needs to be established in selecting the most advantageous tender is the "working group," which comprises a minimum of three members to support the Procurement Evaluation Committee in the evaluation process. In general, the structure of the teams that participate in the source selection process in Taiwan is depicted in Figure 6.

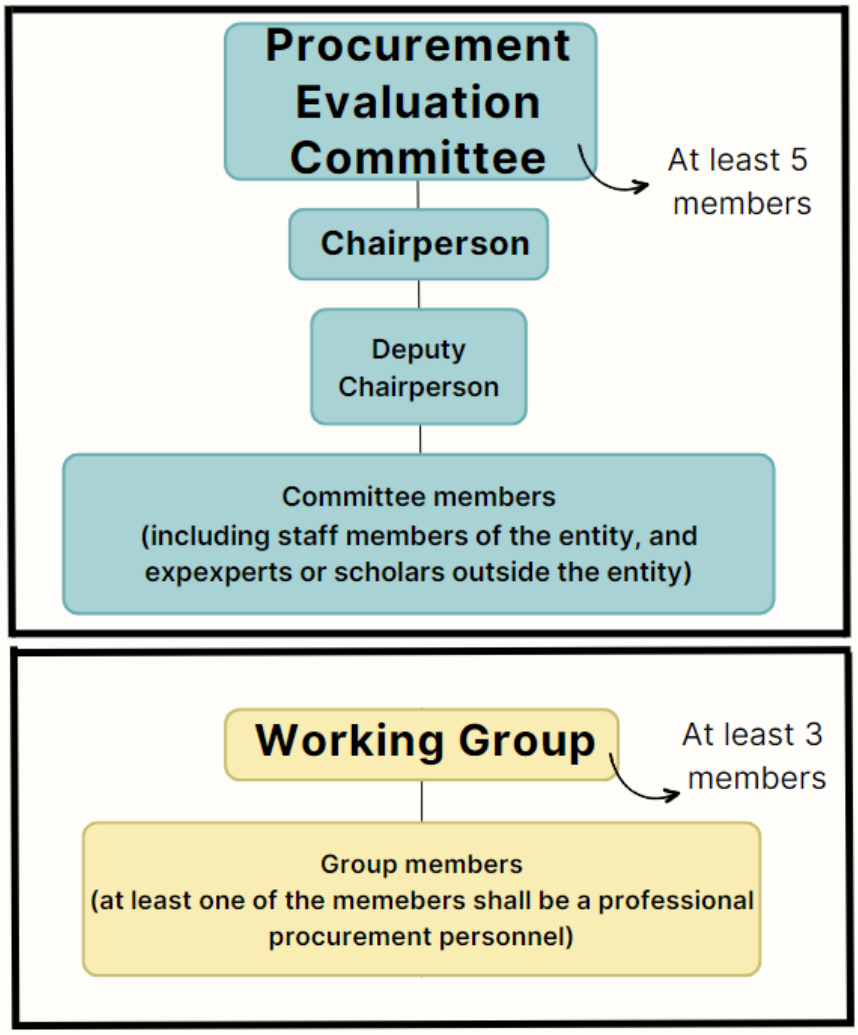

Figure 6. Procurement Evaluation Committee and Working Group. Adapted from Regulations Governing the Organization of Procurement Evaluation Committee (2021).

Additionally, if the evaluation result from the evaluation committee is not align with the preliminary review report produced by the working group, "the reason shall be explicated by the Committee or the member and be taken in the minutes." (Regulations for Review by Procurement Evaluation Committee, Article 3–1, 2021). In addition to assessing the variance in overall evaluation results between the evaluation committee and the working group, it is important to scrutinize differences in evaluation results among individual committee members. This is reflected in Article 6 of Regulations for Review by Procurement Evaluation Committee (2021), which states "where there is a significant difference on evaluation result among Committee members, the chairperson shall present

it to the Committee for resolution or there shall be a re-evaluation according to the decision of the Committee."

The source selection process and team structure are the factors that influence the source selection strategy. The contract type also plays a critical role in contracting strategy. It varies depending on the degree of risk and incentive that the buyer and seller hold. I will introduce the categories of contract types in the following section.

E. CONTRACT TYPE

Selecting proper contract type is one of the job tasks on formulating contract strategy in the CMS. The selection of contract type relates to the risk and responsibility between the buyer and seller, which will be discussed next.

1. The United States

There are two broad categories of contract type, which are "fixed-price" and "cost-reimbursement" contracts (FAR 16.1, 2023). In general, the "firm-fixed-price (FFP)" contract within "fixed-price" category implied the contractor has more responsibility on "performance costs and resulting profit (or loss)" (FAR 16.1, 2023). On the other hand, the "cost-plus-fixed-fee (CPFF)" contract within "cost-reimbursement" category assumes the contractor had less responsibility on "performance costs and resulting profit (or loss)" (FAR 16.1, 2023). According to FAR 16.104, the considerations on deciding contract type include price analysis, requirement urgency and capability of industry, which are factors impacting how much risk the government would be willing to tolerate based on specific conditions. The contract type matrix, depicted in Figure 7, demonstrates the application of each contract type within the spectrum of available FAR and non-FAR contract strategies (Defense Acquisition University, n.d.)

		FFP	FPEPA	FPIF	FFP-LOE	Cost	CPIF	CPAF	CPFF	T&M
FAR Based	Federal Supply Schedules - FAR 8.4	•								•
	Commercial Items - FAR 12	•	•							•
	Simplified Acquisitions - FAR 13	•	•	•	•	•	•	•	•	•
	Contracting by Negotiation - FAR 15	•	•	•	•	•	•	•	•	•
	IDIQ Contracts - FAR 16.5	•	•	•	•	•	•	•	•	•
	Letter Contract - FAR 16.603	N/A								
	Agreements - FAR 16.7	Agreements, not contracts								
	Small Business - FAR 19	•	•	•	•	•	•	•	•	•
	BAA - FAR 35.106	•	•	•	•	•	•	•	•	•
	SBIR/STTR	•		•	•	•	•	•	•	•
	Defense CSO Pilot	•		•						
Non-FAR	Other Transaction Authority	Agreements, not contracts								
	Procurements for Experimental Purposes	Agreements or contracts (usually FFP)								
	CRADA (15 USC 3710a)	Agreements, not contracts								
	PIA (15 USC 3715)	Contract, agreement, or memorandum of understanding								
	TIA (32 CFR Part 37)	Agreements, not contracts								

Figure 7. Contract Type Matrix. Source: Defense Acquisition University (n.d.).

2. Taiwan

Although there is no formal contract type category established in Taiwan's GPA, there are some regulations related to the payment method and calculating fee based on the circumstance. Generally, the fixed price contract type is normally used by Taiwan's MND. Additionally, in the payment conditions for contract price within terms and conditions of the solicitations, the price could be adjusted based on price index adjustment announced by the Directorate-General of Budget, Accounting and Statistics, Executive Yuan. But the fee and profit are not included in the adjustment items.

However, there are some conditions that allow using the "cost plus fee" method when contracting for "professional services," "technical services," and "information services" in Subparagraph 9 of Paragraph 1 of Article 22 of the GPA. First, the Regulations for Selection and Fee Calculation of Professional Services Providers Entrusted by Entities describes the professional services referred to as

> services which are provided with one's professional knowledge or skills, including law, accounting, finance, land administration, medical treatment, health care, immunization or blight prevention and treatment, culture and

art, research and development, social welfare, and other services. (Regulations for Selection and Fee Calculation of Professional Services Providers Entrusted by Entities, 2017)

Second, the Regulations for Selection and Fee Calculation of Technical Services Providers Entrusted by Entities explains the technical services referred to as

> technical services related to feasibility research, planning, designing, supervision or professional construction management, or other services provided by engineering consulting firms, professional engineering offices, architect offices, professional engineering consulting firms and any other natural persons or legal persons that may provide such services according to the other laws. (Regulations for Selection and Fee Calculation of Technical Services Providers Entrusted by Entities, 2020)

Last, the Regulations for Selection and Fee Calculation of Information Services Providers Entrusted by Entities discusses the information services referred to as

> services related to computer hardware and software, including overall planning, system integration and organization, system inspection and evaluation, system management, network management, software development, software inspection and testing, software maintenance, hardware maintenance, hardware operation, plant infrastructure management, support services, network services, consultant services, database setup and storage, data processing, data input, training and promotion services, and so forth. (Regulations for Selection and Fee Calculation of Information Services Providers Entrusted by Entities, 2017)

Thus, the cost-plus fee method is less conducted in the Taiwan government contracting environment. If implemented, it would typically be used for specific services procurement. Besides contract type, the other factor that varies between the United States and Taiwan is the small business policy, which will be discussed in the next section.

F. SMALL BUSINESS POLICY

This research focuses on the comparison of small business policy between the United States and Taiwan, especially small business subcontracting and small business set-aside.

1. The United States

According to FAR 19.702, when receiving contract value greater than the simplified acquisition threshold (SAT), which is $250,000, the contractor must agree that

> small business, veteran-owned small business, service-disabled veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business concerns will have the maximum practicable opportunity to participate in contract performance consistent with its efficient performance. (FAR 19.702, 2023)

Thus, the subcontracting plan is required to demonstrate the participation of the small business. To make the responsibility and cooperation clear between prime contractor and subcontractor, the content of the subcontracting plan needs to include separate goals and statements that regulate the eligibility of the subcontractors and details of how they work with each other (FAR 52.2, 2023).

Another policy that supports small businesses is called small business set-aside. As mentioned in FAR 19.5 (2023), small business set-aside "is the limiting of an acquisition exclusively for participation by small business concerns." Furthermore, the FAR notes that

> Each acquisition of supplies or services that has an anticipated dollar value above the micro-purchase threshold, but not over the simplified acquisition threshold, shall be set aside for small business unless the contracting officer determines there is not a reasonable expectation of obtaining offers from two or more responsible small business concerns that are competitive in terms of fair market prices, quality, and delivery. (FAR 19.5, 2023)

Overall, the federal government provides opportunities for small business whenever the circumstances allow. The policy varies based on the contract value, which consists of four parts as depicted in Table 3.

Table 3. Small Business Set-Aside Requirement on Contract Dollar Value. Adapted from Small Business Administration (n.d.).

Contract Value	Small Business Set-Aside Requirement
$10,00 to $250,000	Automatically and exclusively set aside for small businesses
$250,000 or more	Set aside if there are two or more small businesses that could do the work.
$750,000 or more (non-construction contracts)	If not set aside for small business, must have a subcontracting plan if awarded to a non-small business
$1.5 million or more (construction contracts)	If not set aside for small business, must have a subcontracting plan if awarded to a non-small business

2. Taiwan

The policy of supporting small business in the United States is like Taiwan, but with different conditions and requirements. In Taiwan's regulation, the government may request that the offeror "must be a small or medium enterprise" or encourage the offeror to "invite small or medium enterprises for subcontracting" (Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement, Article 3, 2002). Furthermore, if the procurement value does not reach "the threshold for publication," which is NT $1.5 million, "small and medium enterprises shall be awarded in principle" except in circumstances such as special procurement or sole source. Every fiscal year, the responsible entity, which refers to the Procurement and Public Construction Commission (PCC), discusses with related organizations and publishes "the percentage of the targeted value of annual procurement" that needs to be "contracted or sub-contracted to the small and medium enterprises" for all the government entities (Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement, Article 4, 2002).

In addition to the above small business subcontracting plan and other considerations in source selection method, there are other scholars that have also conducted research on the source selection strategies and the contracting outcome. The next section will discuss their research.

G. PREVIOUS RESEARCH

Although the literature includes extensive research on the contract management process, there is limited research specifically on the source selection process, and even more limited research on the source selection strategy of the Taiwanese government. Below are some examples of past research on source selection.

First, Landale et al. (2017) researched how the procurement outcome is impacted by the source selection method. They utilized "a multiple regression model and multivariate analysis" to evaluate the effects on critical procurement results "such as procurement lead time (PLT), supplier performance and buyer team size" (Landale et al., 2017, p. 47). Based on their findings, the trade-off method led to increased PLT and larger SST. Consequently, even though the PLT and the team's size are increased, the supplier performance is achieved (Landale et al., 2017).

Additionally, Baker et al. (2016) researched Naval Sea Systems Command's (NAVSEA's) data to determine "the possible relationships between the contract source selection strategy and pre-award and post-award performance metrics" (Baker et al., 2016, p. 43). Their research showed that the higher complexity of procurement requirements leads to a higher possibility of implementing the tradeoff approach. Also, they mentioned that a "positive correlation between Procurement Administrative Lead Time (PALT) and source selection strategy seems to suggest that longer PALTs are associated with the tradeoff strategy" (Baker et al., 2016, p. 44).

Finally, in research on the source selection strategies for the Taiwanese government, Lee (2006) discussed the factors that influenced "the degree of heterogeneity of the requirements" and how it relates to "determine the most appropriate basis for contract award," which provides guidance on when it is appropriate to use "the lowest tender" or "the most advantageous tender" approach (Lee, 2006, p. v). Also, it should be noted that since Lee's thesis was published, Article 2 of Regulations for Evaluation of the Most Advantageous Tender relates to the degree of heterogeneity of the requirements was deleted in 2008 to provide flexibility for all the government entities on selecting the lowest tender or the most advantageous tender approach.

However, very little research compares the source selection method between the United States and foreign countries. As a result, I focus this research on comparison of source selection strategies between the United States and Taiwan.

H. SUMMARY

The purpose of this chapter was to provide a comprehensive review of scholarly literature that serves as the research's foundation. This literature review discussed agency theory, the CMS, the source selection process and team structure, contract type, and small business policy for the U.S. government and Taiwan's government. First, I introduced the theoretical framework underpinning the CMS as reflected in agency theory. Then, I presented how the CMS is aligned with the FAR and Taiwan's GPA. Additionally, I discussed the source selection process and team structure regulated by the DFARS and the Source Selection Procedures memorandum in the United States. Also, I discussed the tendering procedures and the most advantageous methods governed by Taiwan's GPA and related regulations. Furthermore, I provided information concerning contract type and small business policy, both of which are variables in the solicitations analyzed in this research.

Chapter III presents the methodology that I implemented in this research.

THIS PAGE INTENTIONALLY LEFT BLANK

III. METHODOLOGY

The purpose of this chapter is to discuss the methodology that was used in this research. First, I will discuss the sources of the data as well as the location of the database for the United States' and Taiwan's shipbuilding procurement. Next, I will introduce how I access and collect the data. Then, I will address how the data will be filtered to conduct the comparative analysis between the United States' and Taiwan's shipbuilding solicitations. Finally, a summary will conclude this chapter.

A. DATA SOURCES

In this research, I collected all the U.S. government data from "the governmentwide point of entry" (GPE), which is the government's website where all the notices required to be published by the FAR are posted (FAR 5.003, 2023). Solicitations, which are the data of this research, should be transmitted to the GPE by access through the website link (SAM.gov) as reflected in FAR 5.201 (2023).

Similar to the U.S. government, Taiwan's government also has established a point of entry, which is the "government procurement information website" that published notices regulated in Article 5 of Regulations for Publication of Government Procurement Notices and Government Procurement Gazette (2008). The public website link is web.pcc.gov.tw/pis/.

B. DATA ACCESS

The access of the unclassified data for both the United States and Taiwan is open to the public. As FAR 4.6 states (2023), "In accordance with the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. 109–282), all unclassified Federal award data must be publicly accessible." This transparency could also be found in the policy of Taiwan's GPA, which emphasizes "fair and open procurement procedures" for the contracting system (GPA, 2019). Thus, the solicitations are available on the public aforementioned websites.

C. DATA FILTER

This research focuses on shipbuilding procurements. As a result, there are several steps to filter the available request for proposals (RFP) on the GPE website. For the U.S. shipbuilding solicitations, I began with using the search term "construction." Then, I applied two advanced search filters: NAICS Code 3366, "ship and boat building," and PSC 19, "ships, small craft, pontoon, docks." Generally, these conditions would filter out solicitations which are not related to shipbuilding. Last, I focused on the solicitations between 2013 and 2023, and I only picked solicitations that utilized contractor selection strategies.

As for Taiwan's shipbuilding procurement, I focused on the shipbuilding plans mentioned in the National Defense Report announced by Taiwan's MND in 2021, which I introduced in Chapter I as background information. There are five shipbuilding procurements in the report, which include the IDS program, High-Speed Minelayers, a new LPD, HPV follow-up ships, and a new rescue and salvage ship. Since the IDS program is classified, I will not include that solicitation and only analyze four unclassified shipbuilding solicitations in Taiwan's procurement information website.

D. DATA ANALYSIS

Once I collected and filtered data for both the U.S. Navy and Taiwan's Navy shipbuilding procurement solicitations, I organized the data in a Microsoft Excel spreadsheet listing all the criteria for comparison between both countries. These criteria included source selection process, SST structure, contract type, and small business subcontracting. After forming the spreadsheet, I created a table summarizing the numbers of each factor. Finally, from the difference or similarity of the comparison factors, I provided the findings of this research by comparative analysis.

E. SUMMARY

The purpose of this chapter was to discuss the methodology that was used in this research. First, I discussed the sources of the data as well as the location of the database for the United States' and Taiwan's shipbuilding procurement. Next, I introduced how I

access and collect the data. Finally, I addressed how the data were filtered to conduct the comparative analysis between the United States' and Taiwan's shipbuilding solicitations.

The next chapter will present the findings and discuss the implications based on analysis of the shipbuilding solicitations. Then, I will provide the recommendations for future shipbuilding procurement strategies and a summary.

THIS PAGE INTENTIONALLY LEFT BLANK

IV. FINDINGS AND ANALYSIS

The purpose of this chapter is to provide the findings from the comparison analysis of the U.S. Navy and Taiwan's Navy shipbuilding solicitations. First, I will introduce the findings from the comparison of the solicitations from both countries, and then I will provide discussions and implications based on the findings. Also, recommendations will be provided for both the U.S. government and Taiwan's government according to the analysis. Finally, a summary will conclude this chapter.

A. FINDINGS

The findings of this research are categorized into two parts based on the countries.

1. The United States

I discovered 59 solicitations related to the U.S. shipbuilding procurement when applying the advanced search function in the SAM.gov website. As depicted in Figure 8, the data filter factors include the search term *construction*, and then I narrowed the selection of notice type as *solicitation*, NAICS Code 3366, and PSC 19.

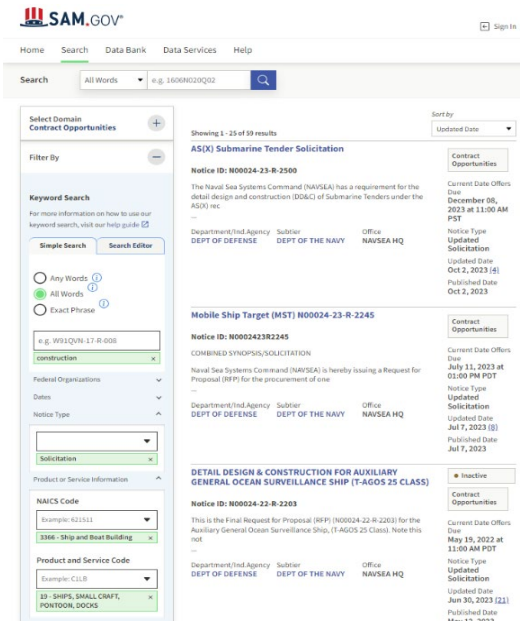

Figure 8. SAM.gov Search Results. Adapted from SAM.gov website (2023).

Among the aforementioned 59 solicitations, I focused on 26 solicitations which are published by NAVSEA and filtered out the solicitations from other departments to align with the agency in Taiwan's shipbuilding procurement. Moreover, to enhance the accuracy of the data and eliminate the noise in the comparative analysis, I further filtered out 14 solicitations that were not for shipbuilding, were out of date, contained controlled information, or were canceled. Thus, the results for this research came from data taken from 12 U.S. solicitations on SAM.gov. This information is summarized in Table 4.

Table 4. Data Filter Results for the U.S. Shipbuilding Solicitations. Adapted from SAM.gov website (n.d.).

Data	Category	Number	Results/ Excluded Reasons
Original Data	SAM.gov search result	59	Search Term: Construction Notice Type: Solicitation NAICS Code:3366 – Ship and Boat Building PSC:19 – Ships, Small Craft, Pontoon, Docks
Data Filter Process	Not for DoD Navy	33	Exclude reasons: Dept of Homeland Security, Dept of Agriculture, Dept of Commerce, Dept of Interior, Dept of Transportation, Special Operations Command, Army Corps of Engineers
	Not for shipbuilding	9	Exclude reasons: Procurement of dry dock, industry studies, planning, units of ships, dismantlement, and construction for section
	Out of date	3	Exclude data before 2012, only applying data during FY2013 to FY2023
	Controlled information	1	Controlled unclassified information
	Canceled solicitation	1	Renew with another solicitation
Final Data	**Final research data**	**12**	

2. Taiwan

As mentioned in the background in Chapter I, Taiwan MND announced 12 shipbuilding program plans to enhance capability on self-reliant military establishment in 2016. So far, seven solicitations have not started yet or have been cancelled due to policy and budget. Thus, in the latest National Defense Report published in 2021, there are five shipbuilding plans ongoing. Among those five shipbuilding solicitations, the IDS

program is classified, and the data could not be obtained from the Taiwan's e-Procurement System website. As a result, the outcome of data filter is four solicitations, including High-Speed Minelayers, a new LPD, HPV follow-up ships, as well as a new rescue and salvage ship. These four solicitations are the data set that represent Taiwan's shipbuilding solicitations in this research as depicted in Table 5.

Table 5. Data Filter Results for the Taiwan's Shipbuilding Solicitations. Adapted from National Defense Report (2021).

Data	Category	Number	Results/Excluded Reasons
Original Data	Shipbuilding program plan	12	FY2017–2040 shipbuilding program plans announced by Taiwan's MND in 2016
Data Filter Process	No ongoing plans on National Defense Report	7	Exclude reasons: Plans that do not start yet or were cancelled due to policy and budget
	Controlled information	1	Exclude reason: Classified information
Final Data	**Final research data**	**4**	

B. DISCUSSION OF FINDINGS

The comparative analysis of this research between the United States and Taiwan's shipbuilding source selection strategies focusses on five variables: source selection approaches, SSTs, evaluation factors, contract types, and small business policies. I will discuss each variable through comparison of solicitations and regulations between the United States and Taiwan in the following sections.

1. Source Selection Approach

Among the 12 selected U.S. Navy shipbuilding solicitations, nine applied tradeoff and three applied LPTA as the source selection approach. Even though the technical or similar factor is one of the evaluation factors in all the selected solicitations, which would be discussed in a later section, none of the solicitations applied HTRO as the source selection approach. Also, all three solicitations that applied LPTA as a source selection approach are commercial contracts, and most of the commercial contracts applied LPTA

as a source selection approach, but not all of them do so. Additionally, the budget dollar amount of the procurement is not published in the solicitation, which limits the analysis considering price as one of the influencing factors when determining the source selection approach in the U.S. Navy shipbuilding procurement. Detailed information of the source selection approach for the U.S. Navy shipbuilding procurement is depicted in Table 6.

Table 6. U.S. Navy Shipbuilding Procurement Source Selection Approach. Adapted from SAM.gov website (n.d.).

U.S. Navy Shipbuilding Procurement Source Selection Approach					
	Solicitation Name	**Notice ID**	**Year**	**Commercial Contract**	**Source Selection Approach**
1	Mobile Ship Target (MST)	N00024-23-R-2245	2023	N/A	Tradeoff
2	Auxiliary General Ocean Surveillance Ship (T-AGOS 25 CLASS)	N00024-22-R-2203	2022	N/A	Tradeoff
3	Yard Oiler, Non–Self–Propelled (YON) Fuel Oil Barge	N00024-22-R-2244	2022	Commercial Contract	LPTA
4	Yard Repair Berthing and Messing Barge (YRBM)	N00024-21-R-2253	2021	Commercial Contract	Tradeoff
5	Force Protection Small/Large Boat	N00024-22-R-2270	2022	Commercial Contract	LPTA
6	Guided Missile Frigate (FFG[X])	N00024-19-R-2300	2019	N/A	Tradeoff
7	65’ Dive Support Boat	N00024-18-R-2209	2018	Commercial Contract	LPTA
8	Heavy Polar Icebreaker (HPIB)	N00024-18-R-2210	2018	N/A	Tradeoff
9	NOAA AGOR Variant (NAV)	N00024-18-R-2201	2018	N/A	Tradeoff
10	Expeditionary Fast Transport (EPF)	N00024-18-R-2227	2018	N/A	Tradeoff
11	Landing Craft Utility (LCU)	N00024-17-R-2462	2017	N/A	Tradeoff
12	Towing, Salvage, and Rescue Ships	N00024-17-R-2207	2017	N/A	Tradeoff

As for the four selected Taiwan’s Navy shipbuilding solicitations, all of them applied most advantageous tender as a source selection approach—a similar concept to tradeoff, which considers price and non-price factors when selecting contractors. Since there is not a formal commercial item contracting category established in Taiwan’s GPA, there is no difference on the solicitation form. Additionally, the budget amount of all the solicitations is published when requesting proposals on Taiwan’s e-Procurement System

website. Detailed information of the source selection approach for Taiwan's Navy shipbuilding procurement is depicted in Table 7.

Table 7. Taiwan's Navy Shipbuilding Procurement Source Selection Approach. Adapted from Government e-Procurement System website (n.d.).

Taiwan's Navy Shipbuilding Procurement Source Selection Approach					
	Solicitation Name	**Job number**	**Year**	**Budget Value (1USD≒30TWD)**	**Source Selection Approach**
1	New LPD 新型兩棲船塢運輸艦	PA06004L038	2017	USD $154.5M TWD $4,635M	The most advantageous tender
2	High-Speed Minelayer 快速布雷艇	PA07002L125	2018	USD $24.6M TWD $738M	The most advantageous tender
3	New Rescue and Salvage Ship 新型救難艦	PA09002L120	2020	USD $93.17M TWD $2,975M	The most advantageous tender
4	HPV Follow-up Ship Procurement 高效能艦艇第二批	PA12002L092	2023	USD $302.34M TWD $9,070M	The most advantageous tender

Besides the source selection approach, the SST is another factor that might impact the source selection process as well as the result, which will be discussed in the next section.

2. Source Selection Team

Among the 12 selected U.S. Navy shipbuilding solicitations, there is little information revealed in the solicitation related to the SST. However, it is noteworthy that FAR 7.5 (2023) stated that "participating as a voting member on any source selection boards" is regarded as "inherently governmental functions." Thus, the members in SSEB "must be performed by Federal employees" (Office of Federal Procurement Policy [OFPP], 2011, p. 56234). Besides the limitation that the SSEB should be carried out by federal employees, there are no other limitations on numbers or position. Also, the name list of the SSEB is not required to be published on public websites in any U.S. regulations.

However, for the Taiwan's procurement evaluation committee members, there is a minimum requirement on the total number and minimum percentage requirement for members outside the government agency, which are mentioned in Chapter II. Moreover, "the name list of the Committee members shall be published immediately on the website designated by the responsible entity" (Regulations Governing the Organization of Procurement Evaluation Committee, 2021) after the procurement evaluation committee is established. Since the name list would not be published only "when there is a necessity not to disclose the list at the entities' discretion upon taking into consideration of the characteristics of the case and the actual needs," all four of the selected Taiwan Navy's shipbuilding solicitations published their name list of procurement evaluation committee members (Regulations Governing the Organization of Procurement Evaluation Committee, 2021).

It should be noted that the SST selects contractors that meet the best value requirement based on the evaluation factors and relative importance of the factors, which will be discussed in the next section.

3. Evaluation Factors and Relative Importance of Factors

According to FAR 15.304, "The award decision is based on evaluation factors and significant subfactors that are tailored to the acquisition" (FAR 15.304, 2023). Furthermore, when making source selection award decisions, the tailored evaluation factors and relative importance express the areas that the U.S. Navy regards primary and critical. Table 8 shows the evaluation factors and their relative importance in Section M of the 12 U.S. Navy shipbuilding solicitations.

Table 8. U.S. Navy Shipbuilding Procurement Evaluation Factors and Order of Importance. Adapted from SAM.gov website (n.d.).

U.S. Navy Shipbuilding Procurement Evaluation Factors and Order of Importance			
	Solicitation Name	**Source Selection Approach**	**Evaluation Factors and Order of Importance**
1	Mobile Ship Target (MST)	Tradeoff	1. Technical Merit of Design > 2. Facility and Management Feasibility > 3. Past Performance > 4. Price

U.S. Navy Shipbuilding Procurement Evaluation Factors and Order of Importance			
	Solicitation Name	**Source Selection Approach**	**Evaluation Factors and Order of Importance**
2	Auxiliary General Ocean Surveillance Ship (T-AGOS 25 CLASS)	Tradeoff	1. Detail Design and Engineering Approach = 2. Production Approach > 3. Management Approach > 4. Past Performance > 5. Price
3	Yard Oiler, Non–Self–Propelled (YON) Fuel Oil Barge	LPTA	Acceptable or Unacceptable for both Technical Approach and Past Performance factors, then award to the lowest priced proposal
4	Yard Repair Berthing and Messing Barge (YRBM)	Tradeoff	1. Technical Merit of Design > 2. Facility and Management Feasibility > 3. Past Performance > 4. Price
5	Force Protection Small/Large Boat	LPTA	Acceptable or Unacceptable for both Technical Approach and Past Performance factors, then award to the lowest priced proposal
6	Guided Missile Frigate (FFG[X])	Tradeoff	1. Design and Design Maturity = 2. Objective Performance > 3. Schedule, Production Approach, and Facilities > 4. Data Rights > 5. Price
7	65’ Dive Support Boat	LPTA	Acceptable or Unacceptable for both Technical and Past Performance and Experience factors, then award to the lowest priced proposal
8	Heavy Polar Icebreaker (HPIB)	Tradeoff	1. Design and Design Maturity > 2. Schedule, Management and Production Approach > 3. Sustainment Cost Reduction Approach > 4. Past Performance > 5. Price
9	NOAA AGOR Variant (NAV)	Tradeoff	1. Ship Design Approach > 2. Production Facilities and Management > 3. Past Performance > 4. Price
10	Expeditionary Fast Transport (EPF)	Tradeoff	1. Commonality > 2. Ship Design/Technical Approach > 5. Price Acceptable or Unacceptable: 3. Production/ Management Approach and 4. Past Performance
11	Landing Craft Utility (LCU)	Tradeoff	1. Craft Design Approach > 2. Facility and Production = 3. Management > 4. Past Performance > 5. Price
12	Towing, Salvage, and Rescue Ships	Tradeoff	1. Ship Design > 4. Past Performance > 2. Production = 3. Management > 5. Price

Even though there are differences in evaluation factors and their relative importance among the 12 selected shipbuilding solicitations, there are some similarities in general. Overall, the technical approach and design is the most important factor, which is more important than the management factor, and then the past performance is more

important than the price factor, which is the least importance compared to the non-price factors. On the one hand, for the solicitations applying tradeoff as a source selection approach, the non-price factors, when combined, will be considered significantly more important than price. On the other hand, the solicitations that fall within the LPTA approach would be awarded to the lowest priced proposal if the technical and past performance factors are acceptable, which means that the proposal clearly meets the minimum requirements of the solicitation. Also, besides "acceptable" and "unacceptable" rating criteria for the factors in LPTA approach, all other evaluation factors conduct adjectival ratings that reflects how well the proposal meets or exceeds the solicitation requirements and the degree of risk mitigation depends on each solicitation. The results of adjectival rating include "outstanding," "good," "acceptable," "marginal," and "unacceptable."

For Taiwan's Navy, the four selected shipbuilding solicitations applied "ranking method" as an approach to select the most advantageous tender. According to Article 15 of Regulations for Evaluation of the Most Advantageous Tender (2008), the process of this ranking method begins when "a supplier [also called offeror] is evaluated and awarded a score against each evaluation item [also called evaluation factor], and the summed scores of all suppliers shall be converted to a ranking." After each member of the evaluation committee gives each offeror an individual ranking and then, "the converted rankings shall be summed to determine each supplier's overall ranking." (Regulations for Evaluation of the Most Advantageous Tender, 2008). Additionally, "the supplier that attains the lowest overall ranking is ranked first." (Regulations for Evaluation of the Most Advantageous Tender, 2008). Simply put, the ranking method is converted through the score and then summed up with the ranking numbers, and the offeror with the lowest ranking number is the most advantageous tender for the buyer.

The assigned scores of each evaluation factor reveal the relative importance of the factors, which are set and approved by the Procurement Evaluation Committee (Regulations for Evaluation of the Most Advantageous Tender, 2008). But it should be noted that if the price factor is included in the consideration of the evaluation, "the weighting of which in relation to all of the evaluation item [also called evaluation factor] shall be not less than 20% and not more than 50%" (Regulations for Evaluation of the

Most Advantageous Tender, 2008). Thus, the score of the price as an evaluation factor should be no less than 200 if the total score for all the evaluation factors is 1000 in the solicitation. The evaluation factors and scores of the four solicitations for Taiwan's Navy shipbuilding are depicted in Table 9.

Table 9. Taiwan's Navy Shipbuilding Procurement Evaluation Factors and Scores. Adapted from Government e-Procurement System website (n.d.).

Taiwan's Navy Shipbuilding Procurement Evaluation Factors and Scores			
	Solicitation Name	**Source Selection Approach**	**Evaluation Factors and Scores**
1	New LPD 新型兩棲船塢運輸艦	The most advantageous tender	(Total score for this solicitation is 1,000) 1. Offeror's Organizational Structure and Financial Condition: 150 2. Past Performance: 120 3. Technical Capability: 320 4. Management and Execution of Project Plan: 130 5. Price: 200 6. Other Factors Related to the Functions or Benefits of This Procurement: 60 7. Performance of Presentation and On-Site Questioning and Answering: 20
2	High-Speed Minelayer 快速布雷艇	The most advantageous tender	(Total score for this solicitation is 1,000) 1. Offeror's Organizational Structure and Financial Condition: 140 2. Past Performance: 120 3. Technical Capability: 350 4. Management and Execution of Project Plan: 130 5. Price: 200 6. Other Factors Related to the Functions or Benefits of This Procurement: 40 7. Performance of Presentation and On-Site Questioning and Answering: 20
3	New Rescue and Salvage Ship 新型救難艦	The most advantageous tender	(Total score for this solicitation is 1,000) 1. Offeror's Organizational Structure and Financial Condition: 140 2. Past Performance: 120 3. Technical Capability: 350 4. Management and Execution of Project Plan: 130 5. Price: 200 6. Other Factors Related to the Functions or

Taiwan's Navy Shipbuilding Procurement Evaluation Factors and Scores			
	Solicitation Name	**Source Selection Approach**	**Evaluation Factors and Scores**
			Benefits of This Procurement: 40 7. Performance of Presentation and On-Site Questioning and Answering: 20
4	HPV Follow-up Ship Procurement 高效能艦艇第二批	The most advantageous tender	(Total score for this solicitation is 100) 1. Offeror's Organizational Structure and Financial Condition: 14 2. Past Performance: 10 3. Technical Capability: 32 4. Management and Execution of Project Plan: 13 5. Price: 20 6. Other Factors Related to the Functions or Benefits of This Procurement: 6 7. Performance of Presentation and On-Site Questioning and Answering: 5

As depicted in Table 9, the evaluation factors of the four solicitations are consistent. Even though they are slightly different on the proportion of the scores, the importance of the evaluation factors of all the solicitations descending from "Technical Capability," "Price," "Offeror's Organizational Structure and Financial Condition," "Management and Execution of Project Plan," "Past Performance," "Other factors related to the functions or benefits of this procurement" to "Performance of Presentation and on-site questioning and answering."

The evaluation factors and their relative importance reflect how the government regards the offeror in terms of the degree of performing the contract and risk management. The other element reveals the effort on risk management between the government and the offeror is contract type. Thus, it is the object of the comparative analysis in the following section.

4. Contract Type

As depicted in Table 10, there are four kinds of contract types applied in the 12 selected U.S. Navy shipbuilding solicitations. These are firm fixed price (FFP), fixed price incentive firm (FPIF) and fixed price with economic price adjustment (FP-EPA) in the "fixed-price" category as well as cost plus fixed fee (CPFF) in the "cost-

reimbursement" category. It is no surprise that all the four commercial item solicitations put in FFP contract type since FAR 12.207 (2023) states that "agencies shall use firm-fixed-price contracts or fixed-price contracts with economic price adjustment for the acquisition of commercial products or commercial services" besides time-and-materials contract, labor-hour contract, indefinite-delivery contract or other specified circumstances mentioned in FAR 12.207. On the other hand, most of the non-commercial item solicitations use multiple contract types based on the contract line item (CLIN). Also, I tried to analyze the relationship between contract types with the procurement number of ships and CLIN numbers in Table 10. Based on initial appearance, there's no consistency with the contract type among the 12 solicitations with the ship amount and CLIN number, which indicates that the purchased number of ships and CLIN structure do not seem to have direct impact on contract type selection.

Table 10. U.S. Navy shipbuilding procurement contract type. Adapted from SAM.gov website (n.d.).

U.S. Navy Shipbuilding Procurement Contract Type					
	Solicitation Name	Commercial Contract	Ship Amount	CLIN Number	Contract Type
1	Mobile Ship Target (MST)	N/A	1	5	FFP
2	Auxiliary General Ocean Surveillance Ship (T-AGOS 25 CLASS)	N/A	7	16	FFP FPIF
3	Yard Oiler, Non–Self–Propelled (YON) Fuel Oil Barge	Commercial Contract	6	29	FFP
4	Yard Repair Berthing and Messing Barge (YRBM)	Commercial Contract	8	44	FFP
5	Force Protection Small/Large Boat	Commercial Contract	2	78	FFP
6	Guided Missile Frigate (FFG[X])	N/A	10	99	FFP FPIF CPFF
7	65' Dive Support Boat	Commercial Contract	1	3	FFP
8	Heavy Polar Icebreaker (HPIB)	N/A	3	15	FFP FPIF FP-EPA CPFF
9	NOAA AGOR Variant (NAV)	N/A	2	16	FFP

U.S. Navy Shipbuilding Procurement Contract Type					
	Solicitation Name	Commercial Contract	Ship Amount	CLIN Number	Contract Type
10	Expeditionary Fast Transport (EPF)	N/A	2	13	FFP FPIF
11	Landing Craft Utility (LCU)	N/A	32	28	FFP FPIF CPFF
12	Towing, Salvage, and Rescue Ships	N/A	8	22	FFP FP-EPA

Note. FFP = Firm-Fixed-Price, FPIF = Fixed-Price Incentive Firm, CPFF = Cost-Plus-Fixed-Fee, FP-EPA = Fixed-Price with Economic Price Adjustment

The payment method of Taiwan's four solicitations is all paid in installments based on the accomplishment of each stage of work. The summed payment would be the contract price without any adjustment or incentives, which is like the FFP contract type method even though there is not any formal contract type category established in Taiwan's GPA. It appears that the contractor assumes all the cost risk in FFP contract type, and the Taiwan's Navy holds low risk. However, it is worth to notice that all the first payment is advance payment for the contractor once the Taiwan's Navy receives the refund bond and performance bond. Additionally, the CLIN structure is simplified in Taiwan's solicitations regardless of the number of ships, which shows that all the work is combined in one CLIN as depicted in Table 11.

Table 11. Taiwan's Navy Shipbuilding Procurement Payment Method. Adapted from Government e-Procurement System website (n.d.).

Taiwan's Navy Shipbuilding Procurement Payment Method				
	Solicitation Name	Ship amount	CLIN number	Payment Method
1	New LPD 新型兩棲船塢運輸艦	1	1	FFP 1st payment: 11.4% (advance payment) 2nd payment:17.8% 3rd payment:30% 4th payment: 15.7% 5th payment: 25.1%
2	High-Speed Minelayer 快速布雷艇	4	1	FFP 1st payment: 12.76% (advance payment) 2nd payment:12.76%

Taiwan's Navy Shipbuilding Procurement Payment Method				
	Solicitation Name	**Ship amount**	**CLIN number**	**Payment Method**
				3rd payment:37.23% 4th payment: 37.25%
3	New Rescue and Salvage Ship 新型救難艦	1	1	FFP 1st payment: 13.3% (advance payment) 2nd payment:8% 3rd payment:17% 4th payment: 26.7% 5th payment: 35%
4	HPV Follow-up Ship Procurement 高效能艦艇第二批	5	1	FFP 1st payment: 3% (advance payment) 2nd payment:27% 3rd payment:12% 4th payment: 12% 5th payment: 16% 6th payment: 16% 7th payment: 7% 8th payment: 7%

The selection of contract type impacts the risk on cost for contractor. Also, the decision of subcontracting out or not is an important question for prime contractors for balancing risks in performing contract. I will analyze the subcontracting part in solicitations, especially on small business subcontracting.

5. Small Business Policy

For the small business variable, this research focused on small business set-aside since the information is directly demonstrated on the SAM.gov website for each solicitation. There are seven out of 12 U.S. selected solicitations that applied total small business set-aside as depicted in Table 12.

Table 12. U.S. Navy Shipbuilding Procurement Small Business Set-Aside. Adapted from SAM.gov website (n.d.).

U.S. Navy Shipbuilding Procurement Small Business Set-Aside		
	Solicitation Name	**Small Business Set-Aside**
1	Mobile Ship Target (MST)	Total small business set-aside
2	Auxiliary General Ocean Surveillance Ship (T-AGOS 25 CLASS)	N/A
3	Yard Oiler, Non-Self Propelled (YON) Fuel Oil Barge	Total small business set-aside
4	Yard Repair Berthing and Messing Barge (YRBM)	Total small business set-aside
5	Force Protection Small/Large Boat	Total small business set-aside
6	FFG(X) Guided Missile Frigate	N/A
7	65' Dive Support Boat	Total small business set-aside
8	Heavy Polar Icebreaker (HPIB)	N/A
9	NOAA AGOR Variant (NAV)	N/A
10	Expeditionary Fast Transport (EPF)	N/A
11	Landing Craft Utility (LCU)	Total small business set-aside
12	Towing, Salvage, and Rescue Ships	Total small business set-aside

Compared to the U.S. shipbuilding solicitations, none of the four selected Taiwan's shipbuilding solicitations included small business set-asides or small business subcontracting requests in the solicitations. The first reason is that the procurement value is above the required threshold, thus, the principle of awarding contracts to "small and medium enterprises" does not apply. The second reason is that there's flexibility for the government to decide whether to provide set-aside or request subcontracting to small and medium enterprises based on "the characteristic and the scale of the procurement" (Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement, 2002)

This section discussed the five variables of source selection strategy and the findings based on the selected shipbuilding solicitations. In the next section, I will reveal the implications of the findings.

C. IMPLICATION OF FINDINGS

Based on the comparative analysis between the United States and Taiwan's shipbuilding solicitations, there are several implications of the findings. I will discuss the impact and problems for the U.S. Navy and Taiwan's Navy in the following sections.

(1) U.S. Navy shipbuilding solicitations don't reveal total budget amount in the RFP.

Based on the discussion of findings, the U.S. Navy shipbuilding solicitations don't reveal total budget amount in the RFP and SAM.gov website. There are some reasonable considerations for why the U.S. Navy does not publish the total budget amount in the solicitations. The published budget value might encourage the companies to propose a certain amount and lead to the predetermination of the price because the companies know the maximum amount that the government could offer. However, not publishing the budget value in the solicitation can be a challenge to ensure transparency of the procurement process and secure the efficiency of the source selection procedure. This is because the disclosed budget value in RFP could allow the offerors to provide recommendations in the pre-award phase and lower the risk of offering over-budget proposals. If the budget value is not revealed in the solicitation, the offerors might provide proposals beyond the budget value, and the U.S. Navy would need to spend more time on modifying and republishing the RFP.

(2) The members of the U.S. SSEB seem less diverse and transparent than those of the Taiwan's evaluation committee.

Since the evaluation and voting are inherently governmental functions in the source selection process, the members in the SSEB should be U.S. federal employees. The government employees might obtain more information on the agency's requirements and be more mission oriented. However, the outcome of evaluation results might be subjective, especially when applying an adjectival ratings system. Additionally, the name list of the members would not be published on SAM.gov website. Thus, the lack of transparency and diversity might lead to insufficient knowledge on selecting proper contractors or the risk of the senior officers manipulating the source selection result.

(3) The U.S. adjectival rating method lacks qualitative assessment, while Taiwan's ranking method is overly complicated.

All the selected U.S. shipbuilding solicitations applied adjectival rating and relative importance of evaluation factors as the evaluation approach. The adjectival rating is comparatively simple to perform when evaluating proposals. However, the concern

with this approach is that it offers a limited range of rating categories for evaluators, such as outstanding, good, acceptable, marginal, and unacceptable. For example, there is no flexibility for evaluators to choose between "acceptable" and "good." Thus, evaluators are compelled to align their evaluation results with the provided adjectival rating categories, leading the selection decision to depend more on subjective judgments rather than qualitative assessment.

The ranking method is generally applied in most Taiwanese military procurement processes, as it aims to mitigate significant differences among members of the evaluation committee. The regulated process is to score the offerors by each member, then convert the individual score to rank, and then sum up the total ranks from all the members to conclude the most advantageous tender. Thus, when performing the ranking method, the process is time-consuming and complicated, which adds burden and work for the contracting officials in Taiwan.

(4) The payment method in Taiwan's shipbuilding procurement is commonly FFP.

There isn't any formal contract type category or compensation method established in Taiwan's GPA, so the implication of finding focuses on the payment method in Taiwan's solicitations. As stated in the regulations outlined in Chapter II, the "cost plus fee" method is deemed appropriate only for contracting "professional services," "technical services," and "information services." Consequently, the firm fixed-price payment method is commonly employed in Taiwan's shipbuilding procurement, as it does not fall under the aforementioned service procurements. It offers a strong motivation for the contractor to control costs efficiently and deliver effective performance. However, since it is not subject to any adjustment or incentive fee, it puts the maximum risk and responsibility on the contractor. Also, for a long lead time contract, it might pose risks of underestimated cost.

(5) Taiwan's shipbuilding procurement provides limited support to small businesses.

None of Taiwan's four selected shipbuilding solicitations incorporated provisions for small business set-asides or included requests for small business subcontracting.

Compared to U.S. shipbuilding procurement, which includes seven out of 12 solicitations providing total small business set-asides, Taiwan's shipbuilding procurement offers less support to small businesses. Besides the less controlling of the Taiwan's regulations on assisting small and medium businesses, the fact that the indigenous shipbuilding industry is still in development might also be a consideration for not including small businesses in the shipbuilding solicitations. Taiwan's government started to focus on indigenous ship production instead of foreign ship purchases in 2016. Thus, the defense industrial base on shipbuilding capability is increasingly valued and gradually improving.

Based on the implications of the findings, I will provide several recommendations on source selection strategy for both the United States and Taiwan's shipbuilding procurement.

D. RECOMMENDATIONS

The implications of the findings from the comparative analysis reveal the challenge and risk that the U.S. government and Taiwan's government might face in shipbuilding procurement. I will provide five recommendations for both countries.

(1) Consider revealing budget amount in the U.S. solicitations.

Based on the implications of the findings, not revealing the budget amount in the RFP creates a more competitive environment in the source selection process. This might be appropriate when the requirement is more well defined and the schedule is more flexible, but it might not be proper for not-yet designed shipbuilding solicitations or procurement with a limited time schedule. If the solicitation combines the work of design and construction, it may have a wide range of estimated costs, potentially resulting in over-budget proposals, especially if there is no published limited value. Then, the contracting officer should either modify the RFP to align with the budget or request an additional budget, both approaches leading to an extended lead time in contracting. As a result, the U.S. Navy could consider revealing the total budget amount depending on the circumstances. The other benefit of publishing the budget value is that it could prevent the potential offerors from guessing and probing the dollar amount. Additionally, in the

worst-case scenario where the budget amount is unofficially shared, it might result in potential fraud and unfair opportunities for companies.

(2) Increase transparency and diversity in the U.S. SSEB.

The findings reflect that the members of the SSEB in the United States are all federal government employees. Adding capable experts from outside the agency could provide diverse and innovative perspectives from academia or industry. Additionally, this approach mitigates the risk of fraud and manipulating the result of the evaluation. The diversity and transparency resulting from the inclusion of non-government members add value to the source selection process. As a result, I recommend that the U.S. government take the approach in Taiwan's Regulations Governing the Organization of Procurement Evaluation Committee as a reference. Some examples that might provide insights are as follows. First, the Public Construction Commission Executive Yuan oversees publishing the recommended list of the experts in various areas on the Government e-Procurement System website. The recommended list is for all the government agencies as reference forming their own evaluation committee based on each RFP requirements. Second, the name list of the formal evaluation committee be published on the Government e-Procurement System website once established. Last, the experts outside the agency in the evaluation committee are not paid with salary but are offered an attendance fee for each RFP.

(3) Enhance qualitative assessment in the U.S. evaluation rating method, while streamlining the rating process in Taiwan.

The rating methods in FAR 15.305 (2023) include "color or adjectival ratings, numerical weights, and ordinal rankings." As non-commercial shipbuilding solicitations may be considered complex requirements, rating methods such as numerical weights or ordinal rankings should be considered when formulating the evaluation strategy. This would eliminate the constraints of adjectival rating that only offer a limited range of rating categories for evaluators. Also, it reflects more precise source selection results by allowing the evaluators to implement more qualitative assessments. Moreover, the more detailed assessments could support the elimination of protests in the source selection process.

As mentioned in the implications of findings, Taiwan's ranking method in deciding the most advantageous tender contains several procedures and conversions between score and ranks. Also, the identification of significant differences between the rank and score provided by each member of the evaluation committee heavily relies on experience in the evaluation procedure. For example, there are five types of significant differences identified by Public Construction Commission Executive Yuan, which include the comparison of the scores and rank between each member and the overall result in the evaluation committee. Thus, I recommend that the Public Construction Commission Executive Yuan consider streamlining the ranking method process and easing the restrictions on identifying the significant differences. Perhaps the policy can be revised by eliminating the scoring process in the ranking method or by only placing emphasis on the ranking result when identifying significant differences in the source selection process.

(4) Increase the use of various payment methods in Taiwan's shipbuilding procurement.

One recommendation for Taiwan's Navy is to make good use of the price adjustment mechanism within standard terms and conditions published by the Public Construction Commission Executive Yuan. This allows the price of the contract to be modified based on the specific price index adjustment.

The other recommendation is related to regulation and public policy. Since the "cost plus fee" payment method is limited to certain types of procurement items, the public policy on government procurement provides limited application on applying other methods than fixed price. Thus, the policy responsible entities could adopt the contract types in the Contract Management Body of Knowledge (CMBOK) which developed from CMS or incorporate FAR Part 16 to develop proper payment methods (or contract types) in Taiwan's GPA.

(5) Develop thorough support policy for Taiwan's small businesses.

The Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement in Taiwan focuses on providing opportunities for small and medium enterprises for contract value less than NT $1.5 million. But for

contract value above the requirement threshold, there is limited control and guidance on supporting small and medium businesses. Thus, as long as the government agency reaches the target small business contract percentage published by the Public Construction Commission, there is little incentive for the government to provide small business set aside or small business subcontracting. Thus, I recommend that the Public Construction Commission provide more incentives and guidance for the government agencies to invite small and medium businesses to participate in more complicated or higher dollar value contracts. This could be achieved by implementing set-asides for small and medium businesses in solicitations within the prescribed threshold or by requiring large contractors to subcontract to small and medium businesses in solicitations above the prescribed threshold. The policy reform should be done gradually since the capability of the industry should improve at the same time to allow the policy to be implemented.

The recommendations based on the findings and analysis of shipbuilding procurement is not only limited to how the U.S. Navy or Taiwan's Navy conducts source selections. These findings also reflect the interactions between the policy makers and industry partners, who need to collaborate to provide a healthier environment for military procurement.

E. SUMMARY

The purpose of this chapter was to provide the findings from the comparison analysis of the U.S. Navy and Taiwan's Navy shipbuilding solicitations. First, I introduced the findings from the comparison of the solicitations from both countries, and then I provided discussions and implications based on the findings. Also, recommendations were provided for both the U.S. government and Taiwan's government according to the analysis.

The next chapter will provide a summary of this research, the conclusions of the research questions, and possible areas for future research.

V. SUMMARY, CONCLUSION AND AREAS FOR FUTURE RESEARCH

The purpose of this chapter is to summarize this research and conclude with the answers to the research questions. Also, I will discuss possible areas for future research.

A. SUMMARY

Taiwan's MND started to focus on indigenous shipbuilding plans and develop a robust domestic defense industry from 2016 (Minnick, 2016). The importance of shipbuilding procurement is also valued in the United States as reflected in the FY2024 30-year shipbuilding plan released by the U.S. Navy (O'Rourke, 2023). Also, the contract management, especially the source selection strategy, could heavily impact the outcome of the contractor's performance. Thus, the purpose of this research is to analyze the source selection strategy of shipbuilding procurement by comparing source selection approaches, processes, team structures, evaluation factors, contract types and small business policies between the U.S. Navy and Taiwan's Navy. Based on the comparative analysis from the selected U.S. and Taiwan's solicitations, I provided insights and recommendations for future shipbuilding procurement.

B. CONCLUSIONS

Based on the result of the findings and analysis of the U.S. Navy and Taiwan's Navy shipbuilding procurement, I concluded this research with the following answers to the research questions that were presented in Chapter I.

(1) How do source selection strategies, including team structures and processes for shipbuilding procurement, differ between the U.S. Navy and Taiwan's Navy?

The U.S. Navy mostly utilized tradeoff as its source selection approach in selected shipbuilding solicitations, while Taiwan's Navy applied the most advantageous tender method, which contains similar principles as tradeoff. But the process of "discussion," which is called "negotiation" in Taiwan's GPA is different. Taiwan's negotiation process occurred only "if the most advantageous tender is unable to be determined." (GPA, 2019)

Also, there's no process in Taiwan's GPA that is similar to "establishing the competitive range" stated in FAR 15.306 (2023). Additionally, the SST structure is divergent since the FAR takes the voting tasks of the SSEB as an inherently governmental function, which means the task could only be carried out by federal employees. In contrast, Taiwan's GPA requests that one-third of the members should be "experts or scholars" and should "not be incumbent staff members of any government agencies." (Regulations Governing the Organization of Procurement Evaluation Committee, 2021)

(2) How do evaluation factors and relative importance of factors for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?

The overall relative importance of evaluation factors for the selected U.S. shipbuilding solicitations descends from "technical approach and design," "management," "past performance" and "price." If only considering the abovementioned four evaluation factors, the trend of relative importance of evaluation factors for Taiwan's shipbuilding solicitations descends from "technical approach and design," "price," "management" and "past performance." The main difference is the rank of the price factor, which could be explained through the regulation that required weighting of the price factor must be 20% to 50% if the price factor is included in the consideration of the evaluation (Regulations for Evaluation of the Most Advantageous Tender, 2008). Thus, this limitation automatically raises the relative importance of the "price" factor.

(3) How do contract types for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?

There isn't any formal contract type category established in Taiwan's GPA, which implies that Taiwan's government procurement generally applies the fixed price payment method. All the four selected Taiwan's Navy shipbuilding solicitations utilized FFP without any incentive fee or price adjustment. On the other hand, the U.S. Navy shipbuilding procurement applied four kinds of contract types, including FFP, FPIF, FP-EPA and CPFF, which seems to be more flexible on balancing the risk and responsibility between the buyer and seller.

(4) How do small business subcontracting opportunities and set-asides for shipbuilding procurement differ between the U.S. Navy and Taiwan's Navy?

The selected U.S. Navy shipbuilding solicitations include seven out of 12 that provide for total small business set-asides. In contrast, none of the four selected Taiwan's shipbuilding solicitations incorporated provisions for small business set-asides or included requirements for small business subcontracting. The main reason for the difference in these numbers came from the small business policy for both countries. The U.S. government seems to provide various levels of support for small business based on the contract value and the number of capable companies. Taiwan's Navy did not engage with any small business set-aside or small business subcontracting, as Taiwan's GPA focuses on small business set-asides for contracts within the prescribed threshold and only encourages, but does not mandate, small business subcontracting in contracts above the prescribed threshold.

(5) Based on the comparison and analysis, what insights could be presented to the U.S. Navy and Taiwan's Navy?

Based on the comparison of the five variables in the U.S. Navy and Taiwan's Navy source selection strategies, this research provided five recommendations for both countries' shipbuilding procurement.

My first recommendation for the U.S. Navy is to consider revealing budget amount in the shipbuilding solicitations. This can ensure transparency of the procurement process and secure the efficiency of the source selection procedure.

The second recommendation for the U.S. government is to increase transparency and diversity in the SSEB. By adding capable experts outside the agency, this would increase transparency and diversity in the source selection process. Moreover, this recommendation might entail a significant change for the U.S. government. In this regard, rules outlined in Taiwan's Regulations Governing the Organization of Procurement Evaluation Committee could serve as a reference for implementing practical approaches.

The third recommendation is to enhance qualitative assessment in the U.S. evaluation rating method, while streamlining the rating process in Taiwan. The adjectival ratings method heavily relies on the subjective judgement of the SSEB, so the U.S. Navy should include more qualitative assessment to eliminate risk of protests. Additionally, Taiwan's ranking method involves several procedure and identification of significant differences. Therefore, I recommend that Taiwan's Public Construction Commission Executive Yuan consider streamlining the ranking method process and easing the restrictions on identifying the significant differences.

The fourth recommendation for Taiwan's government is to increase the use of various payment methods (or contract types) in Taiwan's shipbuilding procurement. To encourage proper balance of risk and responsibility between the buyer and seller, Taiwan's Navy should make good use on the price adjustment mechanism. Also, the Public Construction Commission Executive Yuan should develop proper payment methods (or contract types) and incorporate them into Taiwan's GPA.

The last recommendation for Taiwan's government is to develop more thorough policy on supporting Taiwan's small businesses. Specifically, I recommend that the Public Construction Commission Executive Yuan provides more incentives and guidance for the government agencies to implement set-asides for small and medium businesses in solicitations within the prescribed threshold. Additionally, Taiwan's GPA should require large contractors to subcontract to small and medium businesses and submit subcontracting plans in solicitations above the prescribed threshold.

This research is specifically focusing on source selection strategies of the U.S. Navy and Taiwan's Navy shipbuilding procurement. However, the insights from the analysis are not only about how the U.S. Navy and Taiwan's Navy differ on source selection strategies, but it could also reflect differences in policy and culture. Thus, both countries could learn from each other and cultivate the proper strategies for their own.

C. AREAS FOR FUTURE RESEARCH

There are some limitations of this research, which implies that there are potential areas for exploration and analysis. I outlined areas for future research into three categories.

First, since this research only concentrated exclusively on shipbuilding procurement, future research could focus on other branches and other products or services. Further research could explore solicitations from other branches such as the Army, Air Force, Marine Corps, Coast Guard, or Space Force. Also, further research could target other NAICS codes or PSCs to identify how the source selection strategies differ.

Second, this research only concentrated exclusively on solicitations published on the U.S. SAM.gov and Taiwan's Government e-Procurement System websites, thus, future research could focus on output or outcome of contracts. Further research could analyze the impact of source selection strategies on PALT, contract performance, total spend, or customer satisfaction. This could provide insights on how the source selection strategies influence the efficiency or effectiveness in contract management.

Third, this research concentrated exclusively on comparison between the United States and Taiwan, so future research could focus on source selection strategies of other countries. Further research could identify the similarities or differences on five variables including source selection approaches, source selection team structures, evaluation factors, contract types, and small business policies for countries other than the United States and Taiwan. Moreover, there are more variables that could be explored in the comparative analysis depending on researchers' preferences.

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

Baker, J. T., Bono, M. J., & DeVoe, J. T. (2016). *LPTA versus tradeoff: Analysis of contract source selection strategies and performance outcomes* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/49498

Defense Acquisition University. (n.d.). *Contract type matrix*. Retrieved October 16, 2023, from https://aaf.dau.edu/aaf/contracting-cone/contract-type-matrix/

Department of Defense. (2022). Department of Defense source selection procedures: Defense Federal Acquisition Regulation Supplement procedures, guidance, and information: Subpart 215.3—source selection. https://www.acq.osd.mil/dpap/policy/policyvault/USA000740-22-DPC.pdf

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *The Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.2307/258191

FAR 4.6, Contract Reporting (2023). https://www.acquisition.gov/far/subpart-4.6

FAR 5.003, Governmentwide Point of Entry (2023). https://www.acquisition.gov/far/part-5#FAR_5_003

FAR 5.201, General (2023). https://www.acquisition.gov/far/part-5#FAR_5_201

FAR 15.101, Best Value Continuum (2023). https://www.acquisition.gov/far/part-15#FAR_15_101

FAR 15.305, Proposal Evaluation (2023). https://www.acquisition.gov/far/15.305

FAR 15.306, Exchanges With Offerors After Receipt of Proposals (2023). https://www.acquisition.gov/far/15.306

FAR 16.1, Selecting Contract Types (2023). https://www.acquisition.gov/far/part-16#FAR_Subpart_16_1

FAR 19.5, Small Business Total Set-Asides, Partial Set-Asides, and Reserves (2023). https://www.acquisition.gov/far/subpart-19.5

FAR 19.7, The Small Business Subcontracting Program (2023). https://www.acquisition.gov/far/subpart-19.7

FAR 52.2, Text of Provisions and Clauses (2023). https://www.acquisition.gov/far/subpart-52.2

Federal Deposit Insurance Corporation. (n.d.). *Introduction to the Federal Acquisition Regulation*. Retrieved November 1, 2023 from https://www.fdic.gov/about/diversity/sbrp/45.pdf

General Services Administration. (n.d.). *SAM.gov.* Retrieved November 29, 2023, from https://sam.gov/content/home

Global Taiwan Institute. (2022, November 30). *Taiwan's naval shipbuilding programs point towards an evolving direction in defense policy*. https://globaltaiwan.org/2022/11/taiwans-naval-shipbuilding-programs-point-towards-an-evolving-direction-in-defense-policy/

Government Procurement Act [Republic of China (Taiwan)], (2019). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030057

Huang, H.-F. (2019). *An analysis of the Taiwan Navy Minehunter procurement fraud case* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/62764

Landale, K. A. F, Rendon, R. G., & Hawkins, T. G. (2017). Examining the effects of source selection method on procurement outcomes. *Journal of Defense Analytics and Logistics, 1*(1), 47–68. https://doi.org/10.1108/JDAL-05-2017-0006

Lee, C.-J. (2006). Requirement analysis: Evaluating the degree of heterogeneity for determining an appropriate basis for contract award. Defense Technical Information Center. https://doi.org/10.21236/ADA451440

Manuel, K. M., Halchin, E., Lunder, E. K., & Christensen, M. D. (2015). *The Federal Acquisition Regulation (FAR): Answers to frequently asked questions* (CRS Report No. R42826). Congressional Research Service. https://sgp.fas.org/crs/misc/R42826.pdf

Ministry of National Defense, Taiwan. (2021). *National defense report.* https://www.mnd.gov.tw/PublishForReport.aspx?&title=%E8%BB%8D%E4%BA%8B%E5%88%8A%E7%89%A9&SelectStyle=%E6%AD%B7%E5%B9%B4%E5%9C%8B%E9%98%B2%E5%A0%B1%E5%91%8A%E6%9B%B8%E5%B0%88%E5%8D%80

Minnick, W. (2016, June 23). Taiwan moves on $14.7B indigenous shipbuilding, upgrade projects. *Defense News*. https://www.defensenews.com/naval/2016/06/23/taiwan-moves-on-14-7b-indigenous-shipbuilding-upgrade-projects/

National Contract Management Association. (n.d.). *Contract management standard—Federal Acquisition Regulation matrix*. Retrieved Nov 1, 2023, from https://www.ncmahq.org/Web/Web/Standards---Practices/Contract-Management-Standard-Publication.aspx

National Contract Management Association. (2022). *The contract management standard* (ANSI/NCMA ASD 1–2019 [R2022]). https://www.ncmahq.org/Web/Web/Standards---Practices/Contract-Management-Standard-Publication.aspx

Office of Federal Procurement Policy. (2011). *Publication of the Office of Federal Procurement Policy (OFPP) policy letter 11–01, performance of inherently governmental and critical functions.* https://www.govinfo.gov/content/pkg/FR-2011-09-12/pdf/2011-23165.pdf

O'Rourke, R. (2023). *Navy force structure and shipbuilding plans: Background and issues for Congress* (CRS Report No. RL326655). Congressional Research Service. https://crsreports.congress.gov/search/#/?termsToSearch=shipbuilding%20plans&orderBy=Relevance

Public Construction Commission, Executive Yuan. (2021). *What is PCC*. Retrieved September 10, 2023, from https://www.pcc.gov.tw/en/cp.aspx?n=BFD921221785BFAE

Rendon, R. G. (2015). Benchmarking contract management process maturity: A case study of the U.S. Navy. Emerald Group Publishing Limited.

Rendon, J. M., & Rendon, R. G. (2015, March 22). *Defense procurement: An analysis of contract management, internal controls* (NPS-CM-15-003). Naval Postgraduate School.

Regulations for Publication of Government Procurement Notices and Government Procurement Gazette (2008). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030065

Regulations for Selection and Fee Calculation of Professional Services Providers Entrusted by Entities Article 3 (2017). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030076

Regulations for Selection and Fee Calculation of Technical Services Providers Entrusted by Entities Article 3 (2020). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030077

Regulations for Selection and Fee Calculation of Information Services Providers Entrusted by Entities Article 3 (2017). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030078

Regulations Governing the Organization of Procurement Evaluation Committee Article 3 (2021). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030103

Regulations Governing the Organization of Procurement Evaluation Committee Article 4 (2021). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030103

Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement Article 3 (2002). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030068

Regulations Governing Assistance for Small and Medium Enterprises Participating in Government Procurement Article 4 (2002). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030068

Regulations For Review by Procurement Evaluation Committee Article 3–1 (2021). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030102

Regulations For Review by Procurement Evaluation Committee Article 6 (2021). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030102

Regulations for Evaluation of the Most Advantageous Tender. (2008). https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=A0030080

Rumbaugh, M. G. (2010). *Understanding government contract source selection*. Management Concepts.

Small Business Administration. (n.d.). *Set-aside procurement*. Retrieved November 17, 2023, from https://www.sba.gov/partners/contracting-officials/small-business-procurement/set-aside-procurement

Warburton, A. G. (2022). *Procuring bult petroleum for the federal government: Why vendor's offers are rated technically unacceptable* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. https://calhoun.nps.edu/handle/10945/71128

Acquisition Research Program
Naval Postgraduate School
555 Dyer Road, Ingersoll Hall
Monterey, CA 93943

www.acquisitionresearch.net