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MBA PROFESSIONAL REPORT

THE NAICS CODE SELECTION PROCESS AND SMALL BUSINESS PARTICIPATION

March 2016

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**THE NAICS CODE SELECTION PROCESS AND SMALL BUSINESS
PARTICIPATION**

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Submitted in partial fulfillment of the requirements for the degree of

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THE NAICS CODE SELECTION PROCESS AND SMALL BUSINESS PARTICIPATION

ABSTRACT

The purpose of this project is to analyze small business participation in the United States Air Force in relation to the North American Industry Classification System (NAICS) code selection process. Anecdotally, there appears to be a wide range of interpretation across federal government agencies when applying a NAICS code to a contract. Contracting Officers are required to pick from 19,225 NAICS codes, often choosing among codes with very similar descriptions. In our professional experience, Contracting Officers are not provided any training on how to pick the most appropriate code, nor are they told why this is important. Therefore, this study selects commodities and services common to many federal contracting agencies to see if there is diversity in NAICS code selection. Furthermore, we seek to determine the impact (negative and/or positive) improper code selection has on small business set-asides and provide recommendations to support appropriate NAICS code selection.

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
ECPC	Economic Classification Policy Committee
FAR	Federal Acquisition Regulation
FPDS-NG	Federal Procurement Data System–Next Generation
GAO	Government Accountability Office
HUBZone	Historically Underutilized Business Zones
NAICS	North American Industry Classification System
OHA	Office of Hearings and Appeals
OMB	Office of Management and Budget
PSC	Product Service Code
SBA	Small Business Administration
SIC	Standard Industrial Classification
VA	Veterans Administration

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EXECUTIVE SUMMARY

The North American Industry Classification System (NAICS) code is an important part of federal government contracting. Contracting officers are responsible for selecting an appropriate NAICS code for all procurements. An inappropriate NAICS code selection could potentially affect small businesses interested in bidding on federal government requirements. Our research attempts to identify how often incorrect NAICS codes are assigned to government solicitations and their subsequent contracts to determine if inappropriate NAICS code selection affects small business participation.

In this research, we examined the importance of the small business program and the NAICS codes and their role in federal government acquisitions. We analyzed data from the Federal Procurement Data System–Next Generation (FPDS-NG) website and information gathered from interviews with small business specialists. The data include contract actions from 276 contracts with seven different NAICS codes. Based on our analysis, we determined that contracting officers used the correct NAICS code 68% of the time. Contracting officers selected the wrong NAICS code 29% of the time. We were not able to determine what was being procured for 3% of the contract actions. We used interviews to determine if small businesses are affected by inappropriate NAICS code selection. None of the six small business specialists we interviewed believe the NAICS code selection process negatively affects small business participation.

Although the small business specialists do not believe the selection of the NAICS code negatively affects small business participation, our interviews concluded that there is an abundant need for more education about the NAICS code selection process , for both contracting officers and affected small businesses.

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I. INTRODUCTION

A. BACKGROUND

The North American Industry Classification System (NAICS) is the standard classification system used by federal agencies to categorize “business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy” (United States [US] Census Bureau, 2015). Government agencies and North American organizations doing business with those governmental agencies use the NAICS. Government contracting officers select NAICS codes based on their individual interpretation of the requirement and the industry. Unfortunately, contracting officers do not always have a full understanding of the industry associated with the NAICS code. Contracting officers can select from a wide range of NAICS codes for similar acquisitions. Apparent inconsistencies in NAICS code selection begs the question, are NAICS codes selected accurately for federal government contracts? Additionally, since the NAICS selection process influences how businesses participate in government contracting, how does the NAICS code selection process affect small business participation?

In this study, we select electronic-related commodities and services common to federal contracting agencies to assess diversity in NAICS code selection and to determine the impact NAICS code selection has on small business participation. We use the results of this research to provide recommendations that support appropriate NAICS code selection. This research uses both quantitative and qualitative data. Specifically, Federal Procurement Data System–Next Generation (FPDS-NG) data are analyzed and compared to U.S. Census Bureau (i.e., NAICS-related) data. Using these data, we are able to evaluate the accuracy of contracting officers’ NAICS code selections. We also conduct interviews with small business specialists to gain professional insight into how the selection of an improper NAICS code affects small business participation in federal contracting.

B. PURPOSE OF RESEARCH

The purpose of this research is to determine the frequency of correct and incorrect code selection, as well as implications that result from improper code selection.

According to the Federal Acquisition Regulation (FAR) 19.201 (2015):

It is the policy of the Government to provide maximum practicable opportunities in its acquisitions to small business, veteran-owned small business, service-disabled veteran-owned small business, [Historically Underutilized Business Zone] small business, small disadvantaged business, and women-owned small business concerns. Such concerns must also have the maximum practicable opportunity to participate as subcontractors in the contracts awarded by any executive agency, consistent with efficient contract performance. The Small Business Administration (SBA) counsels and assists small business concerns and assists contracting personnel to ensure that a fair proportion of contracts for supplies and services are placed with small business.

The United States Small Business Administration (SBA) establishes industry size standards for small businesses. Therefore, the determination of small business status is unique to each specific industry. For instance, NAICS code 423210, which represents Furniture Merchant Wholesalers, has a small business size standard of 100 employees; NAICS 722320, which represents Caterers, has a small business size standard of \$7.5 million (Small Business Administration [SBA], 2014). The SBA defines a small business based on its “average number of employees over the past 12 months or average annual receipts over the past three years” (Small Business Administration [SBA], 2015). The federal government uses these industry size standards to identify small businesses for federal contracts. The NAICS codes with which a business identifies and consequently, the NAICS code a contracting officer selects for a solicitation,¹ determines which businesses are considered “small” for a particular requirement. Companies can identify with multiple NAICS codes, and any one business can potentially be considered small in one industry but large in another. Businesses working with the federal government

¹ Solicitation “means any request to submit offers or quotations to the Government” (FAR, 2015). Solicitations are generally publicized on the Government’s Federal Business Opportunities website. Once an offeror receives a government award, the contract is based off of the final solicitation.

depend on the correct NAICS code selection, especially when a requirement is set aside for small businesses.

In our professional experience, contracting officers have limited knowledge about the multitude of industries from which the government procures. Therefore, it can be difficult for them to select the correct NAICS code for a given requirement. An inadvertent selection of a wrong code could negatively affect any business; however, this research is particularly concerned with small businesses. For instance, if a contracting officer selects a NAICS code with a small business size standard of 500 employees, but the more appropriate code has a size standard of 1,000 employees, the contracting officer has inadvertently limited participation in a solicitation that is set aside for small businesses. This incorrect choice also affects the government, as the government prefers to have maximum competition on every requirement because competition generally leads to better prices and better quality of services or products. Thus, the choice of the wrong NAICS code can inadvertently limit small business participation *and* competition.

On the other hand, if a contracting officer selects a NAICS code with a small business size standard of 1,000 employees but the more appropriate code has a size standard of 500 employees, the contracting officer has inadvertently forced small businesses to compete with firms that are considered large businesses under the more appropriate NAICS code. In some situations, a business could be considered a small business with one NAICS code and considered a large business under a different, but similar, NAICS code. An improper selection might prevent qualified small businesses from submitting bids in a small business set-aside solicitation. An improper selection could potentially result in fewer companies being eligible to compete for a specific contract award. If fewer companies are eligible to compete, the government may not receive the best value, thus reiterating the point that choosing the wrong NAICS code can inadvertently limit small business participation *and* competition.

C. RESEARCH QUESTIONS

The primary research question we seek to answer is: Are NAICS codes selected accurately for federal government contracts? Our research will identify the frequency

with which the NAICS code are selected correctly or incorrectly for seven codes using Fiscal Year (FY) 2010 data. The secondary question we seek to answer is: How does improper NAICS code selection affect small business participation in federal government contracting? An improper selection of a NAICS code might prevent small businesses from participating in work they are qualified to perform. We use interviews to determine if small businesses are affected by inappropriate NAICS code selection. Specifically, we hope to identify how dependent small businesses are on NAICS codes when searching for federal contracting opportunities.

D. BENEFITS OF RESEARCH

This study will benefit federal government employees, specifically contracting officers and other acquisition professionals. If the results from our research show that contracting officers generally select appropriate NAICS codes (i.e., the contract item description is consistent with the Census Bureau's intended purpose for the NAICS code), then federal contracting professionals will be assured that their methods are effective. However, if the results from our research show inconsistencies between the contract item description and the selected NAICS code, it may be necessary to implement training for contracting professionals on the process and importance of NAICS code selection. With a better understanding of the extent and impact of NAICS code inconsistencies, contracting officers may spend more time matching the appropriate NAICS code to the contract.

In addition to government employees, small businesses may benefit from this research as well. Small businesses may not know how the NAICS code selection process works on the government side. It may be necessary for some small businesses to adjust their strategy (i.e., the way they search for federal business opportunities) based on a more informed understanding of how contracting officers select NAICS codes.

E. LIMITATIONS OF RESEARCH

Our research, like all research, involves generalizations and limitations. There are thousands of federal contract actions and thousands of associated NAICS codes. Realistically, we can only analyze a limited number of contract actions and a limited number of NAICS codes. We limited the contracting actions we analyzed to Air Force contract awards from the five active duty Air Force bases in California (i.e., Beale Air Force Base [AFB], Travis AFB, Edwards AFB, Vandenberg AFB, and Los Angeles AFB). We did not analyze data from other Air Force bases or any other federal government agency. We used FPDS-NG data to analyze seven NAICS codes from electronic-related supply and service contracts. We did not analyze construction contract actions. We took a binary approach to reviewing the data, meaning we only assessed whether or not the contracting officer's description of the contract action matches the official NAICS code description from the Census Bureau. This is a limitation since this approach is vulnerable to subjectivity. We did not attempt to review other NAICS codes to see if there is a more appropriate code for each contract action. Finally, the small business specialists we interviewed do not represent all small business specialists within North America, just the six² from the five Active Duty Air Force bases in California. Despite the limitations, we believe our methodology allows us to examine a representative sample of NAICS codes applied to federal contracts.

F. ORGANIZATION OF REPORT

The remainder of our report will proceed as follows: In Chapter II, we provide a more detailed description of the NAICS, describe small business participation procedures, and discuss the federal government contracting process in relation to the NAICS code selection. In Chapter III, we provide a detailed explanation of how we conducted our research. In Chapter IV, we analyze and interpret data from the FPDS-NG. We also report the results of our interviews with the small businesses offices. In Chapter V, we conclude our research by summarizing our findings and providing recommendations for future research.

² We interviewed two small business specialists from Los Angeles AFB.

G. SUMMARY OF CHAPTER I

The NAICS code is an important part of federal government contracting. Contracting officers are responsible for selecting an appropriate NAICS code for all procurements. An inappropriate NAICS code selection could potentially affect small businesses interested in bidding on federal government requirements. Our research attempts to identify how often incorrect NAICS codes are assigned to government solicitations and their subsequent contracts to determine if inappropriate NAICS code selection affects small business participation. Based on our findings, we will provide recommendations to acquisition professionals to help maximize small business participation.

II. LITERATURE REVIEW

A. INTRODUCTION

In Fiscal Year (FY) 2009, the Department of Defense reported over 3.5 million contract actions with obligations over \$372 billion (Defense Procurement and Acquisition Policy [DPAP], 2015). With such a significant amount of contracting actions performed and tax dollars spent, all federal government employees should be diligent to ensure all contract actions are in the best interest of the government and the taxpayers. Transparency in government spending is essential to ensuring accountability and reasonableness. However, transparency also invites increased scrutiny towards government officials (e.g., contracting officers) and their work.

B. BACKGROUND

Throughout this chapter, we will discuss the significance of the SBA, specifically the history of the Small Business Act, different types of small business, and the SBA's annual small business goals for the DOD. Additionally, we will examine the NAICS and the NAICS code selection process. Finally, we will review previous research conducted on the NAICS code selection process and/or small business participation.

1. History of the Small Business Act and the Small Business Administration

President Eisenhower signed the Small Business Act in 1953, creating the U.S. Small Business Administration (SBA, 2015). The SBA is an independent federal government agency intended to “aid, counsel, assist and protect the interests of small business concerns, to preserve free competitive enterprise and to maintain and strengthen the overall economy of our nation” (SBA, 2015).

The SBA creates small business size standards for every industry (FAR, 2015). The U.S. Census Bureau establishes a NAICS code for every industry and the SBA subsequently sets the small business size standard associated with each NAICS code (and thus, for every industry). In addition to annual revenue or number of employee size

standard limitations, the SBA describes a small business as any firm that “(1) is organized for profit, (2) has a place of business in the United States, (3) operates primarily within the US or makes a significant contribution to the United States economy through payment of taxes or use of American products, material, or labor, (4) is independently owned and operated, and (5) is not dominant in its field on a national basis” (SBA, 2015).

2. Types of Small Businesses

Contracting officers can set aside an acquisition to any type of small business in general (i.e., companies that meet the SBA-published industry small business size standard), or they can set the acquisition aside to a specific type of small business. For instance, woman-owned small businesses, small disadvantaged business, service-disabled veteran-owned small business, or a Historically Underutilized Business Zone (HUBZone) firm are some of the specific types of small businesses a contracting officer can utilize. A woman-owned small business is a small business that is at least 51% owned by one or more women (FAR, 2015). Firms considered for the Woman-Owned Small Business Program operate in industries the SBA has determined to be underrepresented by women. Small disadvantaged businesses are firms that are at least 51% owned by one or more socially or economically disadvantaged citizens with a net worth of less than \$750,000 (FAR, 2015). A service-disabled veteran-owned small business is a firm that is at least 51% owned by a veteran with a service-connected disability (FAR, 2015). A HUBZone firm is a small business that operates in an area on the SBA’s List of Qualified HUBZone Small Business Concerns (FAR, 2015).

3. SBA Goals

Every two years, the SBA sets small business program goals for each federal government agency (SBA, 2015). By law, each agency has to meet or exceed its goal of prime contracts awarded to small businesses in order for the sum of the government-wide goal to exceed 23% (SBA, 2015). An agency’s achievement of its goal is based on the amount of dollars the agency actually obligated (i.e., dollars awarded to small business contracts) and the amount of dollars that were eligible to be obligated (i.e., the budget).

For instance, Table 1 shows that the Department of Defense (DOD) obligated 23.47% of its budget to small business in FY 2014, or \$54,318,496,913 out of an eligible \$231,399,180,297 (Federal Procurement Data System–Next Generation, 2015). Contracting officers are required to input this information into the government’s procurement database, called the FPDS-NG, so that the public can monitor agencies’ progressions toward their annual goals.³

In order to meet their small business goals, as well as other tasks affiliated with the Small Business Act, federal government agencies have small business specialists. These employees are typically collocated with contracting officers and work hand-in-hand with contracting officers to ensure compliance to small business regulations, policies, and practices. Small business specialists act as a liaison between federal acquisition professionals and local small businesses. They are responsible for advising and training acquisition professionals and small business personnel in order to assist in the federal government contracting process. For instance, the main regulatory document for federal acquisition, the FAR, requires that acquisitions with an anticipated dollar value between \$3,500 and \$150,000 be set aside exclusively for small businesses (FAR 13.003, 2015). Small business specialists help link contracting officers to small businesses that are capable of delivering goods or performing services for the government while subsequently advising firms on how to do business with the government.

Table 1 illustrates the Department of Defense’s small business contracting goals and achievement of those goals for FY 2014. The overall figures for woman-owned small businesses, small disadvantaged businesses, service-disabled veteran-owned small businesses, and HUBZone small businesses are independent and specific to the respective small business categories. The overall numbers used to determine the small business percentages are a summation of all categories listed in Table 1. In other words, the \$7 billion that was obligated to service-disabled veteran-owned small businesses is a portion of the \$54.3 billion that was obligated for all small businesses. As previously mentioned, in FY 2014, the DOD obligated 23.47% of its eligible small business dollars, which

³ Contracting officers complete a Contract Action Report after every contract action; information from the Contract Action Report is automatically uploaded to the FPDS-NG website.

exceeded its 21.35% goal. This is the first time the DOD met its prime contracting small business goal since 2005 (Roseboro & Rutkovitz, 2014). Although the DOD did not meet its goals for woman-owned small businesses or HUBZone small businesses, there were improvements in all five categories from FY 2013 to FY 2014.

Table 1. Department of Defense FY2014 Small Business Contracting Goals

Prime Contracting Achievement⁴			
	2013 Achievement	2014 Goal	2014 Achievement
Total Small Business	21.09%	21.35%	23.47% (\$54.3 B)
Woman-Owned Small Business	3.57%	5.00%	3.97% (\$9.2 B)
Small Disadvantaged Business	7.79%	5.00%	8.95% (\$20.7 B)
Service-Disabled Veteran-Owned Small Business	2.64%	3.00%	3.04% (\$7.0 B)
HUBZone	1.78%	3.00%	1.93% (\$4.5 B)
Other Small Business	5.31%		5.58% (12.9 B)

Source: United States Small Business Administration, "Department of Defense FY2014 Small Business Procurement Scorecard," March 13, 2015, https://www.sba.gov/sites/default/files/files/FY14_DoD_SB_Procurement_Scorecard_Public_View_2015-04-29.pdf.

4. North American Industry Classification System

In 1997, the Office of Management and Budget (OMB) developed the NAICS to replace the Standard Industrial Classification (SIC) system (U.S. Census Bureau, 2015). OMB's Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's National Institute of Statistics and Geography collaborated to develop the NAICS "to allow for a high level of comparability in business statistics among the North American countries" (U.S. Census Bureau, 2015).

⁴ Prime contractors are firms the Government contracts directly with in order for them to perform a service or a commodity.

The U.S. Census Bureau (2015) describes the NAICS as:

The standard for use by federal statistical agencies in classifying business establishments for the collection, tabulation, presentation, and analysis of statistical data describing the U.S. economy. Use of the standard provides uniformity and comparability in the presentation of these statistical data. NAICS is based on a production-oriented concept, meaning that it groups establishments into industries according to similarity in the processes used to produce goods or services.... These common definitions facilitate economic analyses of the economies of the three North American countries. The statistical agencies in the three countries produce information on inputs and outputs, industrial performance, productivity, unit labor costs, and employment. NAICS, which is based on a production-oriented concept, ensures maximum usefulness of industrial statistics for these and similar purposes.

The U.S. Census Bureau (2015) explains that the NAICS's purpose was to collect statistical data. However, other agencies and organizations have adopted the NAICS and frequently use it for other non-statistical purposes, such as soliciting contracting requirements (U.S. Census Bureau, 2015). The Census Bureau states that the NAICS is not well suited to meet the needs of any agency or organization if used for purposes other than statistical analysis.

The Economic Classification Policy Committee updates the NAICS codes every five years on behalf of OMB (FAR, 2015). Once OMB updates or adds a new code, the SBA has to publish a corresponding industry size standard (FAR, 2015). The Census Bureau (2015) explains NAICS code formatting:

NAICS is a 2- through 6-digit hierarchical classification system, offering five levels of detail. Each digit in the code is part of a series of progressively narrower categories, and the more digits in the code signify greater classification detail. The first two digits designate the economic sector, the third digit designates the subsector, the fourth digit designates the industry group, the fifth digit designates the NAICS industry, and the sixth digit designates the national industry. The 5-digit NAICS code is the level at which there is comparability in code and definitions for most of the NAICS sectors across the three countries participating in NAICS (the United States, Canada, and Mexico). The 6-digit level allows for the United States, Canada, and Mexico each to have country-specific detail.

5. NAICS Code Selection Process

Contracting officers are the only people who have the authority to bind the federal government to a contract over the micro-purchase threshold, which is currently \$3,500 (FAR, 2015). Unless restricted by their organization-granted authority, contracting officers have the power to procure, administer, and terminate contracts on the behalf of the federal government. Contracting officers use the NAICS to determine the eligibility of a business to enter into a contract, specifically if it is set aside for small businesses (Miranda, 2014).

The FAR 19.303 states:

The contracting officer shall determine that appropriate [NAICS] code and related small business size standard and include them in solicitations above the micro-purchase threshold. If different products or services are required in the same solicitation, the solicitation shall identify the appropriate small business size standard for each product or service. The contracting officer's determination is final unless appealed.

Contracting officers are supposed to select the NAICS code that is most appropriate for the primary purpose of each acquisition. Contracting officers select a single NAICS code for each individual requirement in the solicitation. To qualify for a government contract that is set aside for small businesses, contractors must meet the industry size standard associated with the NAICS code selected by the contracting officer. Any offeror or other interested party negatively affected by the contracting officer's selected NAICS code may appeal the selection to the Office of Hearings and Appeals within 10 days of the issuance of the solicitation or 10 days of the issuance of an amendment to the solicitation that affects the NAICS code (Code of Federal Regulations [CFR], 2015).

C. NAICS-SPECIFIC LITERATURE

Although there are few research studies on the effects of the NAICS selection process on small business participation, literature has been written on the need for the federal government to ensure maximum small business participation. Generally, studies

have suggested that the federal government, specifically contracting and acquisitions, does not conduct business effectively or efficiently.

Miranda (2014) asserts that an incorrect NAICS code selection adversely affects small business participation in government contracting:

An incorrect NAICS selection negatively affects small business participation in government contracting. It is the responsibility of the contracting officer to correctly select a NAICS code in order to provide all small businesses an equal opportunity to bid for a specific solicitation. (p. 68)

To increase small business participation, all members of the acquisition team should be more knowledgeable about its importance (Roseboro & Rutkovitz, 2014). The NAICS code chosen by the contracting officer can significantly affect small business participation because of the size standards associated with the code. For example, if a solicitation with NAICS 541330, Engineering Services, is set aside for small businesses, only companies with average annual revenue less than \$15 million qualify for the award. However, if a contracting officer was to select NAICS 541712, which is known as Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology), only companies with less than 500 employees would qualify for the award. A novice contracting officer with limited knowledge about either industry can easily interchange both codes. Choosing the wrong code may restrict competition, particularly if there are only a few small businesses in a specific NAICS-based industry.

Clinton and Armstrong (2011) argue that there is no benefit to applying size standards to any solicitation. Size standards exclude some small businesses from competing, negatively affecting not only those small businesses, but the government as well. There are numerous documented instances of the contracting officer selecting the incorrect NAICS code, resulting in the unfair exclusion of small businesses. Additionally, when a company is considered a small business under one NAICS code but is not considered a small business under another NAICS code, it may restrict that company from expanding into other industries, limiting the amount of contracts for which it can be the prime contractor.

Clinton and Armstrong (2011) recommend changing the NAICS code process in federal government contracting. The NAICS codes should be used in restricted solicitations the same way they are used in unrestricted solicitations, for statistical purposes, which is the intended use for the NAICS (U.S. Census Bureau, 2015). This approach would potentially decrease confusion, reduce paperwork, decrease NAICS-related protests, and most importantly, increase competition.

a. House Armed Service Committee Example

After the passage of the Small Business Act, it became the policy of the U.S. government to assist small businesses in receiving federal contracts. This is not always an easy task. In 2012, the House Armed Services Committee concluded:

The Department of Defense acquisition system lacks sufficient emphasis on small business participation. The Panel also found that a number of hurdles make it challenging for companies to compete for defense contracts. The plethora of regulations specific to government and defense contracting dissuades many companies from competing for government contracts. The acquisition process is often bureaucratic and rigid, with insufficient flexibility to allow appropriate application of management, oversight, and monitoring of small businesses. (U.S. House of Representatives Committee on Armed Services, 2012, p. vii)

At the conclusion of our research, we will be able to determine if the NAICS code selection process is one of the DOD “hurdles” that make it “challenging for companies to compete for defense contracts.” With little guidance on how contracting officers should select a NAICS code for a particular acquisition, an improvement in the NAICS code selection process, if necessary, may increase small business participation.

b. Government Accountability Office Example

The United States Government Accountability Office’s (GAO) Case B-402387 exemplifies the significant impact NAICS code selection can have (Government Accountability Office [GAO], 2010). On August 19, 2009, the Department of Veterans Affairs (VA) issued a request for proposal (RFP) as a small business set-aside “to provide home oxygen equipment rental and services to VA beneficiaries within defined geographic areas” (GAO, 2010, p. 2). Initially, the contracting officer applied NAICS

532291 to the solicitation, which is known as Home Health Equipment Rental and has a size standard of \$7 million. The contracting officer later decided that NAICS 339112, which is known as Surgical and Medical Instrument Manufacturing and has a size standard of 500 employees, was more applicable to the requirement. The VA based its decision to change the NAICS code on the United States Court of Federal Claims decision in *Rotech Healthcare, Inc. v. United States* (2006), which discusses these types of home oxygen procurements. However, the Rotech case was limited to the decision of whether the proposed award would violate the Small Business Act, specifically the statutory non-manufacturer rule. The court noted that the prosecutor did not challenge the assigned NAICS code and the protestor believed the assigned NAICS codes were irrelevant to the case.

On November 16, 2009, the VA contracting officer issued Amendment 4 to change the NAICS code from 532291 to 339112. The official descriptions of both NAICS codes are in Appendix A. On November 27, Eagle Home Medical Corporation filed an appeal with the Office of Hearings and Appeals (OHA), arguing that the change was unreasonable because 339112 was not more applicable to the requirement than 532291 (GAO, 2010). On December 11, prior to the December 23 proposal due date, OHA sustained Eagle's appeal which, by regulation, was supposed to reverse the contracting officer's decision to change the NAICS code. OHA determined that NAICS code 532291 was the appropriate code for this procurement:

The NAICS code [339112] has nothing to do with the provision of Home Oxygen Equipment Rental and Services for the VA as described in the RFP. Instead, NAICS code 339112 is about the Manufacture of Medical, Surgical, Ophthalmic, and Veterinary Instruments and Apparatus...Even if there was some congruency between the devices required by the RFP and those encompassed by NAICS code 339112, NAICS code 339112 would, at best, still only touch upon part of what the RFP requires and not its principal purpose, which is to provide home oxygen to VA beneficiaries in a professional and safe manner...[NAICS code 532291] covers all services necessary to make the home health care equipment functional. (GAO, 2010, p. 3)

The VA apparently disagreed with OHA's decision and decided not to amend the solicitation to change the NAICS code back to 532291 (GAO, 2010). Eagle Home

Medical Corporation protested the award. The SBA and GAO both determined the VA violated the Small Business Act by ignoring the OHA's final binding decision. The GAO determined that the VA's decision to ignore OHA's determination because of the Rotech decision is unreasonable. Eagle Home Medical Corporation's protest was sustained.

GAO Case B-402387, Eagle Home Medical Corporation, is a clear example of how a contracting officer's subjective NAICS code decision can negatively affect small business participation, and ultimately affect the acquiring agency and the customer. Eagle Home Medical Corporation was not a small business under 339112, and therefore was not allowed to participate in the VA's solicitation, which was set aside for small businesses. Contracting officers have to be certain when selecting a NAICS code, because the size standards can affect small business eligibility and participation.

D. SUMMARY OF CHAPTER II

In this chapter, we examined the importance of the small business program and the NAICS codes and their role in federal government acquisitions. The existing literature on the topic emphasizes the importance of maximizing small business participation in federal government contracting, and how the improper use of NAICS codes can limit small business participation. In the next chapter, we explain our methodology for our research.

III. METHODOLOGY

A. INTRODUCTION

The purpose of this chapter is to explain how we collected and analyzed our data. Our data were obtained from two sources: FPDS-NG (contract data) and interviews with small business specialists. First, we will discuss how we obtained and used our contract data. Second, we will discuss the format of the interviews with the small business specialists.

B. CONTRACT DATA

To review NAICS codes for accuracy, we needed contract data. Contract data were obtained from the FPDS-NG website. FPDS-NG is open to both government employees and non-government employees and provides contract data for all federal-awarded contracts using appropriated funds valued at and over \$3,000 (Federal Procurement Data System–Next Generation [FPDS-NG], 2015).

The federal government has to evaluate where, when, and how tax dollars are spent. The FPDS-NG allows the government to look at contracting data across government agencies, providing the opportunity for a more effective and efficient utilization of resources (DPAP, 2015). Additionally, FPDS-NG data are necessary to create recurring and special reports for political officials, governmental agencies, and the public (DPAP, 2015).

1. Contract Data Selection

Our first task was to determine the frequency of correctly and incorrectly applied NAICS codes. Given the sheer number of contract actions produced each year across the federal government, we had to limit the amount of data we analyzed. We decided to limit our analysis to contract data from Fiscal Year 2010 (1 October 2009 to 30 September 2010). We also limited our research to only United States Air Force contract data, specifically from the five Active Duty Air Force bases in California: (1) Beale AFB, (2) Travis AFB, (3) Edwards AFB, (4) Vandenberg AFB, and (5) Los Angeles AFB.

2. NAICS Code Selection

We selected seven NAICS codes to analyze to determine if contracting officers are selecting the most appropriate code for their actions. In other words, are NAICS code selected accurately and consistently? The NAICS codes that we examined were selected from all of the FY2010 contract data from the five Air Force bases. We selected the seven codes based on their similarity to each other. The selected codes are all related to computer and/or electronics. This allows us to identify if codes are being selected accurately and consistently. The selected codes are shown in Table 2.

Table 2. NAICS Codes Selected

NAICS	Description	Number of Contract Actions
334111	Electronic Computer Manufacturing	72
511210	Software Publishers	61
811219	Other Electronic and Precision Equipment Repair and Maintenance	36
423430	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers	35
541519	Other Computer Related Services	27
811212	Computer and Office Machine Repair and Maintenance	24
334419	Other Electronic Component Manufacturing	21

After paring down the data based on the selected Air Force bases and the selected NAICS codes, we were left with 276 contract actions to analyze.⁵ Once we had only the contract data from the NAICS codes that we retained, we inserted the description of the NAICS code, which we obtained from the Census Bureau website, next to the description of the item that was being procured. This allowed us to efficiently compare the words the contracting officer inserted into the description block to the actual Census Bureau description. Once we had the Census Bureau description and the description that was

⁵ All contract actions that were for contract modifications were removed regardless if they had the correct NAICS or not.

inserted into the contract, we analyzed the two to see if they were similar. If the two descriptions were similar, a “yes” was inserted next to the description. If the two descriptions were not similar, a “no” was inserted next to the description. If the description that the contracting officer inserted was vague and we were not able to determine what was being procured, we inserted “can't be determined” next to the description.

During our analysis of the contract data, we discovered some limitations to our approach. The NAICS codes that we selected to analyze are all related to computers and electronics. The seven that we picked were often selected by the contracting officers at the five bases in California; however, there are other NAICS codes that are related to computers and electronics. Since we did not pick every single computer and electronic NAICS code, we were not able to determine if another NAICS code would have been a better fit. Therefore, we were only able to determine if the NAICS code description matched the item(s) that were being procured.

Furthermore, we were somewhat limited by the description of the contract action provided by the contracting officer. Even though contracting officers are to enter a description for each contract action, there is no required format or method for creating a description for the contract action (i.e., no standardized wording or rules). Through our professional experience, we have observed that contracting officers are not provided any training for entering item description information, nor are they provided training on NAICS code selection. Thus, each entry is idiosyncratic and required us to use our best judgment to interpret each description and make a determination as to whether or not the item description matched the NAICS code description. This approach is vulnerable to subjectivity; however, we firmly believe our choice of the seven similar codes provided us with enough data to analyze if NAICS codes are correctly or incorrectly applied despite these limitations.

C. INTERVIEWS

The second part of our research involved interviewing small business specialists from each of the Active Duty Air Force bases in California. The interviews assisted us in answering our secondary question.

Every Air Force Base has at least one small business specialist who is responsible for all small business matters. Air Force small business specialists act as a liaison between Air Force acquisition professionals and local small businesses. The small business specialists have direct contact with local small businesses that wish to work with the Air Force. All interviewees are partially responsible for federal government solicitations and awards. All interviewees agreed to participate in our research and knew they were involved in human subject research. The structured interview questions that we provided to all six participants are provided in Appendix C. The interviewees provided their answers via email, and allowed us to gain valuable knowledge about the NAICS code selection process and the effect(s) on small businesses.

D. SUMMARY OF CHAPTER III

The data we analyzed for this research originated from the FPDS-NG website and information gathered from interviews with small business specialists. Once pared down, the data include contract actions from 276 contracts with seven different NAICS codes. In the next chapter, we will discuss our results and findings.

IV. RESULTS

A. INTRODUCTION

The purpose of this chapter is to present and discuss our findings. Specifically, we will discuss the description consistency (or lack thereof) for contract data that we gleaned from FPDS-NG, and then we will discuss the results of the interviews.

B. THE DATA

Contracting officers are able to select any NAICS code that they see fit for a particular contract action. We reviewed 276 different contract actions under seven different NAICS codes. Below we provide our findings grouped by NAICS code.

1. 334111–Electronic Computer Manufacturing

This NAICS category is related to computer hardware such as mainframes, personal computers, workstations, laptops, and computer servers (U.S. Census Bureau, 2015). Upon reviewing the 72 different contract actions under this NAICS code, we determined that 39 contract actions, or 54% of the NAICS codes, were selected accurately. Based on the description, we determined that 31 contract actions, or 43%, should have had a different NAICS code assigned. We were not able to determine 3% of the contract actions due to unclear descriptions. Contracting officers selected this NAICS code for contract actions that were for maintenance agreements, software, and portable radios. All of these items belong to another NAICS code.

2. 511210–Software Publishers

This NAICS code is software-related; we assumed that the contract action was being procured through the publisher (U.S. Census Bureau, 2015). If the description included mention of software, then we assumed the contracting officer used the correct NAICS code. Upon reviewing the 61 different contract actions, we determined that 53 contract actions, or 87% of the time, the contracting officer used the correct NAICS code. This code was used incorrectly 11% of the time, or on seven of the contract actions. During our analysis, we discovered that some contract actions were for warranties, and

warranties fall under another NAICS code category. We found one contract action that was unclear; therefore, we were not able to determine if the code was correctly or incorrectly applied.

3. 811219–Other Electronic and Precision Equipment Repair and Maintenance

This NAICS code is for electronic and precision equipment repair and maintenance such as medical diagnostic imaging equipment, laboratory instruments, and radar and sonar equipment (U.S. Census Bureau, 2015). Upon reviewing the 36 different contract actions, we determined that contracting officers used this NAICS code accurately on 31 contract actions, or 86% of the time. We determined that this NAICS code was incorrectly applied on four of the contract actions, or 11% of the time. We could not determine what was being procured on one contract action. Importantly, this NAICS code is not for the repair and maintenance of computer and office machines. We determined that three of the contract actions were either for computers or for other hardware.

4. 423430–Computer and Computer Peripheral Equipment and Software Merchant Wholesalers

This NAICS code is for wholesale distribution of computers, computer peripheral equipment, and computer software (U.S. Census Bureau, 2015). Upon reviewing the 35 different contract actions, we determined that contracting officers used this NAICS code correctly on 32 of the contract actions, or 91% of the time. We discovered three contract actions that used this NAICS code incorrectly, or 9% of the time. One contract action was for a printer cartridge, which does not fall under this NAICS code. The other contract actions that used this NAICS code incorrectly were for cell phone support renewal and for a reinstatement fee. Both of these contract actions fall under another NAICS code.

5. 541519–Other Computer-Related Services

This NAICS code is for computer-related services, such as computer disaster recovery services or software installation services (U.S. Census Bureau, 2015). Upon reviewing the 27 different contract actions, we determined that contracting officers had

selected this NAICS code correctly on 13, or 48%, of the contract actions. We determined that contracting officers had used this code incorrectly on 12 of the contract actions, or 44% of the time. For two of the contract actions, the description was too vague to determine the contract action. We found that this NAICS code was used for computer software, which does not fall under this category.

6. 811212–Computer and Office Machine Repair and Maintenance

This NAICS code is for computer and office machine repair and maintenance (U.S. Census Bureau, 2015). Upon reviewing the 24 different contract actions, we determined the contracting officers correctly selected this NAICS code on 15 of the contract actions, or 63% of the time. We determined that seven of the contract actions, or 29%, had used this NAICS code incorrectly. In two contract actions, we were not able to determine what was being procured. We discovered that some of the contract actions were for actual hardware and software; therefore, they did not belong under this category.

7. 334419–Other Electronic Component Manufacturing

This NAICS code was for other electronic components, such as computer screens and switches for electronic applications (U.S. Census Bureau, 2015). Upon reviewing the 21 different contract actions, we determined that contracting officers selected this NAICS code correctly on four of the contract actions, or 19% of the time. We determined that contracting officers used this NAICS code incorrectly on 16 of the contract actions, or 76% of the time. There was one contract action that we were not able to determine what was being procured. Many of the incorrect contract actions were for computer and computer peripheral equipment, which belong under a different NAICS code(s).

Table 3. NAICS Codes Results

NAICS Code	Amount Correct	Percent Correct	Amount Incorrect	Percent Incorrect	Amount that cannot be determined	Percent that cannot be determined
334111	39	54%	31	43%	2	3%
511210	53	87%	7	11%	1	2%
811219	31	86%	4	11%	1	3%
423430	32	4%	3	9%	0	0%
541519	13	48%	12	44%	2	7%
811212	15	63%	7	29%	2	8%
334419	4	19%	16	76%	1	5%
Total	187	68%	80	29%	9	3%

C. THE INTERVIEWS

We emailed interview questions to the six small business specialists from the five Active Duty Air Force bases in California. All six small business specialists responded to our interview questions.

All of the specialists recognized Federal Business Opportunities (FedBizOpps) as the primary source for small businesses to find federal government contracting opportunities. FedBizOpps is a website the federal government uses to solicit their requirements. The website is public, and businesses (large and small) can register to receive notifications when the federal government posts a solicitation that is related to their expertise. Four of the six specialists mentioned that vendors can search for government solicitations on FedBizOpps by either using their NAICS codes or a keyword. Therefore, even when contracting officers choose incorrect NAICS codes, businesses may still be able to find relevant solicitations. However, if vendors are not already registered under a specific NAICS code that is on a solicitation, they have to add it to their registration before they can receive a government contract. This forces the businesses to be proactive in searching FedBizOpps and requires them to constantly update their contractor registration⁶ in order to be considered for an award.

⁶ Contractors are required to register in a government database, System for Award Management, in order to receive awards.

The small business size standards are based on the company's number of employees or annual revenue (U.S. Census Bureau, 2015). Two NAICS codes could have a similar description but different size standards; one could be based on the number of employees and the other annual revenue. This is the case, as three of the small business specialists noted, with 541330, which is known as Engineering Services and has a size standard of \$15M; similarly 541712, which is known as Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology) and has a size standard of 500 employees. When an engineering requirement is set aside for a small business, smaller small businesses likely prefer the NAICS code 541712, because it does not allow larger small businesses to compete. Conversely, larger small businesses likely prefer 541330, under which they are considered to be a small business. This reiterates the importance of choosing the correct NAICS code in order to maximize competition.

Four of the small business specialists interviewed noted that it is indeed feasible for the SBA to adjust employee-based size standards for labor productivity growth, similar to how they adjust revenue-based standards due to inflation. According to the Office of Government Contracting and Business Development (2009), labor productivity could cause a company to gain small business status under NAICS codes that use employee-based size standards, similar to how inflation could cause a company to lose small business status under codes that use revenue-based standards.

Five of the specialists we interviewed believed the NAICS code selection process has caused confusion for some small businesses, including not being able to find opportunities and not understanding how to challenge the selected NAICS code. Two of the interviewees stated that most small businesses do not know that NAICS code selections are primarily dependent on the contracting officer. This may be an area of concern because companies that are not aware of this fact may have a false sense of comfort in the rigor of federal government's NAICS code selection process.

Further, the same two specialists believed most small businesses do not generally know they can appeal a NAICS code selection. A third interviewee stated that although small businesses know they can appeal, it is uncommon for them to question the contracting officer's NAICS code selection. Five of the interviewees stated that the main

reason why companies appeal is because the contracting officer's selected NAICS code disqualifies them from being considered a small business, thus disqualifying them to receive the set-aside award. This can lead to bogus appeals if the small businesses are trying to look out for their best interest and not truly ensuring the government's requirement fits within the official NAICS code description. One of the participants stated that the NAICS code should be selected based on the requirement, not the size standards. In other words, contracting officers should not attempt to select a NAICS code to sway a competition in any contractor's favor.

None of the six specialists believed the NAICS code selection process negatively affects small business participation. One of the six believed it positively influences participation, but a detailed explanation as to why was not given. The remaining five interviewees believed the impact of the NAICS code selection process is neither positive nor negative. However, two interviewees noted that more education on the entire NAICS code selection process significantly helps improve small business participation.

D. SUMMARY OF CHAPTER IV

We reviewed 276 contract actions from five different Active Duty Air Force bases in California. We analyzed contract actions from seven different NAICS codes. All of the NAICS codes were related to computers and/or electronics. This allowed us to see if contracting officers accurately selected NAICS codes across a category. Based on our analysis, we determined that contracting officers used the correct NAICS code 68% of the time. Contracting officers selected the wrong NAICS code 29% of the time. We were not able to determine what was being procured on 3% of the contract actions.

We interviewed six different small business specialists from the five different Air Force bases in California. None of the six specialists believed the NAICS code selection process negatively affects small business participation. More education for government acquisition professionals and small businesses on the NAICS code selection process could improve small business participation.

V. CONCLUSION

A. INTRODUCTION

In this chapter, we provide answers to the research questions introduced in Chapter I. We also provide recommendations based on our findings from Chapter IV, as well as areas for future research.

B. RESEARCH QUESTIONS

1. **Are NAICS Codes Selected Accurately for Federal Government Contracts?**

In Chapter IV, we determined that contracting officers used the correct NAICS code 68% of the time. Contracting officers selected the wrong NAICS code 29% of the time. We were not able to determine what was being procured on 3% of the contract actions. We believe a 68% accuracy rating is a poor rating. A 68% accuracy rating suggests that contracting officers are not being diligent about selecting the appropriate NAICS code, or that they do not understand how to properly search for an appropriate NAICS code.

2. **How does the NAICS Selection Process Affect Small Business Participation in Federal Government Contracting?**

Based on our interviews with six small business specialists, we found the NAICS code selection process does not adversely affect small business participation in federal government contracting. However, more education for government and contractor employees may significantly improve the process. The small business specialists can provide training to contracting officers and to local businesses on the NAICS code selection process. Specifically, the training should stress the importance of selecting accurate NAICS codes and how businesses can challenge the selected code if they feel it is inappropriate.

C. FINDINGS AND RECOMMENDATIONS

Contracting officers are responsible for picking the correct NAICS code for each contract action. In Chapter II, we noted that the U.S. Census Bureau (2015) states that the NAICS codes are not well suited to meet the need of any agency or organization if they are used for other than statistical purposes. Currently, however, contracting officers are required to select a NAICS code for each solicitation.

We recommend the use of Product Service Codes (PSC)⁷ as the primary source of categorizing government contract actions. Contracting officers are currently required to select an appropriate PSC for each solicitation in addition to a NAICS code. PSCs are specific to the product or service being purchased, not to the industry that is producing the product or service (as is the case for NAICS codes). There are not as many PSCs as there are NAICS codes, therefore, selecting a code may be easier (thus improving accuracy) if contracting officers were choosing from a more concise list.

We are not advocating the removal of NAICS codes in federal contracting; rather, we recommend that contracting officers input NAICS codes in order to gather data for statistical purposes—not for determining small business status. Clearly, this method would require another way to determine size standards for small business set-asides. Instead of using the NAICS code, the SBA could publish size standards for PSCs.

Below we highlight three issues that we discovered throughout our research and provided recommendations on how to fix those issues.

1. Selection of Incorrect NAICS Code

Findings: We determined that NAICS codes were selected incorrectly for 29% of the contract actions we analyzed.

Recommendation: Contracting officers and other acquisition professionals need to realize the impact incorrect NAICS codes can have on small business set-asides. Contracting officers need to thoroughly review the description of the contract action and

⁷ PSCs are used to describe the actual product or service being procured by the Government.

make sure it matches the official NAICS code description provided by the U.S. Census Bureau.

2. Small Businesses Are Not Aware

Finding: Small businesses do not realize that contracting officers are solely responsible for selecting NAICS codes for each contract action. Further, they are not aware that they can appeal the contracting officer's NAICS code selection.

Recommendation: The Small Business Administration and small business specialists need to ensure small businesses are aware of and understand the NAICS code selection process by providing thorough training to small businesses interested in government contracting. Small businesses also need to understand the protest process so they can take corrective action if they feel an incorrect code has been selected.

3. Many NAICS Codes Have Similar Descriptions

Finding: There are several NAICS codes with similar descriptions but different size standards. This creates an issue for contracting officers when deciding which NAICS code best fits the requirement.

Recommendation: Contracting officers need to consult the SBA or their small business specialist if an issue arises when selecting NAICS codes. Contracting officers should work closely with their small business specialist(s) if there is any confusion regarding possible NAICS codes for a particular acquisition. Additionally, small business specialists should pay close attention to the code description to ensure the selected NAICS codes are appropriate.

D. FUTURE RESEARCH RECOMMENDATIONS

Our research can be expanded by future researchers. We recommend four ways to advance this research. First, researchers should analyze NAICS codes across fiscal years in order to detect the presence of trends in consistency/inconsistency. Naturally, collecting more data will also confirm or disconfirm the results we found in our research. Second, researchers should analyze other NAICS codes (including construction) and

compare the results to our research. We analyzed seven similar NAICS codes. Subsequent research could analyze a random selection of NAICS codes, encompassing several different industries. Third, researchers should analyze a different government agency's use of NAICS codes and compare the results to our research. We analyzed only contract actions from the five Air Force bases in California. Subsequent research could analyze different Air Force bases or other governmental agencies. Fourth, researchers should interview representatives from actual small businesses instead of, or in addition to, government employees (small business specialists). Small business representatives are likely to have different perspectives on the use of NAICS codes to determine small business status and eligibility for federal contracts.

APPENDIX A. GAO CASE B-402387 NAICS CODES

The following NAICS codes are used in Chapter II Section B. The purpose of this appendix is to provide the reader with more understanding of the referenced GAO case, B-402387. The descriptions of the codes come directly from the U.S. Census Bureau (2015).

A. 532291–HOME HEALTH EQUIPMENT RENTAL

The U.S. Census Bureau (2015) describes NAICS code 532291, Home Health Equipment Rental, as, “this U.S. industry comprises establishments primarily engaged in renting home-type health and invalid equipment, such as wheel chairs, hospital beds, oxygen tanks, walkers, and crutches.”

B. 339112–SURGICAL AND MEDICAL INSTRUMENT MANUFACTURING

The U.S. Census Bureau (2015) describes NAICS code 339112, Surgical and Medical Instrument Manufacturing, as:

This U.S. industry comprises establishments primarily engaged in manufacturing medical, surgical, ophthalmic, and veterinary instruments and apparatus (except electrotherapeutic, electromedical and irradiation apparatus). Examples of products made by these establishments are syringes, hypodermic needles, anesthesia apparatus, blood transfusion equipment, catheters, surgical clamps, and medical thermometers.”

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APPENDIX B. NAICS CODES

The purpose of this appendix is to provide the reader with a more in-depth understanding of the NAICS codes we used in our research. The descriptions of the codes come directly from the U.S. Census Bureau.

A. 334111–ELECTRONIC COMPUTER MANUFACTURING

The U.S. Census Bureau (2015) describes NAICS code 334111, Electronic Computer Manufacturing, as:

This U.S. industry comprises establishments primarily engaged in manufacturing and/or assembling electronic computers, such as mainframes, personal computers, workstations, laptops, and computer servers. Computers can be analog, digital, or hybrid. Digital computers, the most common type, are devices that do all of the following: (1) store the processing program or programs and the data immediately necessary for the execution of the program; (2) can be freely programmed in accordance with the requirements of the user; (3) perform arithmetical computations specified by the user; and (4) execute, without human intervention, a processing program that requires the computer to modify its execution by logical decision during the processing run. Analog computers are capable of simulating mathematical models and contain at least analog, control, and programming elements. The manufacture of computers includes the assembly or integration of processors, coprocessors, memory, storage, and input/output devices into a user-programmable final product.

B. 511210–SOFTWARE PUBLISHERS

The U.S. Census Bureau (2015) describes NAICS code 511210, Software Publishers, as:

This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction. Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers. These establishments may design, develop, and publish, or publish only.

C. 811219–OTHER ELECTRONIC AND PRECISION EQUIPMENT REPAIR AND MAINTENANCE

The U.S. Census Bureau (2015) describes NAICS code 811219, Other Electronic and Precision Equipment Repair and Maintenance, as:

This U.S. industry comprises establishments primarily engaged in repairing and maintaining (without retailing) electronic and precision equipment (except consumer electronics, computers and office machines, and communications equipment). Establishments in this industry repair and maintain equipment, such as medical diagnostic imaging equipment, measuring and surveying instruments, laboratory instruments, and radar and sonar equipment.

D. 423430–COMPUTER AND COMPUTER PERIPHERAL EQUIPMENT AND SOFTWARE MERCHANT WHOLESALERS

The U.S. Census Bureau (2015) describes NAICS code 423430, Computer and Computer Peripheral Equipment and Software Merchant Wholesalers, as:

This industry comprises establishments primarily engaged in the merchant wholesale distribution of computers, computer peripheral equipment, loaded computer boards, and/or computer software.

E. 541519–OTHER COMPUTER RELATED SERVICES

The U.S. Census Bureau (2015) describes NAICS code 541519, Other Computer Related Services, as:

This U.S. industry comprises establishments primarily engaged in providing computer related services (except custom programming, systems integration design, and facilities management services). Establishments providing computer disaster recovery services or software installation services are included in this industry.

F. 811212–COMPUTER AND OFFICE MACHINE REPAIR AND MAINTENANCE

The U.S. Census Bureau (2015) describes NAICS code 811212, Computer and Office Machine Repair and Maintenance, as:

This U.S. industry comprises establishments primarily engaged in repairing and maintaining computers and office machines without retailing new computers and office machines, such as photocopying machines; computer terminals, storage devices, and printers; and CD-ROM drives.

G. 334419–OTHER ELECTRONIC COMPONENT MANUFACTURING

The U.S. Census Bureau (2015) describes NAICS code 334419, Other Electronic Component Manufacturing, as:

This U.S. industry comprises establishments primarily engaged in manufacturing electronic components (except electron tubes; bare printed circuit boards; semiconductors and related devices; electronic capacitors; electronic resistors; coils, transformers and other inductors; connectors; and loaded printed circuit boards).

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APPENDIX C. INTERVIEW QUESTIONS

The purpose of this appendix is to provide the reader with the set of interview questions that were given to the six small business specialists that we interviewed.

1. Please state your title with the Air Force and provide a brief description of your duties.
2. Other than government contracting, how else do small businesses use the North American Industry Classification System?
3. How do small businesses generally find federal government contracting opportunities? Is it just by their NAICS code or do they have another process?
4. How do small businesses generally find solicitations that have a NAICS code that is not their business' primary NAICS?
5. Would it be feasible for the SBA to adjust employee-based size standards for labor productivity growth similar to how they adjust receipts-based standards due to inflation?
6. What would be the potential impact of the SBA lowering its size standards?
7. Has the NAICS code selection process for any particular solicitation caused small businesses any confusion? Please explain.
8. Do small businesses generally know that NAICS code selections are primarily dependent on the contracting officer?
9. Do small businesses generally know they can appeal a NAICS code selection? If so, are they familiar with the NAICS code selection appeal process?
10. In your experience, what are some reasons small businesses have appealed a NAICS code selection?
11. Has the NAICS code process in federal government contracting discouraged small businesses from expanding to other industries?
12. Has the NAICS code selection process positively or negatively affected small business participation in federal government contracts? Please explain.

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LIST OF REFERENCES

- Clinton, K. J., & Armstrong, M. B. (2011). The federal government's NAICS code process: Overdue for change. *Contract Management*, 52(6), 78–85.
- Code of Federal Regulations. (2015). Retrieved from <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>
- Defense Procurement and Acquisition Policy. (2015). Retrieved from <http://www.acq.osd.mil/dpap/>
- Federal Acquisition Regulation. (2015). Retrieved from <http://farsite.hill.af.mil/vffara.htm>
- Federal Procurement Data System–Next generation. (2015). Retrieved from https://www.fpds.gov/wiki/index.php/FPDS-NG_FAQ
- Government Accountability Office. (2010). *Eagle Home Medical Corporation (GAO Decision No. B-402387)*. Washington, DC: U.S. Government Printing Office
- Miranda, L. D. (2014). *NAICS impact on small business set-asides* (Master's thesis). Naval Postgraduate School, Monterey, CA.
- Roseboro, D. D., & Rutkovitz, J. M. (2014). *Department of Defense small business (SB) program: A knowledge-level analysis of how customer education relates to meeting SB goals* (Master's thesis). Naval Postgraduate School, Monterey, CA
- Size Standards Division Office of Government Contracting & Business Development (2009). *SBA size standard methodology*. Washington, DC: U.S. Government Printing Office
- Small Business Act. (2013).
- United States Census Bureau. (2015). Retrieved from <http://www.census.gov/>
- United States House of Representatives Committee on Armed Services. (2012). *Challenges to doing business with the Department of Defense: Findings of the Panel on Business Challenges in the Defense Industry*. Washington, DC: U.S. Government Printing Office.
- United States Small Business Administration. (2015). Retrieved from <https://www.sba.gov/>
- United States Small Business Administration. (2014). *Table of small business size standards matched to North American Industry Classification System Codes*. Washington, DC: U.S. Government Printing Office.

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