NPS-CM-09-150

ACQUISITION RESEARCH SPONSORED REPORT SERIES

Understanding Market Segments and Competition in the Private Military Industry

10 December 2009

by

Capt. Kenneth H. Curtis, USMC,

Capt. Paul J. Marko, USMC, and

Lt. John J. Parma, USN

Advisors: Dr. Nicholas Dew, Assistant Professor, and

Lt. Col. Bryan J. Hudgens, Lecturer

Graduate School of Business & Public Policy

Naval Postgraduate School

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

NPS-CM-09-150

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

Understanding Market Segments and Competition in the Private Military Industry

10 December 2009

by

Capt. Kenneth H. Curtis, USMC,

Capt. Paul J. Marko, USMC, and

Lt. John J. Parma, USN

Advisors: Dr. Nicholas Dew, Assistant Professor, and

Lt. Col. Bryan J. Hudgens, Lecturer

Graduate School of Business & Public Policy

Naval Postgraduate School

THIS PAGE INTENTIONALLY LEFT BLANK

Abstract

This report builds on work completed in 2008 by Professors Nicholas Dew and Bryan Hudgens. It is a product completed in conjunction with their most recent study titled, *Market Niches in the Private Military Sector: An Initial Look* (Dew & Hudgens, 2009). Last year, both professors sought to help government security communities better understand the evolving private military (PM) sector by describing the demographics of the sector and the capabilities of the industry as a whole. Their 2008 report successfully identified some important characteristics of the industry, such as its history, age, global presence, and each founder's background. However, this report only scratched the surface of the industry and did not provide information about the government-outsourced service market (of which the private military industry is part), industry competition, or the future of the PM industry. Our new study partially answers these questions but also details how the PM sector is segmented and examines what types of rivalries exist within the industry. Through an analysis of a survey instrument distributed between July and September 2009 to senior PM executives, we attempt to explain the complex competitor connections and market relationships within this industry. We believe this work has significant practical merit in supporting the professional acquisition community in the Department of Defense, the Department of State, and other US Government agencies that conduct business with and through the use of PM companies. Given the high levels of public scrutiny of government contracting practices (particularly service contracting), being well informed is—in our view—a decision maker's first priority. Since this industry is relatively new, acquisition professionals do not have the informational benefits of a long history of transactions and market activities (unlike military aircraft acquisition, for example). Therefore, using established survey techniques and statistical methodologies, we will describe in detail the distinct market niches and rivalries in the PM industry.

Acknowledgments

We would like to express our sincere gratitude to our advisors, Professors Nicholas Dew and Byran J. Hudgens, for giving us the opportunity to investigate this thought-provoking topic and the guidance they provided while we completed this report. We would also like to thank the faculty and staff of the Naval Postgraduate School and the staff of the Acquisition Research Program (ARP) for assisting us, sometimes unknowingly, with the administrative support necessary to complete the survey and finalize our report. We would like to especially recognize the contributions made by Karl Kruse, a graduate student at the University of California, Irvine. His assistance with the statistical analysis of our sample proved invaluable. Thank you to all the anonymous survey participants for taking the time out of their busy schedules to participate in this project. Without their contributions, our project would have never gotten off the ground.

We would like to express our deepest love and admiration for our friends and family who supported us during the past eighteen months of this academic assignment. Without our family's sacrifices we would not have been able to complete our degree. Ken would especially like to thank his wife, Nicole, for putting her career on hold to move to Monterey, and for enduring the countless number of project team meetings held at their home. Having her unwavering support was always a blessing. We would also like to thank our brothers and sisters serving in combat operations abroad while we focused on our academic studies.

Finally, we would like to dedicate this report in memory of all the private military contractors who gave their lives performing duties in service to this great nation. May they rest in peace and may God watch over the families they left behind.

THIS PAGE INTENTIONALLY LEFT BLANK

About the Authors

Captain Kenneth H. Curtis enlisted in the United States Marine Corps in November 1991 and served with the 2nd, 3rd, and 4th Marine Divisions in several positions within Artillery Operations before being accepted to the Marine Enlisted Commissioning Education Program (MECEP) in 2000. He subsequently graduated from Temple University with a Bachelor of Business Administration and was commissioned a Second Lieutenant in the United States Marine Corps in May 2004. After graduation from The Basic School (TBS) and the Marine Corps Aviation Intelligence Course in Virginia Beach, Virginia, he was ordered to 3rd Marine Air Wing (MAW) in Miramar, California for duty as a Wing Collection Officer. Later, he was reassigned to Marine Medium Helicopter Squadron 165 to serve as the Air Combat Element (ACE) Intelligence Officer once the squadron attached and deployed with the 15th Marine Expeditionary Unit (MEU). Between September 2006 and June 2007, Captain Curtis served in Western Iraq as the ACE Intelligence Officer for the 15th MEU in support of Operation Iraqi Freedom (OIF). After returning from deployment, he served with Marine Aircraft Group 11 where he wrote an Intelligence Operations Manual for both 3rd MAW and the Navy and Marine Corps Intelligence Training Center. In July 2008, he reported to the Naval Postgraduate School where he is a student at the Graduate School of Business and Public Policy studying Financial Management for the Department of Defense. He will graduate in December 2009 with a Masters of Business Administration.

Lieutenant John J. Parma enlisted in the United States Navy in August 1996 after graduating from Sacred heart University with a Bachelor of Arts in Business Administration. After completion of The US Navy's Boot Camp he volunteered for Basic Underwater Demolition/ SEAL (BUD/S) training in Coronado, California. LT Parma completed BUD/S in December 1997 and was assigned to SEAL Team EIGHT where he completed 2 Central Command (CENTCOM) deployments and 1 European Command (EUCOM) deployment. In 2003 he commissioned SEAL Team

TEN in Little Creek, Virginia and completed an operational deployment to EUCOM. After his tour at SEAL Team TEN, LT Parma was accepted to the Navy's Officer Candidate School and was commissioned as an Ensign in 2004 and subsequently reported aboard SEAL Team FOUR. While at SEAL Team FOUR he deployed to CENTCOM as a platoon Assistant Officer In Charge (AOIC). After leaving SEAL Team FOUR in September 2005, he reported to Naval Special Warfare Unit TWO (NSWU-2) in Stuttgart, Germany for a two-year tour as a Planning and Exercise Cell leader. From NSWU-2, LT Parma accepted orders to the Naval Post Graduate School in Monterey, California where he is pursuing a Masters of Business Administration in the Graduate School of Business and Public Policy. After completing his degree requirements he will be assigned to SEAL Team SEVEN as an Officer In Charge of a SEAL Platoon in San Diego, California.

Captain Paul J. Marko graduated from the State University of New York at Buffalo with a Bachelor of Arts Degree in Geography and was commissioned as a Second Lieutenant in the United States Marine Corps in August of 2000 via the OCC Program. After graduation from The Basic School and completion of Naval Flight Training, he was ordered to 3rd Marine Air Wing in San Diego, California to serve with Marine Medium Helicopter Squadron 166 (HMM-166) as a CH-46E helicopter pilot. From June 2003 to November 2006, Captain Marko served with his squadron in Iraq and at sea aboard the USS Belleauwood and USS Peleliu. Following his flying tour duty, Captain Marko became a forward air controller (FAC) and deployed with 2d Battalion, 5th Marine Regiment to Ramadi, Iraq. After a short follow-up tour of duty as the Helicopter Current Operations Officer at Marine Air Group 11, he then reported to the Naval Postgraduate School in July 2008 to study Defense Financial Management in the Graduate School of Business and Public Policy. Captain Marko will graduate in December 2009 with a Masters of Business Administration and continue on to Norfolk, Virginia where he will work in the Head Aviation Budget Office at Marine Forces Command (MARFORCOM).

NPS-CM-09-150

ACQUISITION RESEARCH SPONSORED REPORT SERIES

Understanding Market Segments and Competition in the Private Military Industry

10 December 2009

by

Capt. Kenneth H. Curtis, USMC,

Capt. Paul J. Marko, USMC, and

Lt. John J. Parma, USN

Advisors: Dr. Nicholas Dew, Assistant Professor, and

Lt. Col. Bryan J. Hudgens, Lecturer

Graduate School of Business & Public Policy

Naval Postgraduate School

Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the Federal Government.

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

THIS PAGE INTENTIONALLY LEFT BLANK

I.   Introduction

Recent scandals—such as the "obscene drunken behavior" (Stier, 2009) by approximately 30 supervisors and guards of ArmorGroup (a Wackenhut Services Incorporated affiliate) that compromised security at the US Embassy in Afghanistan, and the overcharging of the US Government by DynCorp International to the tune of $50 million for facility management services in Kuwait—demonstrate why it is important for the Department of Defense (DoD) to contract quality private military (PM) firms (Haynes, 2009). More importantly, DoD must be able to screen firms effectively to determine which firm is best suited for the contract and if that firm would execute the contract adequately and professionally. Presently, there is not a single-source database of private military firms available to assist governmental acquisition and contracting professionals in navigating the complex environment of the PM industry. Therefore, we drafted and deployed a survey to PM executives and analyzed their responses to help government decisions-makers better understand this dynamic and unique industry.

Our survey was designed to answer questions about how the PM sector is segmented and what types of rivalries exist within the industry. We were particularly interested in helping acquisition professionals make informed decisions when working with private military companies (PMCs) by developing a comprehensive picture of the PM sector—specifically targeting the distinctive *market niches* and *rivalries* within the industry. The basic rationale for this approach was that before one can make informed choices about which services to acquire from which firm, one must understand the industry playing field (i.e., be reasonably well-informed about the players involved). Only with accurate and complete knowledge in hand, is it possible for one to conduct a contracting process that obtains maximum value for the taxpayer while simultaneously providing the best support for the warrior on the battlefield.

From this research, we were able to identify those companies whose competitors deem them superior in a particular niche. We were also able to confirm that many firms are competing implicitly by constantly shifting their business models, changing the type of government-outsourced services offered, or acquiring other firms to help expand their own market share. Other areas we investigated and for which we were able to gather practical information concerning the PM industry included:

- Market-sector competition,

- Employee demographics,

- Targeted areas of operations,

- Revenues generated by specific service segments, and

- Mangers' perception of the future and challenges facing the industry.

Our results will give government contracting and acquisition professionals a clearer understanding of how the PM industry is organized and operated, and should assist them with making informed decisions when awarding contracts to PM firms.

The data used in our report was collected between July and September 2009 using a 25-item questionnaire, disseminated to various PMCs within the United States. The exact methodology used to develop, deploy, and analyze the survey results are covered in Chapter III. Chapter II contains a brief history of the PM industry and discusses the relevance of past research conducted on the subject. Chapter IV of our report analyzes the data we extrapolated from the responses received and is primarily focused on examining competition and rivalry within the industry. In this chapter, we discuss the overall frequency of responses, correlations to key industry performance characteristics, and other business factors. Our data reveals that many of these firms are unaware of some of their competitors in certain fields. When questioned about primary competitors, participants appeared to base their responses on a particular firm's reputation or perceived status rather than on the services that firm actually provided. Chapter V is dedicated to the questionnaire section entitled, "Future of the Private Military/Security Industry" and analyzes

responses to the unstructured questions concerning the future of the industry and the challenges the industry might face in the near term. Respondents' answers allowed us to see where members of PMCs believe the industry is headed, as well as the changes that must be made as the operational arenas of Iraq and Afghanistan come to a close. Chapter VI includes a brief conclusion and recommendations for further research to address some of the information gaps we discovered while conducting our research.

THIS PAGE INTENTIONALLY LEFT BLANK

II.   Background on Private Military Companies

The following passage provides perhaps the best and single most comprehensive definition of a private military company to date:

> Private military companies are legally established multinational commercial enterprises offering services that involve the potential to exercise force in a systematic way and by military means and/or the transfer or enhancement of that potential to clients. The potential to exercise force can materialize when rendering, for example, a vast array of protective services in climates of instability (on land and sea). Transfer or enhancement, on the other hand, occurs when delivering expert military training and other services such as logistics support, risk assessment, and intelligence gathering. It is a "potential" to exercise force because the presence of a private military company can deter aggressors from considering the use of force as a viable course of action. (Private Military.org, 2009)

Small groups of non-military entities that were willing to engage in inherently military functions on behalf of the state were once called mercenaries. Today, these more intricately organized conglomerations are known as private military companies (PMCs). These groups have evolved into corporations and organizations on which the United States Department of Defense (DoD), Department of State (DoS) and the United Nations (UN) has come to rely heavily for support in military and peacekeeping operations around the globe. These companies have become such major contributors that during the Invasion of Iraq in 2003, one out of every ten people the United States deployed to the theater were employed by PMCs (Avant, 2005).

PMCs provide security and inherently military services to states, international organizations, non-governmental organizations (NGOs), global corporations, and wealthy individuals (Avant, 2005). Avant stated that "every multi-lateral peace operation conducted by the UN since 1990 included the presence of Private Security Companies" (2005, p. 7). It is clear from this data, as well as from recent research (Dew & Hudgens, 2008) that the use of PMCs in conflicts around the globe is on the rise. This evidence shows that states seem to be relinquishing some duties previously considered the inherent domain of the military. The trend in rising profit

margins is another indicator of industry growth. Estimates for the 2003 global revenue for the PMC industry were over $100 billion (Singer, 2003b), and that has continued to be the industry average.

Avant described events that caused a massive expansion in the PM industry. She proposed that events both local and international caused many professional state soldiers to be left without work and, as a result, were available for contracting. An example of a local event that she noted was the end of apartheid in South Africa; the international example she cited was the end of the Cold War (Avant, 2005). Events such as these resulted in an increase in available personnel who had military skills. These personnel (from countries that downsized their militaries) could be used to source an increase in demand for their skills. A prime example was the breakup of the Soviet Union and the withdrawal and dissolution of its troops from states that were under its rule. These newly independent states required outside help to rebuild their militaries quickly, and they turned to PMCs for those functions (Avant, 2005).

A.   Department of Defense Outsourcing

In addition to the policing, security and military services that PMCs provide, logistics services have become a highly desirable service. The Logistics Civil Augmentation Program (LOGCAP), introduced by DoD, is a particularly important example. LOGCAP was created in 1985 with the intention of utilizing civilian resources to provide for contingencies and near-term emergencies and to establish a means for minimizing costs (Thompson, 2009). LOGCAP has played a role in several military operations since its inception.

In 1991, during Operation Desert Storm, LOGCAP contractors played an integral part in maintenance, supply and transportation functions. A majority of contractor support was provided by 998 employees from 76 US contracting firms, along with an additional 2,900 employees from 22 foreign firms (Kidwell, 2005). During Operation Joint Endeavor in Bosnia in 1995, KBR, Inc. (formerly Kellogg Brown & Root, Inc.) provided services and resources such as dining, potable water,

laundry, and petroleum (Kidwell, 2005). As a LOGCAP contractor, DynCorp International played a large role in East Timor by supplying helicopters and support (2005). More recently, KBR, Inc. and Halliburton provided critical dining and support services in Operation Enduring Freedom (OEF). The institution of LOGCAP created what appears to be a permanent link between PMCs and DoD.

B.   The Business Side of the Industry

The Naval Postgraduate School (NPS) has conducted recent research into the PM industry. A 2007 Master's of Business Administration (MBA) Professional Report by Yusuf Alabarda and Rafal Lisowiec studied the dynamics of the industry by analyzing supply-and-demand economics and using two companies, Blackwater (now Xe) and DynCorp, for a more specific look into the historical evolution of specific firms. The report cites four key measures for developing the effective and efficient use of private military armies: transparent accounting practices, standards on outsourcing and privatization, oversight capacity, and legal accountability (Alabarda & Lisowiec, 2007).

Our report attempts to help government clients with the second key measure (standards on outsourcing and privatization) by providing a clearer look at the services and market niches within the industry. The conclusion of the Alabarda and Lisoweic study (2007) stated their belief that the PM industry was entering a period of rapid growth and cited Avant's supply-and-demand examples mentioned earlier in this report. Through our research, we have captured data that provides insight into why the industry's survival may be long-term and how the firms themselves think the industry will or will not change. Alabarda and Lisoweic (2007) predicted a downsizing in private firm participation in both Afghanistan and Iraq as the conflicts stabilize, but simultaneous growth in other geographical areas. The rate at which these companies are adding and deleting services shows their adaptability to the market demand. Therefore, it is our assertion that firms will shift market focus and increase their available services to maintain profitability and desirability among their customers (primarily governments) and will not downsize as Alabarda and Lisoweic

(2007) concluded. Our study was designed to determine (from the perspective of PM firms) the important factors in their adaptability that allow for such a rapid shift in market focus.

C.   Historic Attempts to Classify the Industry

Over the last decade, the lines separating PM industry services into clear categories have become blurry, and companies are beginning to add more services to their resumes to maintain a competitive edge. PMCs can afford to do so as profits in the industry continue to skyrocket. However, such adaptability makes classification of firms and their respective functions difficult. Avant (2005) changed the original classification of PMCs done by Singer (2003a) to reflect a firm's breakdown by contracts received rather than by the type of service a corporation provides. Avant (2005) created Figure 1 to depict this type of classification. In Avant's model, the spear depicts the spectrum of importance of services on the battlefield; therefore, the so-called "tip" would be the front line, and the opposite end would represent backside logistical and operational support. Avant (2005) arranged the various firms that make up the PM industry by the types of contracted services they provide.
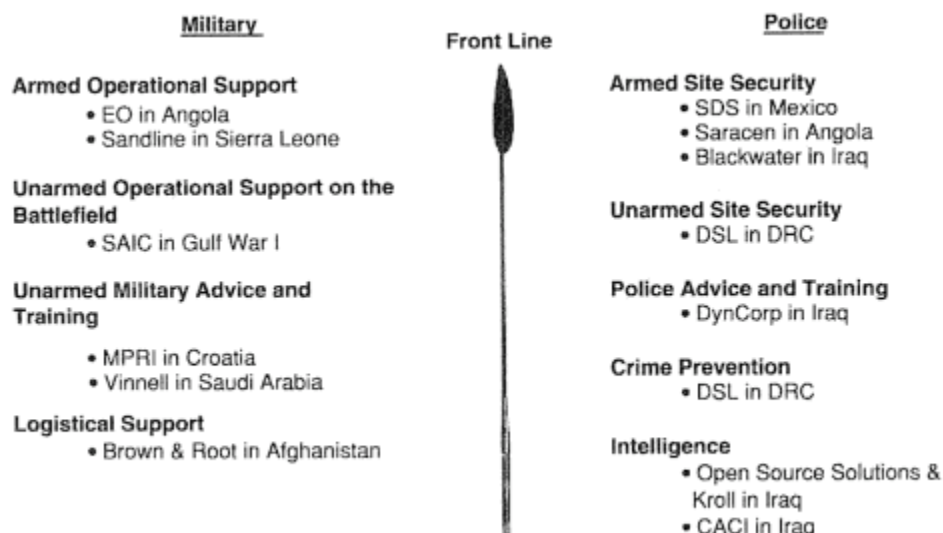
Figure 1.   Tip-of-the-Spear Diagram
(Avant, 2005, p. 17)

Another recent MBA Professional Report produced by students at NPS in December 2007 was entitled, "Private Military Industry Analysis: Private and Public Companies" (Dunar, Mitchell & Robbins, 2007). This report is significant because it gathered demographic data never before collected. Dunar et al. (2007) gathered various data from 585 PMCs and analyzed it to explore relationships between a firm and its location (multiple or otherwise), its founding year, the founder's background, the firm's contact information, the existence of a parent company, the existence of a website, and a firm's core business and capabilities (2007). We used this database as a starting point for our data collection efforts and have added information to it.

The data collection for the Dunar et al. (2007) thesis was challenging for two reasons: 1) a lack of contacts inside the industry, 2) the secretive and private nature of this industry. Ultimately, this study concluded that the private nature of these companies made access to financial data very difficult. Nevertheless, the data collection was sufficient to develop a combination diagram based on the classifications systems created by both Singer (2003a) and Avant (2005). Noting

that neither classification diagram can be used in every case, this report combined the two models to form an overlapping use of both contracts and services to produce the following "Revised Tip-of-the-Spear" classification diagram (Figure 2).

FRONTLINE
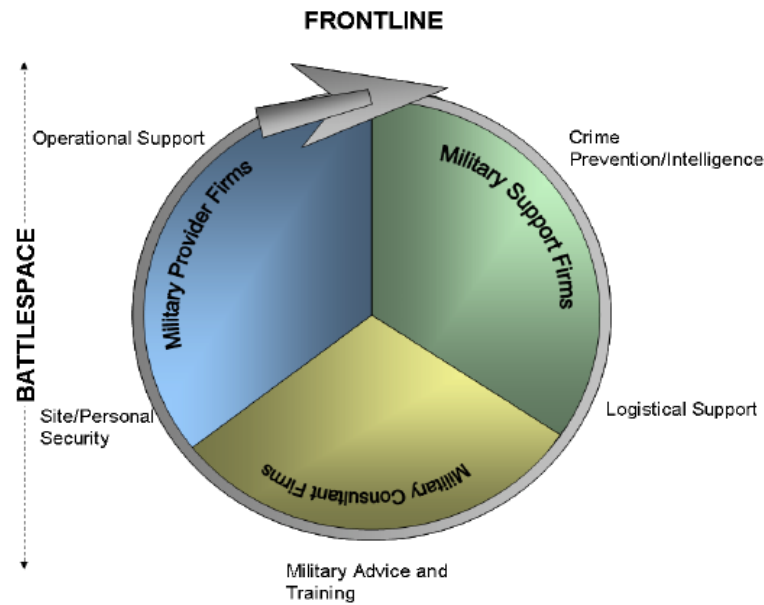
Figure 2.   Revised-Tip-of-the-Spear
(Dunar et al. 2007, p. 29)

As seen in Figure 2, combining the Dunar et al. (2007) theory with Avant's (2005) diagram yields a circular, overlapping pattern that mixes contract types and services across the spectrum of the industry and the battle-space to better depict how the industry cross-pollinates.

Dew and Hudgen's (2009) most recent work offers a simpler perspective on how to classify the PMCs based on the data gathered from our survey (Figure 3) (Dew & Hudgens, 2009). Figure 3 represents a horizontal diagram with two symbolic firms, one at each end of the industry spectrum of services. The firm on the left provides military- and security-type contracts (Blackwater), and the one on the right provides logistic- and administrative-type contracts (KBR). Our research yields a diagram of all the firms and would be quite complex, with points radiating from every direction between the two ends and many firms connecting at both sides. For simplicity, Figure 3 provides the best example because it shows the two anchor points of the industry, with firms arranged between these two poles. Avant's attempt to classify becomes very confusing, as companies continue to fall under several categories—many of which are not depicted along the spear.

Figure 3.   Figurative Spectrum of Services Diagram
(Dew & Hudgens, 2009, p. 20)

Our data shows that there is too much diversification to classify the industry on a single vertical or horizontal plane, and the relationships that reveal themselves prove that cross-pollination at both ends of the spectrum occurs more frequently than we originally expected.

THIS PAGE INTENTIONALLY LEFT BLANK

III.   Research Methodology

A.   Introduction

This chapter explains our research methodology, which was specifically designed with our intended target in mind: the private military (PM) industry. We set out to obtain reliable and practical data from within the industry itself and from a wide distribution of companies. Our intent was to gain the perspective of the PM industry executives—the people participating in the daily decision-making, bidding, operating, and strategizing. With their information and insight, a better picture and understanding of the PM industry could be developed.

We constructed a three-phase methodology to ensure our data would be usable and would produce accurate and beneficial research results. The first phase of our research was the careful design of an industry questionnaire to capture the appropriate data. In the second phase, we distributed the questionnaire in order to survey the largest population sample possible. During the last phase, we compiled and coded our collected sample of data and used several methods of quantitative analysis to identify relationships or trends within the industry.

B.   Questionnaire Development and Format

1.   Overview of Questionnaire

The design and construction of the questionnaire entitled "Private Military/Security Industry" (Appendix A) was accomplished in collaboration with Professor Debra Avant and two graduate students from the University of California at Irvine (UCI). The questionnaire has a total of 25 items divided into four sections:

- Section A – Company Information

- Section B – Business Factors

- Section C – Future of Private Military/Security Industry

- Section D – Additional Comments

The questions used were a mixture of both "closed-end" (multiple choice, Likert scale, and importance scale) and "open-end" (unstructured) questions (Kotler, 2009, p.137).

We applied parts of the Tailored Design Method (Dillman, 2007) to ensure the questionnaire was suitable in its content and design in order to successfully capture successfully our desired data from the PM industry. The general emphasis of the questions aimed to identify the size and structure of the participant's company/organization, his/her relative perception of competition and associations in the industry, and his/her insights into the future of the industry. Although content is more critical than overall "prettiness" of presentation (Dillman, 2007, p.12), we still considered the visual presentation and length of the questionnaire to be important. We designed it to be simple and concise with a well-structured layout. In business, time is of the essence, so we had to produce an easy-to-answer questionnaire that a participant could complete within approximately 15 minutes. Anything longer and we ran the risk of the participant discarding it.

2. Industry Demographics

Item 1 and Items 3-7 of the questionnaire attempt to capture information regarding company demographics and size. Specifically, this group of questions was important in establishing the following information: company location, employee demographics, and annual revenue. Therefore, our results could reveal a general company size/structure distribution throughout the industry.

3. Niche Markets

A niche market is a "narrowly defined customer group seeking a distinctive mix of benefits," and is usually a sub-segment of a larger industry segment (Kotler, 2008, p. 249). Item 2 and Items 8-10 of the questionnaire attempted to capture the market niche/s that the respondents' reportedly targeted within the larger PM

market. This group of questions was designed to reveal the distribution of services that private military companies (PMCs) provide to the varieties of customers they serve, and the geographic markets in which they perform these services.

4. Associations and Competitors

Items 11-18 of the questionnaire were aimed at developing a sense of how each respondent perceives his/her company in relation to others, and which companies he/she competes and cooperates with inside the PM industry. These questions allowed us to gauge where companies "fit" within the larger PM sector and helped to uncover any significant competitive/cooperative patterns and networks. The questions also help establish reasons why these relationships exist.

5. Future of the Industry

Items 19-24 of the questionnaire asked the respondent to speculate on both the future of the PM industry and how his/her represented company might meet the unique challenges confronting the industry as a whole. These questions were designed to determine possible trends occurring within the industry. The answers to these questions shed light on some interesting perspectives, such as which markets or niches are potentially growing and/or shrinking. The questions can also show how the respondents' perceptions of the PM industry may be quite different from one another and are based on the size or type of companies they work for.

C. Data Collection

1. Overview of Data Collection

Survey response rates are traditionally low for self-administered business surveys (Dillman, 2007, p. 218). With this knowledge, we chose a tailored, mixed-mode solution (2007) to collect our data. Using the questionnaire discussed previously, we surveyed the representative companies via two separate, self-administered modes: hand delivery and mail. We preferred the mixed-mode method because research shows that it can achieve better access and response rates from

a population than can a single survey method (Dillman, 2007, p. 223). Our original data collection plan also incorporated an electronically delivered web-based questionnaire, but due to university institutional review board (IRB) restrictions, we could not take advantage of this option. Without a web-based questionnaire, we were limited in the number of companies we could survey.

We acknowledge that there are drawbacks with the mixed-mode survey method. Dillman explains, "It is possible that the introduction of additional modes, while increasing response rates, will also increase measurement differences" (Dillman, 2007, p. 220). While our prime concern was response rates, which led us to choose the mixed-mode approach, we attempted to minimize the potential for measurement differences by refraining from conducting any telephone or personal interviews during this study.

2.   Participant Selection

Due to resource and time constraints, we targeted a population of survey participants with the greatest potential for questionnaire response but that still represented a large cross-section of the PM industry. We selected senior managers and executives within a mix of both public and privately held United States firms. Although many foreign-based PM firms do exist, we excluded them from our sample. We felt our ability to access foreign-based companies would be limited, and the cost of overseas postage exceeded our budget.

For our target population, the US-based PMCs, it was important to bypass their "front office" and access their upper management in order to capture the most accurate and relevant responses to our questions. We assumed company leaders would possess the most comprehensive knowledge regarding their respective organization, their competitors, and their industry. Therefore, all questionnaires were hand-delivered or addressed to the following groups of senior managers and executives: Presidents, Senior Vice Presidents, Chief Executive Officers, Chief Operating Officers, Directors of Training, and Directors of Human Resources.

Generating the list of participants (industry executives) was the most time-consuming task of our research. To begin this task, we capitalized on previous research conducted by fellow NPS students. In 2007, over 500 US-based PM-sector companies were catalogued in a database created by Dunar, Mitchell and Robbins (2007). The database gave us access to a comprehensive list of business names, phone numbers, addresses, and e-mail contact information. However, much has changed since 2007 in this dynamic industry. While vetting the database and researching our potential participants, we discovered many of the companies had moved, changed leadership, terminated operations, or were acquired by larger companies since the Dunar et al. (2007) report.

It is important also to mention that in some cases, we distributed questionnaires to multiple individuals within the same company. This strategy was another attempt to increase probability of response. Also, when multiple questionnaires from a single company were returned, it allowed us to corroborate and compare the respondents' answers. Collectively, we distributed questionnaires to 312 participants at 59 different PM companies or subsidiaries of larger PM companies. Of the 312 questionnaires, 30 of them were hand delivered, and 282 were delivered via US mail.

3. Hand Delivery

The first 30 questionnaires were distributed by hand delivery to 16 unaffiliated PM companies in the greater Washington, DC, and Northern Virginia metropolitan area. There were two reasons for pursuing this face-to-face approach. First, we believed that hand delivering questionnaires would produce our best chance at gaining responses—specifically from our intended target population, members of upper management. With a mailed questionnaire, there was less certainty that it would be completed by the right people, or even returned at all. However, by visiting companies personally and leveraging our military backgrounds and networks, we had a better chance of gaining access to the "front office." Second, we also felt that

visiting companies in person would help us gain access to a network of additional companies and possible survey participants not on our list.

Overall, the hand delivery method was an excellent choice. Not only were response rates high (60%) from these companies, but the experience also gave us a first-hand view of the industry and the people who run it. Companies we visited covered the entire spectrum of development and hospitality. Some companies occupied entire buildings and multiple sites, while others were based out of small offices with meager furnishings. One particular company stands out in our memories; their entire office consisted of only a desk, a flag, and a few cardboard boxes. We also observed business locations to be just as diverse. Some companies were located in the heart of urban Arlington and Alexandria, while others were more remotely located, almost hidden, in the suburbs of northern Virginia. Additionally, some companies and managers were glad, even excited, to meet with us and take a copy of our questionnaire, while others had receptionists simply turn us away.

4. Mailed Questionnaires

Hand delivering our first wave of questionnaires was a good decision. It helped us establish a better plan and a more successful execution of our mailed questionnaires. We learned that personal communication was the best way to grab the respondent's attention, ensure the questionnaire was mailed to the right person and address, and increase the likelihood of response. Therefore, we attempted to limit the number of blind mailings.   We contacted, via e-mail or phone, 79% of our potential participants prior to mailing them a questionnaire. This allowed us to establish a relationship with the individual respondents, and it gave us another opportunity to leverage our military backgrounds, and a chance to personally explain the importance of our research.

D. Methods of Analysis

Following the return and completion of 71 questionnaires, we input the survey data into *Zoomerang*™, a powerful online survey provider. *Zoomerang*™ allowed us to easily store and tabulate the data, and perform some basic statistical analysis. We then reviewed and coded the data, and conducted our analysis with the assistance of computer software such as Microsoft Excel® and SPSS Statistical Software, and with the assistance of researchers at UCI. These two computer software tools and the graduate students at UCI helped us calculate the descriptive statistics and correlations necessary to accurately analyze the PM environment.

1. Inferential Statistics and Correlation Methods

It is important to note that our results and analysis are a form of inferential statistics. Plainly, we infer our sample data and findings to be a fairly close representation of the United States PM industry as a whole. Several of our inferences were made using correlations, such as "The linear relationship between two random variables" (Keller, 2009, p. 795). Based on our ordinal data, we had a choice between two widely used nonparametric correlation methods: Spearman's rank correlation coefficient (Spearman's rho), and Kendall Tau's rank correlation coefficient. We decided to present our results using Spearman's rho. For the purposes of our study, we agreed that "as a test of significance there is no strong reason to prefer one over the other, because both will produce nearly identical results in most cases" (Conover, 1999, p. 323). To verify this decision, we still ran both correlation methods on our data. We observed Conover's statement to be true: the differences were not significant.

E. Summary of Methodologies

It is worth remarking on our data collection strategy because we feel it will benefit future students and researchers who are examining organizations. Since the PM industry is a relatively tight-lipped and private business community, we were pleasantly surprised that our survey response rates exceeded our goals and

expectations. We attribute this success to our strong effort to communicate personally with all of our potential respondents by meeting face-to-face or via e-mail or telephone prior to delivering a questionnaire to them. This effort gave us the opportunity to leverage our military backgrounds, explain our research, and win the trust of our potential respondents. With more time and resources, we believe that we could have reached an even greater sample of PM companies with this approach. However, obtaining responses from large public companies will always remain a challenge unless researchers make strong inside contacts.

IV. Results and Analysis

A. Introduction

This chapter examines the data gathered from the 25-item questionnaire entitled, "Private Military/Security Industry." We surveyed 312 senior managers of United States-based private military companies (PMCs) that provide services to the US Government, the military, corporations, and other governments around the globe. The managers surveyed represent both public and private companies and exclude any company founded or incorporated outside the United States. The objective of this research was to collect, record, and analyze empirical data to help military acquisition professionals better understand the private military sector, as well as to assist other researchers in examining the enigmatic behavior of this important defense-related industry.

B. Data Analysis

1. Overview of Data Collected

When deciding how to conduct our analysis, we first chose to look at the "closed-end" rating-scale-matrix questions (see Chapter III) (Kotler, 2009, p. 137). These questions were designed using Likert-type items to assess the participant's level of importance or level of participation in a particular activity related to an item on the questionnaire. A Likert item is simply a statement which the respondent is asked to evaluate according to any kind of subjective or objective criteria; generally the level of agreement or disagreement to this criteria is measured (Likert, 1932). By using Likert-type items, we were able to code the responses as: 1) not important, none, or least, 2) somewhat important or little, 3) important or somewhat, 4) very important or mainly, and 5) absolutely critical, exclusively, or most.

We then coded and arranged the participants' responses as ordinal data in order to complete our analysis. This allowed us to determine the central tendency (median and mode but not mean) for each question and to explore the relationship

between each variable using Spearman's rank correlation coefficient (Spearman rho). Spearman rho is a nonparametric measure of correlation used when evaluating ordinal data that might not satisfy the requirement of normally distributed data (Keller, 2009). We drew the data analyzed in this chapter from items 2-9, 15, 17, and 18 of the questionnaire (Appendix A).

2. Descriptive Statistics

All 71 respondents were senior managers of companies identified by Dunar, Mitchell, and Robbins (2007) as providers of defense-related or government-outsourced solutions to foreign and domestic government entities. Figure 4 illustrates the percentage of questionnaires distributed and returned, separated by type of organization. Of the questionnaires distributed, 31% of public companies responded, while 69% of private firms did so. These response rates reflect the percentage of questionnaires returned from each company type. We distributed 83 questionnaires to senior managers of public companies, which was 26.6% of the entire survey. Additionally, we distributed 229 questionnaires to senior managers of private firms, which equal 73.4% of the entire survey.
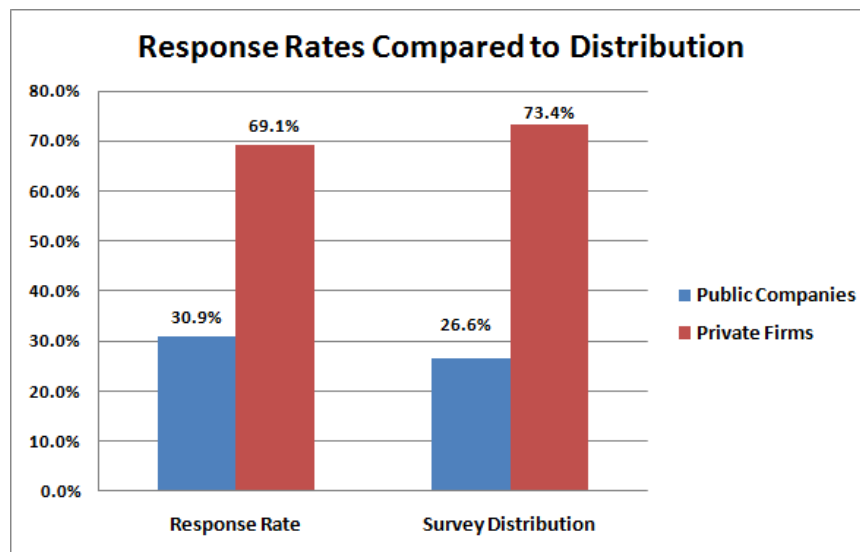

**Figure 4. Response Rates Compared to Sample Distribution**

Our overall response rate was 24.4%. However, when we eliminated questionnaires sent to different business divisions within the same organization, our adjusted response rate was 19.6%, or 59 responses, representing independent companies. Both of these response rates are above the acceptable response rate of 15% for organizational surveys (Baldauf, Reisinger & Moncrief, 1999). Greer, Chuchinprakarn, and Seshadri (2000) discovered questionnaires delivered to workplaces are normally returned at lower rates because of factors such as preoccupation with work, confidentiality of information, or workplace policies. We attribute our higher-than-normal response rate to the unique methods we used to solicit participants and to the special rapport we share with former members of the armed forces—many of whom are now in senior leadership positions within the private military (PM) industry. Please refer to Chapter III for a detailed explanation of how we deployed the survey.

3. Measuring Company Size

One of the first tasks we completed when analyzing the questionnaires was categorizing the response distribution. Since the survey was conducted anonymously, we had to use responses to certain items as a way to measure a company's relative size. Had we identified participating companies by name, we might have used market capitalization (for publicly traded companies) or the number of Federal contracts awarded as a method to measure a company's overall size relative to the industry. However, by asking the questions identified in Item 3 (number of permanent employees), Item 4 (number of non-permanent employees), and Item 7 (annual revenue), we were able to develop an adequate size measurement of the sector and still maintain the respondents' anonymity. We then created an additional measure of size by adding both permanent and non-permanent employee response scores. These four measures of company size were then compared to respondents' reported customer base, firm characteristics, area of operations (AOR), and employee recruitment.

Figure 5 illustrates the relative frequency of responses to Item 3 (number of permanent employees), which served as a predictor of firm size based on the number of permanent employees a company reported employing in the past 18 months. Of the respondents, 27 (38%) reported having a staff of 1000 or more permanent employees, while 16 (23%) reported having a staff of fewer than 50 employees. We anticipated this bimodal distribution because of the two distinct groups in our survey (public and private).
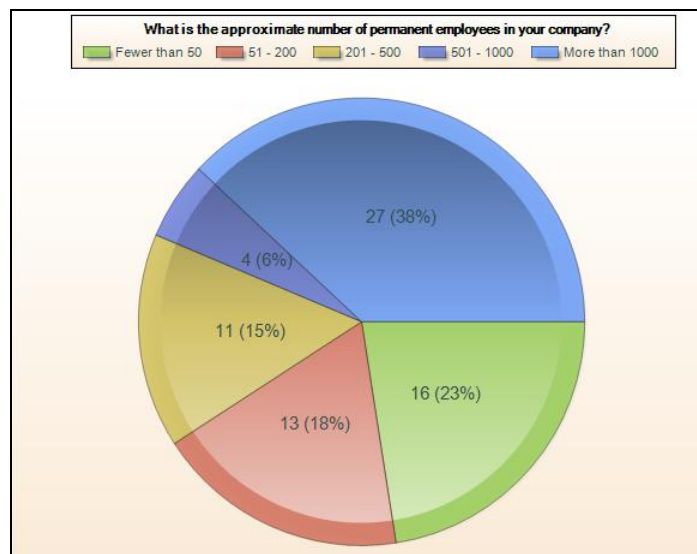
Figure 5.   Frequency of Responses to Item 3

Figure 6 illustrates the relative frequency of responses to Item 4 (number of non-permanent employees). As with the permanent employee scale in item 3, these responses served as a measure of company size. This allowed us to compare our company size variables to other variables in the questionnaire. Thirty-four respondents (49%) reported using fewer than 50 non-permanent employees in the last 18 months. The rest of the responses are positively skewed down the rating scale, with two of the participants neglecting this question (69 total responses). There are two possible reasons for this data being positively skewed: 1) the represented public companies have large permanent staffs and do not require many

non-permanent employees 2) for smaller firms, fewer than 50 non-permanent

employees is a relatively large number of contracted employees. Given that our response rate for private firms is high, we consider the second reason to be more significant.

In the past 18 months, how many non-permanent or contracted workers were employed by your company?
Fewer than 50 | 51 - 200 | 201 - 500 | 501 - 1000 | More than 1000

7 (10%)
4 (6%)
14 (20%)
10 (14%)
34 (49%)
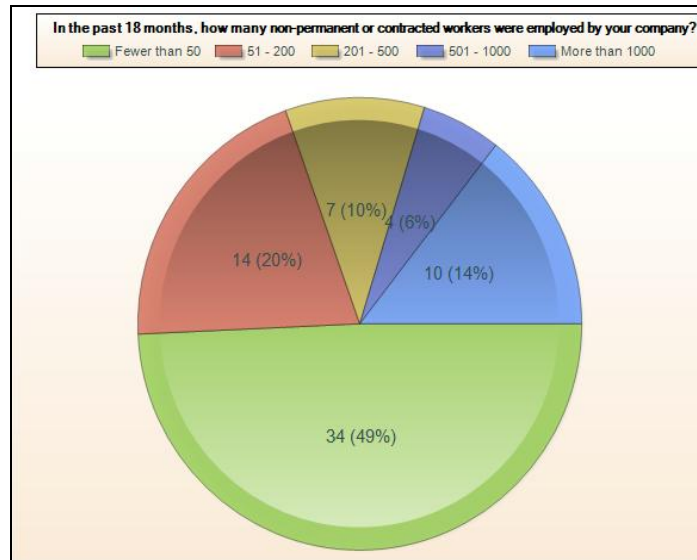
Figure 6.   Frequency of Responses to Item 4

We used the respondents' reported annual revenue as our final measure of company size. The histogram in Figure 7 illustrates the three distinctly different distributions in reported annual revenue. The overwhelming majority, a combined 53% of respondents, reported annual revenue in the $1-50 million and $51-500 million range. The next largest concentration of responses (25%) was from companies whose revenues exceeded $1 billion.
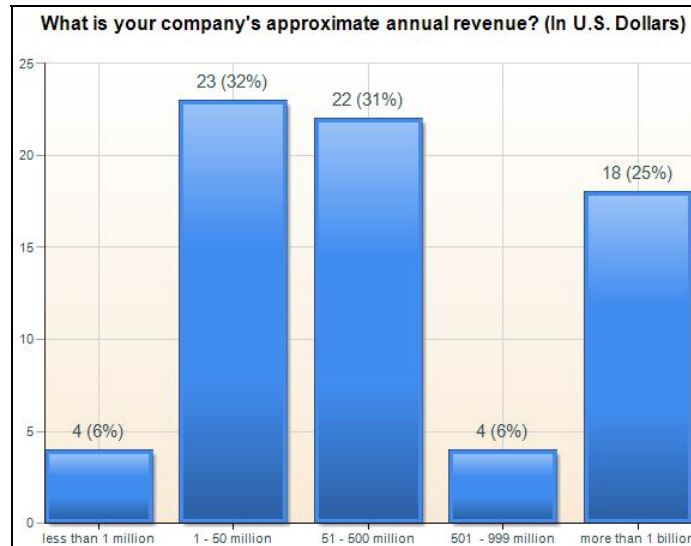
Figure 7. Reported Annual Revenue

We attribute this tri-modal distribution to two factors: 1) the revenue amounts were not uniformly distributed in the rating scale, and 2) the reported revenue for the representative companies is analogous to the survey distribution. We know the distribution between $501 million and more than $1 billion is reasonable because all 22 represented public companies that reported revenue within these two categories had reported similar revenues on their most recent publicly available financial reports. Had we made a concentrated effort to ensure even distribution on the revenue scale (i.e., $0-250 million, $251-500 million, $501-750 million, and more than $750 million), we would have likely seen a reduction in the frequency of revenue reported in the $51-500 million range and an increase in reported revenue between $0-250 million. Despite these two factors, annual revenue reported proved to be a reliable measure of a company's size and was a useful variable when computing correlations.

4. Correlations and Company Size

We compared the measurements of company size outlined in the previous section with other data collected on the same represented companies using Spearman's rank correlation coefficients. Table 1 illustrates the relationship between a represented company's size and its reported customers. Table 1 is arranged with

our size variables as the column headers: permanent employees (PermEmp), non-permanent employees (ConEmp), overall employees (OallEmp), and annual revenue (Revenue) and a company's reported customer base in the rows (i.e., WFDoD = worked for Department of Defense). A complete list of abbreviations can be found in Appendix D. The variable, OallEmp, was created by the summation of scores for permanent employees and non-permanent employees and was not an item listed on the questionnaire. The data for this table was drawn from Item 8 of the questionnaire.

Table 1.   Correlations: Company Size and Targeted Customers

Company Size and Targeted Customers				
	Perm Emp	Con Emp	Oall Emp	Revenue
WFDoD	0.311	0.380	0.342	0.383
WFDoS	-0.074	0.093	0.052	-0.183
WFUSAID	0.238	0.266	0.200	0.218
WFoUS	-0.095	-0.002	0.139	-0.221
WFStates	0.213	0.209	0.411	0.104
WFnonUSG	0.076	0.404	0.026	0.325
Wfcorps	-0.118	0.180	-0.161	0.032
WFpvtctzn	-0.373	-0.164	-0.333	-0.341
WFUN	-0.112	0.088	-0.309	0.049
WFNATO	0.304	0.286	0.287	0.280
WFNGO	0.157	-0.123	0.199	0.178

Note: Shaded cells are significant correlations

After analyzing the data, we found that as a company's size increased, so did the probability of doing business with large US Government organizations—such as the Department of Defense (DoD), non-governmental organizations (NGOs), North Atlantic Treaty Organization (NATO), or other non-US Government agencies. This relationship is not surprising considering the capital needed to compete for and properly execute a large government-outsourced service contract. However, we noted the correlations between total employees (OallEmp) and customers of US State and local government (WFStates). At .411, this correlation is stronger than many other correlations between the variables in Table 1. This relatively strong correlation between total employees and state and local governments could indicate

that companies do perform work for these customers and that perhaps these contracts require more manpower than other types of government- outsourced contracts. However, the low correlation in revenue to US State and local governments (WFStates) indicates that these contracts do not provide a large amount of revenue compared with more profitable Federal and NGO contracts.

The correlations between the reported annual revenue of a company and selected characteristics necessary to support the customer base as outlined in the preceding paragraph is presented in Table 2. The data for this table was drawn from Item 9 of the questionnaire. This data indicates that revenues are very strongly correlated with the number of permanent employees (.864) and with overall employees (.656) reported by a represented firm. As a result, using either permanent employees or revenues as a measurement of company size, we would obtain comparable relationships with both measures and with other firm characteristics. We must also note that correlations between the two employee types and revenue are positive, which denotes all employee types improve revenue. In contrast, when examining only the use of non-permanent employees (Con employees) in relation to reported annual revenue, we see that the correlation is significantly weaker. This signifies the use of non-permanent employees by a represented firm is independent of the other three measures of company size (Dew & Hudgens, 2009).

Table 2.   Correlations: Firm Characteristics and Reported Revenue

Revenue by Firm Characteristics	
	Revenue
Perm Employees	0.864
Con Employees	0.299
Oall Employees	0.656
Training	-0.377
Intelligence	0.126
Logistics/Transp.	0.136
Base Ops	0.120
Security Detachment	-0.211
Maintenance	0.314
Construction	0.198
EOD	-0.130
Medical	-0.159
Legal	0.010
Aviation	0.379

Note: Shaded cells are significant correlations

Other positive correlations of interest are maintenance and repair services (Maintenance) and aviation-related services (Aviation). These two variables (.314 and .379 respectively) have the strongest positive correlation to annual revenue of any of the other reported services. Therefore, a company's annual revenue is positively correlated with these two government-outsourced services. This connection possibly indicates that larger companies tend to perform these services more often than smaller ones. This conclusion is not surprising considering both of these service areas are capital-intensive and require substantial manpower (permanent and contractors), materiel, and capital to provide these services to large customers such as DoD.

In contrast, the negatively correlated variables (training, security, explosive ordnance disposal (EOD), and medical services) appear to indicate that it is not necessary to be a large company in order to provide these services to the US Government or other large agencies within the government. This assessment is substantiated by participants' responses to questions related to business factors (Item 11-14) and to questions related to the future of the industry (Items 19-24).

Smaller private firms, especially Service-disabled Veteran-owned (SDVO), Veteran-owned (VO) and Small Business Administration (SBA) 8(a) disadvantaged firms seem to perform a large portion of services related to training, medical, and EOD services to several Federal agencies, including DoD and DoS. The likely reason these smaller firms are performing these services is because agencies such as DoD have policies in place that attempt to maximize prime and subcontracting opportunities to smaller firms such as SDVO (DoD Office of Small Business Programs, 2009). We discuss the relationship between SDVO, VO, and SBA 8(a) firms and the US Government in Chapter VI because we consider the relationship important enough to warrant further study.

Table 3 shows that all four measures of size are positively correlated with where respondents conduct operations, with the exception of the United States. This observation reinforces our premise that size is a determining factor when a customer selects a firm to perform a contract on foreign soil. We might presume that larger firms have a competitive advantage in the overseas contract market because of capital and manpower advantages. Therefore, size is a significant factor when conducting operations in the Middle East (opsME) and in Asia (opsAsia). We expected this trend because there are 242,657 DoD contracting personnel in the US Central Command (USCENTCOM) AOR, which encompasses Iraq and Afghanistan (Schwartz, 2009).

Table 3. Correlations: Company Size and Geographical Area

Company Size by Area of Operation				
	Revenue	Perm Emp	Con Emp	Oall Emp
opsUS	-0.172	-0.248	-0.164	0.002
opsEurope	0.408	0.269	0.221	0.351
opsME	0.424	0.478	0.325	0.364
opsSA	0.360	0.363	0.045	0.256
opsAsia	0.642	0.543	0.354	0.518
opsAfrica	0.192	0.274	0.457	0.344
opsLAm	0.289	0.224	0.120	0.310

Note: Shaded cells are significant correlations

The most surprising figure in Table 3 is the relatively strong correlation of .457 between non-permanent employees (ConEmp) and operations in Africa (opsAfrica). This is of particular interest because of the relatively weaker correlations between revenue (.192) and permanent employees (.274) and operations in Africa. It is difficult to speculate why there is such a difference between these size variables and reported African operations without having additional data that specifically targeted this area of interest. However, recognized market research indicates that this correlation is likely due to growth in the African theater.

Current events on the African continent support this market development theory. Over the last decade, the United States, European allies, and the African Union have invested considerable resources to aid and stabilize the struggling nations of Africa. The military assistance mission culminated in 2008 with the establishment of Africa Command (AFRICOM) as an independent combatant command (Ploch, 2009). This decision acknowledged the emerging strategic importance of Africa and recognized that peace and stability not only impacted Africans but the strategic interests of the US and the international community as well (US Africa Command, 2009). In order to successfully achieve this "broader soft power mandate aimed at building a stable security environment" (Ploch, 2009, p. 4),

DoD and the US Department of State (DoS) have used private military contractors for some time but have recently increased their demands for these services due to instability in places such as Somalia and Nigeria.

While attention may be focused on operations in Iraq and Afghanistan, the US Government has awarded multi-million dollar contracts to private military corporations to support operations in Africa, ranging from logistical support to security operations. Most recently, DoS awarded PAE Government Services, AECOM, DynCorp International, and Protection Strategies Incorporated contracts not to exceed $375 million for each company (Federal Business Opportunities, 2009). This 5-year, indefinite delivery/indefinite quantity (IDIQ) contract is part of the Africa Peacekeeping Program (AFRICAP) and is designed to "provide logistics support, construction, military training and advising, maritime security capacity building, equipment procurement, operational deployment for peacekeeping troops, and aerial surveillance" to DoS and AFRICOM in support of peacekeeping operations (US DoS, 2008, p. 7-13). As with contracts in Iraq and Afghanistan, PMCs fill many of the non-technical and security-related positions with contracted employees. Therefore, since Africa is a growing market, this new contract will likely be resourced with contracted employees and is a reason why non-permanent employees would be strongly correlated with operations in Africa. Further research into PMCs in the African theater of operations is warranted.

Table 4.   Correlations: Revenue and Reported Hiring Practices

Revenue by Who/Where Firms Hire	
	Revenue
Military Experience	-0.203
Spec Ops Experience	-0.333
Law Enforcement Exp	-0.357
Intelligence Exp	0.072
Legal Exp	0.022
In-house Training	-0.031
Recruit US	-0.306
Recruit Europe	0.443
Recruit Middle East	0.504
Recruit South Asia	0.525
Recruit Asia/Pacific	0.485
Recruit Africa	0.122
Recruit Latin America	-0.044

Note: Shaded cells are significant correlations

In this study, when we compared revenue to the kind of personnel PMCs hire and from where these employees are recruited (Table 4), we discovered negative correlations between revenue and the predictable ex-military and ex-law enforcement labor pool. These negative correlations imply that as representative firms increase their positions in key markets (e.g., intelligence services, management services, platform support, etc.), they hired a more diverse labor force to help expand their service offerings. This means that the innate skills of the military and law enforcement converted to the public sector are not essential to generating revenue. It appears from the data that larger, more diverse firms tend to hire for the mission and not simply to duplicate skills intrinsic to the military and other federal agencies.

Since the Terrorist Attacks of 9/11, PMCs have realized the advantages of having the ability to service many types of government-outsourcing contracts, such as civilian police programs, logistical operations and cyber security contracts. Therefore, over the past few years, PMCs have made an intensive effort to integrate vertically—either by acquiring smaller companies that provide niche services or by

establishing inter-company divisions that can provide new ones. We saw some anecdotal evidence of this when we tried contacting potential survey participants using the Dunar, et al. (2007) PMC database. When attempting to contact managers of PMCs, we found that more than a dozen firms listed in the database had subsequently been purchased by larger PMCs. These procurements prompted us to search for information related to acquisitions within the PM industry as a whole to gauge how widespread acquisitions truly are, particularly after 2007.

We discovered that a large variety of PMCs conducted acquisitions of smaller defense-industry companies following 9/11. Three anecdotal examples that support the notion that PMCs learned they can improve market share by diversifying are ManTech International, L-3 Communications Incorporated, and Science Applications International Corporation—better known as SAIC. All three of these companies, along with giants in the defense industry such as Lockheed Martin and General Dynamics, executed "focused strategic acquisitions" in the 21st Century as a way to expand their customer bases by targeting specific government-outsourcing growth sectors such as intelligence, police training, logistics, and information technology (IT) (ManTech, 2009).

ManTech International became a publicly traded company in February 2002 and immediately began targeting smaller firms as a way to grow its customer base and increase market share. Since 2002, ManTech has acquired 12 companies that provide government-outsourced services to include functions that are essentially military in nature (e.g., security and military training). Some of these companies, with their market specialty and year of acquisition listed in parentheses, are

- CTX, Corporation (Just-in-time logistics - 2002)

- Integrated Data Systems (IT services - 2003)

- Aegis Research Corporation (IT security - 2003)

- MSM Security Services, Inc. (Security background investigators - 2003)

- Gray Hawk Systems, Inc. (Intelligence solutions - 2005)

- SRS Technologies (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) services - 2007)

- EWA Services, Inc. (Electronic warfare - 2008)

- DDK Technology Group, Inc. (Cyber intelligence - 2009)

All of these acquisitions enabled ManTech to grow both its services and customer base and to function as an example of broad vertical integration within the PM industry (ManTech, 2009).

Another example of vertical integration in the PM industry is L-3 Communications Holdings Incorporated (L-3). L-3 has several divisions that are experienced players in the PM industry, such as Military Professional Resources Incorporated (MPRI). MPRI was a pioneer in the PM industry and has been active in market segments such as security and military training since the 1990s (Singer, 2003a). Realizing how acquisitions of smaller PMCs such as MPRI could improve the company's bottom line, L-3 continued to acquire smaller PM sector firms since its creation in 1997. Some of the firms acquired include the following:

- Microdyne (Telemetry and tracking - 1998)

- Training Devices and Training Services from Raytheon (Military training - 2000); MPRI (Security and military training - 2000)

- Aircraft Integration Systems from Raytheon (Surveillance systems - 2002)

- BEAMHIT, LLC (Marksmanship training - 2004)

- D.P. Associates (Aviation-related military training - 2004)

- Mobile Video, Inc. (Video capture for law enforcement - 2005)

- The Titan Corporation (C4ISR - 2005)

These numerous acquisitions have helped L-3 become one of the top US Government contractors, with $14.9 billion in sales during 2008—74% of which were

with DoD alone (L-3 Communications, 2008). These acquisitions allow L-3 to offer a diverse range of services to its customers and appear to have helped it better position itself within the industry when competing for contracts from DoD, DoS, and DHS.

Finally, SAIC has also vertically integrated its services through acquisitions over the last decade. As recently as July 2009, SAIC acquired the R.W. Beck Group, which includes Beck Disaster Recovery (BDR), Inc., and Atlan, Inc., which specializes in Federal Information Processing Standard (FIPS) certification for cryptographic software and hardware (SAIC, 2009b). The company now has 45,000 employees in 150 different countries and generates 93% of its revenue through federal, state, and local government contracts (SAIC, 2009a). SAIC provides services in language, intelligence, information technology, management consulting, business process outsourcing, training, and logistics. To ensure successful growth of these services and to remain a market leader, SAIC appears to understand that labor pool diversity is a force multiplier in the PM industry.

We cannot declare with absolute certainty that these examples of vertical integration are the reason for the negative correlation between revenue and the prevalence of ex-military employees presented in Table 4. Nevertheless, we consider the correlations and the three real-world examples of companies executing strategic acquisitions to increase their market shares as support for the conclusion that PMCs will continue to diversify—especially their labor force—in order to meet changes in market demand.

5. Private Military Companies and their Customers

When designing the survey, we were particularly interested in discovering the wide range of customers that PMCs targeted. Therefore, we designed Item 8 of the questionnaire (Appendix A) to help separate the market segment into 11 different categories or "niche" markets. We theorized that the majority of PMCs would service DoD, DoS, or other large government agencies vital to national security, because PMCs offer services tailored to support government and because governments have

the largest budget for PM-type services. Therefore, we tried to determine how much money the Federal Government spends on PM-type services to see if there was any validity to our assumptions.

The US Government classifies all Federal contracts in accordance with standards set by the Federal Procurement Data System—Next Generation (FPDS-NG). Each contract is classified by major product or service code, which range from agricultural machinery and equipment to weapons. There is no Federal contract category titled "Privatized Military Services," so we were unable to discover the exact amount of federal dollars authorized for PM services. However, we did discover that the Government classifies PM services as "Professional, Administrative, and Management Support Services," also known as Category R services (Federal Procurement Data System, 1998). Table 5 provides a brief summary of a current contract created for professional, administrative, and management support services. In Table 5, we illustrate a recent DoS contract awarded to DynCorp International for services in Iraq. This contract is broadly written to provide IT, security services, and mission support to the Iraqi Criminal Justice Development Program and is categorized as a R499 contract, "other professional services." The details of the DynCorp contract can be found in Appendix E. As of October 21, 2009, there were 191,306 contracts categorized as professional services contracts. Of course, many of Category R contracts are for other services unrelated to what the academic community defines as PM services, such as the $111 million contract awarded to Northrop Grumman to manage the US Air Force's B-2 Performance-based Logistics Sustainment Program (OMB, 2009a). Despite our inability to uncover the dollar amount spent or allocated for PM-related services, the total amount spent on PM-related services is a significant proportion of all professional services contracted by the Federal Government.

Table 5.   Summary: Professional Support Service Contract
(OMB Database, 2009b)

2009 DoS Contract to DynCorp Int. for Professional, Admin, and Mgmt Support Services	
Dollars Obligated	$91,000,000
Date Effective	January 30, 2009
Contract Description	Provide advisors and support services (life and mission support, security services, Information Technology (IT) and communications support services) in support of the Iraq Criminal Justice Development program as directed by the Bureau for International Narcotics and Law Enforcement Affairs (INL) of the US Department of State
Performance Country	Iraq (IZ)
Major Service Code	R499: Other Professional, Admin & Mgmt Support Services

Using historic government contracting data, we were able to build Table 6 and discovered that in the years preceding 9/11, $363.3 billion or 12.07% of all Federal contracts were for Category R services (OMB, 2009b). Since FY 2004—the first full budget year after the invasion of Iraq—the percentage of Federal contract spending for professional administrative and management support services has remained relatively steady at about 12% and has ranked as the second largest expenditure in Federal contracting for several budget years, including FY 2009. This trend continued in FY 2009, with Federal spending totaling $38.9 billion or 12.55% of all Federal contracts.

Table 6.   Top Three Federal Contract Expenditures
(OMB Database, 2009b)

Top Three Service Categories for all Federal Contract Expenditures (in indicated FY$)										
Product or Service Category	2002	2003	2004	2005	2006	2007	2008	2009	2002 - 2009	2009 Rank
Research & Development	$32.45	$36.28	$43.93	$48.37	$51.76	$55.15	$58.92	$44.98	$371.83	1
% total FY09$	12.53%	12.18%	12.88%	12.54%	12.15%	11.92%	11.14%	14.48%	12.35%	
Professional, Admin, & Mgmt Support	**$25.35**	**$29.67**	**$40.73**	**$48.00**	**$55.43**	**$59.26**	**$65.93**	**$38.99**	**$363.35**	**2**
% total FY09$	**9.79%**	**9.96%**	**11.94%**	**12.44%**	**13.01%**	**12.81%**	**12.47%**	**12.55%**	**12.07%**	
Aircraft & Airframe Structural Components	$17.35	$17.67	$19.17	$16.56	$22.48	$27.13	$32.04	$21.58	$173.99	3
% total FY09$	6.70%	5.93%	5.62%	4.29%	5.28%	5.86%	6.06%	6.95%	5.78%	

The majority of both public and private PMCs provide professional and support services. As described by Singer (2003a), these services include, "professional services intricately linked to warfare such as intelligence surveillance, military training support, or technical skills" (p. 8). Table 7 lists the top ten contractors of professional, admin and management support services to the US Government for FY 2009—current as of October 21, 2009 (OMB, 2009b). Of the ten companies listed, five are PMCs or have PMC subsidiaries—based on Avant's "inventory of military and security companies" (2005, p. 9). Based on the number of PMCs in Table 7, we are confident that the majority of PMC services are classified as Category R services by the Federal government. This factor is important because it strengthened our belief that the preponderance of survey participants would direct their services towards DoD, DoS, or other large US Government agencies.

Table 7.   Top Ten Contractors of Category R Services

Top 10 Contractors of Professional, Admin, and Mgmt Support Services by Contracted Amount	
Company Name	**Contract Amount (FY 2009$)**
Northrop Grumman Corp	$1,860,120,934
Lockheed Martin Corp	$1,698,750,463
United Space Alliance, LLC	$1,377,831,402
Computer Sciences Corp (CSC)*	$1,246,764,618
L-3 Communications Holdings, Inc.*	$1,243,372,596
DynCorp International, Inc.*	$1,148,221,130
Booz Allen Hamilton, Inc.*	$1,086,526,971
SAIC, Inc.*	$1,084,919,754
Jacobs Engineering Group, Inc.	$1,013,606,422
The Boeing Company	$980,619,141

* PMC or has PMC subsidiaries (e.g., L-3's MPRI)

Figure 8 is the compilation of all responses to Item 8 of the questionnaire. As we discussed previously, participants were asked to rate to what degree their represented firms directed services to a specific set of customers. The options given on the questionnaire were as follows:

- US Department of Defense (WFDoD)

- US Department of State (WFState)

- US Agency for International Aid (WFUSAID)

- Other US Agencies (WFoUS)

- US States and Local Governments (WFStates)

- Non-US Government Agencies (WFnonUSG)

- Corporations and Businesses (WFcorps)

- Private Citizens (WFCitz)

- United Nations (WFUN)

- NATO (WFNATO)

- Non-governmental Organizations (WFNGO)

The overwhelming response was that represented companies reported working "mainly" for DoD with DoS being a close second. Very few represented companies reported working "exclusively" with any single entity, and there were a significant number of respondents that reported working "somewhat" with the US Government in one capacity or another. In contrast, the response rate for "none" was highest amongst non-government groups such as private citizens, the United Nations, NATO, and non-governmental organizations (NGOs). Therefore, it is evident that the majority of the represented companies do not consider the latter organizations to be a significant portion of their customer base.

PMCs Reported Customers

	WFDoD	WFDoS	WFUSAID	WFoUS	WFStates	WFnonUSG	WFcorps	WFCitz	WFUN	WFNATO	WFNGO
Exclusively	4.3%	1.5%	0.0%	1.5%	0.0%	0.0%	1.5%	1.6%	0.0%	0.0%	0.0%
Mainly	62.9%	9.2%	0.0%	17.9%	9.1%	4.7%	14.9%	6.3%	0.0%	0.0%	3.1%
Somewhat	18.6%	32.3%	9.4%	35.8%	28.8%	10.9%	28.4%	7.9%	1.6%	10.6%	9.4%
Little	8.6%	33.8%	25.0%	29.9%	33.3%	35.9%	34.3%	6.3%	20.3%	28.8%	21.9%
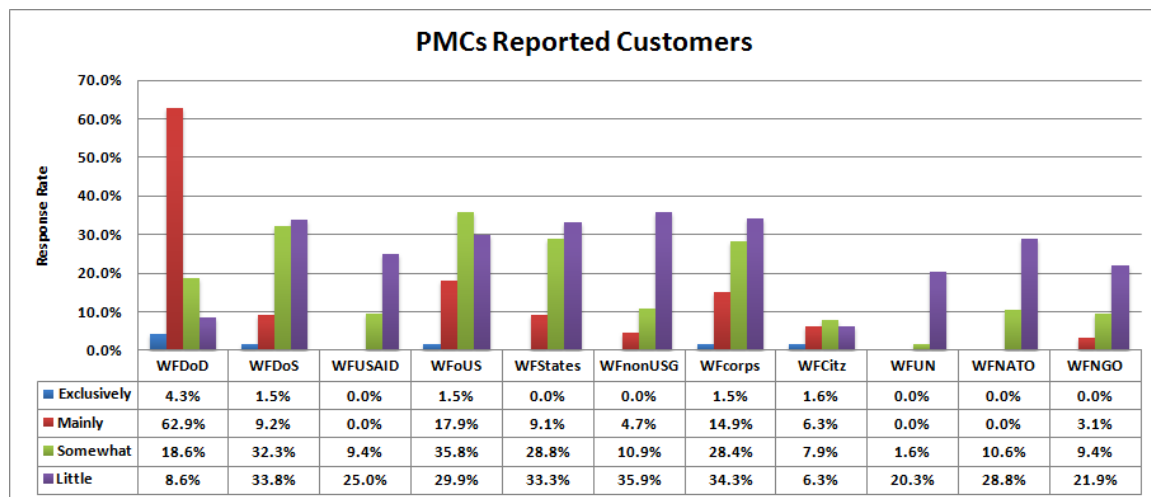
Figure 8.   PMCs and Their Reported Customers

After we determined that the majority of represented firms worked mainly for DoD or DoS, we then wanted to see if there was a correlation between whom PMCs hired and their targeted clients. In business networks, this is called "matching" and is defined by how suppliers, in our case PMCs, match their products and labor services to their targeted customer base (Spulber, 1998). Companies must consider many different variables before they can effectively match their services to the US Government. One of the biggest factors to consider is what kind of professionals to hire or what type of technical skills are necessary to effectively compete for and win

a Federal contract. Therefore, PMCs must either carefully choose what type of employees they want to hire or have a robust in-house training program to remain competitive in today's government-outsourced market.

Table 8 illustrates the relationship between the represented companies' targeted customers and the skills that employee respondents reported as critical to their company's success. We expected to see positive correlations between working for DoD and former military personnel, to include military personnel with intelligence training. We also expected to see positive correlations between DoS and military skills but were not expecting to see positive correlations between DoS and all skill categories. We can better understand the unexpectedly high correlations between DoS and special operations (.397) and law enforcement skills (.411) by investigating the type of contracts awarded to PMCs by DoS.

Table 8.   Correlations: Firms' Targeted Customers and Critical Employee Skills

Who Firms Hire by Targeted Customer						
	SkillsMil	SkillsSpecOps	SkillsLE	SkillsIntel	SkillsLegal	SkillsInHouse
WFDoD	0.375	0.208	-0.273	0.305	-0.053	-0.116
WFDoS	0.196	0.397	0.411	0.203	0.289	0.010
WFUSAID	0.021	-0.017	0.295	0.096	0.112	-0.083
WFoUS	-0.120	0.242	0.202	0.401	0.280	-0.124
WFStates	-0.195	0.193	0.307	0.216	0.223	0.139
WFnonUSG	0.003	-0.007	-0.009	0.053	-0.056	0.031
Wfcorps	-0.246	0.112	-0.156	-0.244	-0.029	0.137
WFCitz	0.063	0.413	0.220	0.229	-0.034	-0.239
WFUN	-0.080	-0.167	0.109	-0.193	-0.162	0.115
WFNATO	0.270	0.185	0.112	0.345	0.192	0.003
WFNGO	0.090	0.319	0.225	0.199	0.158	-0.358

Note: Shaded cells are significant correlations

To find the most recent example of why positive correlations exist among DoS and military skills, Special Forces skills, law enforcement skills, intelligence skills, and legal skills, we took a second look at the DoS IDIQ AFRICAP contract referenced in Paragraph 4, IV (US DoS, 2008). In this contract, DoS required the awardees to, "provide military training and advising, maritime security capacity

building, equipment procurement, operational deployment for peacekeeping troops, and aerial surveillance" (US DoS, 2008, p. 7-14). In order for a winning company to satisfy all requirements, it needs a diverse workforce—one that is familiar with military operations, personal security detachments (PSDs are traditionally conducted by Special Forces), police regulations, and intelligence collections and analysis. Thus, after examining an actual example of DoS contractual requirements, we found the positive correlations are consistent with the skills a PMC must exhibit in order to win the contract and complete the mission.

Moving on to the other relationships between targeted customers and those whom firms hire, we discovered several areas that warranted further investigation. The link between other US Government agencies and intelligence skills (.401) is a significant positive relationship and cannot be explained without knowing how respondents interpreted the term "other US agencies." Since all firms in our sample were listed in Avant's work (2005) as PMCs, it is reasonable to assume that because of respondents' knowledge of the industry, they interpreted "other US agencies" to mean agencies such as the Central Intelligence Agency (CIA), the Federal Bureau of Investigation (FBI), or the Department of Homeland Security (DHS). Consequently, any US agency outside DoD involved in defending the nation (e.g., DHS) would require a PMC that could provide intelligence services in support of a potential contract.

Other noteworthy relationships existed between companies reporting that states and local government and private citizens were their target customers. Represented PMCs that reported state and local governments as their target customer appeared to favor personnel with law enforcement skills. Intuitively this makes sense because before 9/11, law enforcement skills were most useful to these types of customers. We also found that represented companies that reported targeting private citizens as customers had the highest positive correlation (.413) with Special Forces. This, too, makes sense, because PMCs that market their services towards private citizens usually do so in the realm of armed personal security. This relationship between the preferences of PMCs in the private security

business to hire former Special Forces operators does not mean that these are the only individuals they recruit, but that these skills are in high demand amongst PMCs that operate personal security detachments.

6. Private Military Markets and Services

Prior research into PMCs spawned Singer's "Tip-of-the-Spear" conception model, which organizes PMCs within the battle-space based on a company's historical proximity to the forward line of troops (FLOT) (Singer, 2003a, p. 93). The tip-of-the-spear model fixes companies in a classification system that only allows companies to move up and down the spear, with the tip representing the FLOT and the base of the shaft representing the defense support system. Avant argued, that it was easy for firms to move from one service type to another so, she adapted Singer's model using contracts as the unit of analysis rather than a firm's historical performance (Avant, 2005, p. 17) (see Chapter II, Figure 1). This model might have held true in the Cold War era, but in modern times, it distorts a rather complex picture of overlapping market sectors and masks the recent trends towards consolidation within the PM industry. The data collected from our survey suggests that the PM sector is a collage of small, medium, and large firms that can readily adapt their services to meet the demands of their customers and the challenges of asymmetric warfare.

After eight years of asymmetric warfare in the Middle East, PMCs have evolved to effectively compete in the new government-outsourced market. Asymmetric warfare is characterized by unconventional threats, which are difficult to respond to using modern conventional weapons and tactics (Lambakis, 2004). In the absence of a front line, US forces have modified their operating procedures to counter these irregular threats. Units that normally enjoyed the relative safety of operating miles from the front lines have now developed organic security, intelligence, and recovery assets simply to survive Improvised Explosive Devices. Like the military units they support, PMCs have also adapted to support their

customers on this new irregular battlefield. PMCs have developed or acquired "organic" services that allow them to diversify and penetrate market segments historically dominated by a handful of firms. It is because of these observations that we created a different way to classify the PM sector that takes into account market flexibility and service diversity. The schema chosen to augment Singer's (2003a) Tip-of-the-Spear model was a market-sector grid (Figure 9) patterned after Morningstar Incorporated's Stylebox™, (Morningstar Investments, 2009).

Firm's Focused Market Segment

	Support Services	Training & Advisory	Inherently Military
Large		*Company X*	
Medium			
Small			

Firm Size by Revenue (vertical axis label)

Figure 9.   Example of a PMC Market-sector Grid

Figure 9 provides an example of how a market-sector grid might be used to help understand how a company distributes its service offerings to customers from a macro point of view. The nine-square grid classifies companies according to respondents' reported market capitalization along the vertical axis into small, medium, or large firms. Of course, public companies would be classified as large, while SDVO, VO, and 8(a) companies would be placed between the other two measures. Along the horizontal axis, firms would be classified by what types of services they offer their targeted customer base. In this example, we grouped the 11 categories from Item 9 of the questionnaire into three service sectors modified from Singer's (2003a) Tip-of-the-Spear-Typology. The elements that make up our sectors are grouped as follows:

- Support Services—logistical support, base operations, construction, facilities management, medical and legal services,

- Training and Advisory Services—strategic and operational analysis, risk assessment, and technical training,

- Inherently Military Services—armed and unarmed security details, intelligence, Explosive Ordinance Disposal (EOD), and aviation-related services.

Of course, these service sectors could be expanded or reduced depending on changes within the market segment. In Figure 9, our example company is a large public firm that provides training and advisory services but offers some services classified as inherently military. To build a grid like this, an analyst would need to review financial documents (such as annual reports), prior contract performance, and the company's self-professed abilities. Then, using a weighted average of the firm's services and comparisons of its services to the PM market segment as a whole, one would determine where to place the symbolic box in relation to the grid. For our example, let us say the company generated only 25% of its revenue from security details and the rest (75%) from operating a tactical marksmanship contracted by DoD. Therefore, 75% of the company's market box is in the "training and advisory" category with the remaining market box overlapped into "inherently military services."

Analysts would need to create a market-sector grid for each company in order to understand how it interacts with the three different market segments and to compare each company to the others. Over time, PMCs will focus their services on the needs of their customers and will easily transition from one service sector to another by modifying their business strategy or acquiring smaller firms. In fact, in September 2009, we saw an example of a company expanding their service sectors when DynCorp International acquired Phoenix Consulting Group for an undisclosed sum (DynCorp, 2009). DynCorp typically specializes in security, logistical support, aviation-related services, and police training, but by acquiring Phoenix, it has now moved into the realm of intelligence services (Hedgpeth, 2009). This is the type of acquisition that allows a firm to specialize in many market segments while simultaneously providing tailored services to specific government customers.
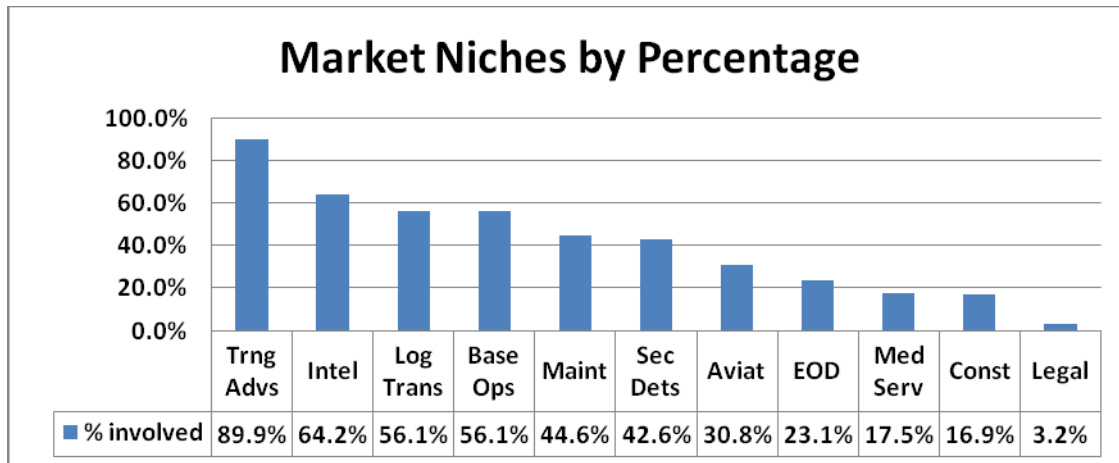
Figure 10.   Market Niches by Percentage

Another way to look at the diverse services offered by the represented companies is to sum the responses to Item 9 of the questionnaire. Figure 10 illustrates the aggregate response rate to the type of government-outsource solutions that respondents indicated they offered to customers. All responses were included in this aggregate except for when a respondent indicated it was not part of his or her business. Our survey indicates that the PM industry is most frequently involved in services that are inherently military in nature such as training, advising, and intelligence services. This is closely followed by support services such as logistical support, transportation, base operations, and maintenance services.

Although Figure 10 reveals the frequency of each service offered by represented companies, it does not show the variety of niche markets in which each PMC participates. The diversification of firms can help explain the degree of adaptability in the PM industry, since our data suggests that PMCs easily switch between service sectors depending on client requirements. Figure 11 illustrates the number of represented companies that reported offering more than one type of service. This chart captures the variety of services offered by our respondents' firms and reveals how diversified PMCs really are.
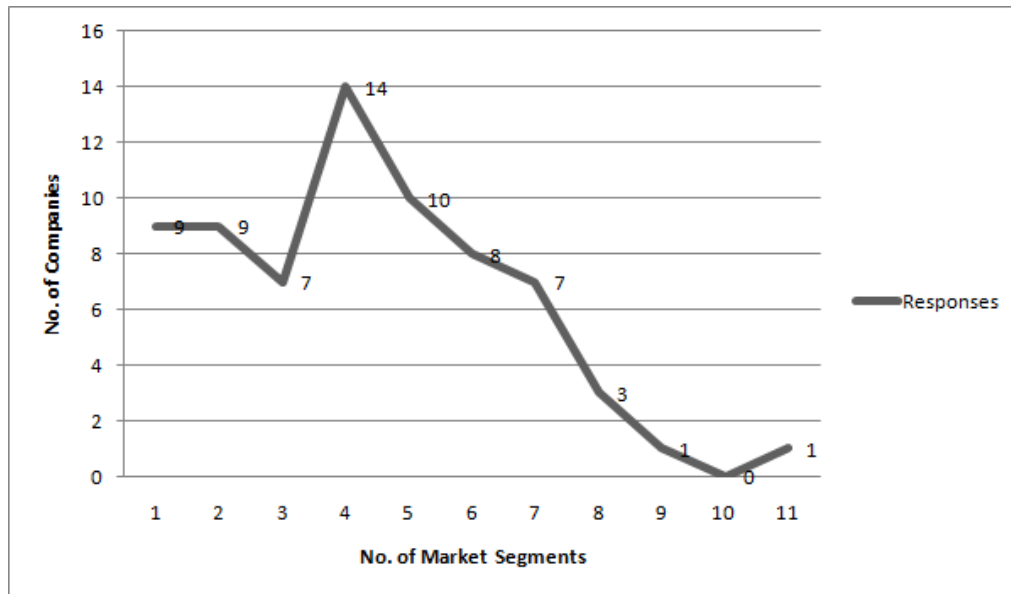
Figure 11. PMC Market Segments Frequency

In Figure 11, the number of market segments corresponds to the 11 service options listed in Item 9 of the questionnaire (Appendix A). The modal response to our survey was four—meaning 20.3% of represented companies reported functioning in four market segments to some degree simultaneously. The data also indicates that only 13% of respondents worked in a single market segment. Overall, 87% of all represented companies reported operating in more than one market, with 63.8% reportedly operating in four or more market segments. Therefore, our survey data supports the assumption that the PM industry is very diverse and that PM companies are able to alter their offering of services in order to capture different market niches.

7. Cooperation and Competition in the Industry

The data derived for this section came from Items 15 and 18 of the questionnaire: why firms work with or avoid each other. In general, representative companies agreed on what factors were important when cooperating with other firms regardless of what market niches the respondents were from. If a firm lacked these factors, perceived as necessary for cooperation, then represented companies were inclined to avoid that firm altogether. For example, a majority of represented

companies indicated they wanted to work with firms that were "professional" and could "get the job done" and attempted to avoid working with firms that "can't get the job done" or are "not professional." These simple relationships were expected, so we also ran correlations on both Items 15 and 18 to see if there was a pattern between factors supporting or hindering cooperation.
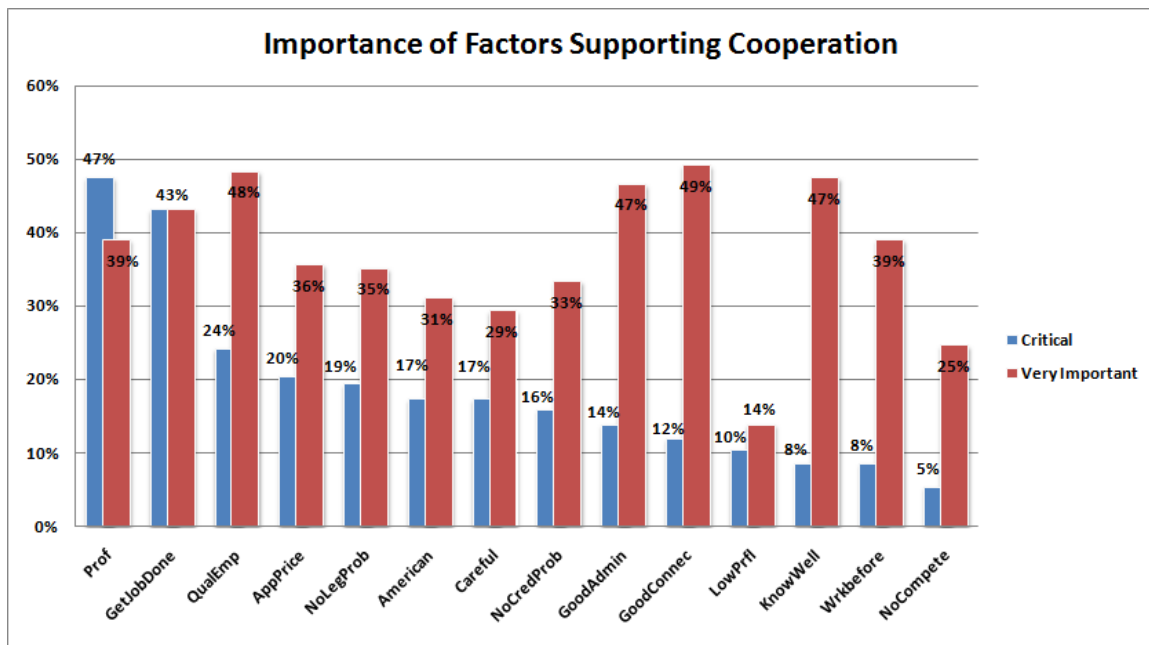
Figure 12.   Importance of Factors Supporting Cooperation

Figure 12 illustrates the two most significant factors represented companies considered when choosing PMCs with which to partner. On a scale of 5 to 1, five being an attribute that was absolutely critical and one being an attribute that was not important, 86% (the sum of both critical and very important responses) reported professionalism as an essential element of cooperation. Not surprisingly, ability to "get the job done" was also ranked highest with 86%, but this attribute was split evenly between the attributes *Critical* and *Very Important*. The remaining absolutely critical scores begin to diminish rapidly after "they hire well-qualified employees" (QualEmp), but the majority of respondents still scored "they are well administered" (GoodAdmin), "their connections might help grow our business" (GoodConnec), "our company knows them well" (KnowWell), and "worked for them before" (Wrkbefore) as very important elements of cooperation.

Surprisingly, the consensus amongst our survey participants was that "maintaining a low profile" (LowPrfl) or "being careful" (Careful) was not as important as we previously expected. We considered negative press coverage, such as what Blackwater, Inc., (now Xe) received in April of this year, to significantly damage the reputation of a firm, potentially making it difficult for that firm to compete on future federal contracts, and was, therefore, to be avoided (Blackwater's dark heart, 2009). However, the exact opposite was true. More than 76% of represented companies felt that maintaining a low profile was only moderately important, with 41% stating it was not important at all. Conversely, 53% of represented companies felt being careful was only moderately important. The implication of these factors having diminished significance with regards to business cooperation is hard to determine, but it might simply be that the factors of "professionalism" and "the ability to get the job done" supersede these two other elements.

Recording the response frequencies for factors important to cooperation only allowed us to look at each element independently. For that reason, we decided to see how each element was correlated with another. Table 9 shows all the correlations between the 14 factors essential to cooperation amongst firms. The absence of credit problems and the absence of legal problems is highly correlated (.898). This is not surprising, as desirable partners usually have sound accounting practices and the absence of litigation troubles. "Worked for them before" is highly correlated to "our company knows them well" and "connections may help us grow our business," indicating that firms appear also to value previous relationships when deciding with whom they will partner. Finally, "they hire quality employees" is highly correlated with "professionalism," a "well-administered firm," and "getting the job done." All four of these elements are reflections of how respondents view their own represented company. We know this because of the responses to Item 11 of the questionnaire, "characteristics that set your company apart from your competitors," had very similar responses. Represented firms that see themselves as having a good business structure, hiring well-trained employees, and as being professional will seek these same types of traits in a potential partner.

Table 9.   Correlations: Factors Essential to Cooperation

	App Price	No Compete	No CredProb	No LegProb	Wrk before	Know Well	Good Connec	USA	Prof	LowPrfl	Careful	Good Admin	Qual Emp	GtJbDn
AppPrice	1.000	0.337	0.395	0.354	0.049	0.040	0.083	0.326	0.117	0.010	-0.117	0.229	0.000	0.084
NoCompete		1.000	0.381	0.454	0.437	0.324	0.306	0.394	0.085	0.313	0.154	0.152	0.079	0.188
NoCredProb			1.000	0.898	0.265	0.234	0.095	0.320	0.410	0.226	0.373	0.467	0.403	0.256
NoLegProb				1.000	0.222	0.185	-0.019	0.301	0.392	0.231	0.322	0.264	0.371	0.297
Wrkbefore					1.000	0.757	0.591	0.377	0.221	0.357	0.185	0.168	0.154	0.145
KnowWell						1.000	0.450	0.222	0.254	0.573	0.319	0.357	0.289	0.350
GoodConnec							1.000	0.445	0.159	0.171	-0.166	0.206	0.074	0.106
American								1.000	0.157	0.259	-0.085	0.358	0.140	0.081
Prof									1.000	0.390	0.344	0.401	0.608	0.429
LowPrfl										1.000	0.628	0.376	0.321	0.285
Careful											1.000	0.222	0.319	0.333
GoodAdmin												1.000	0.544	0.280
QualdEmp													1.000	0.759
GtJbDn														1.000

Figure 13 ranks the magnitude of each factor that would cause a represented company to avoid working with another PMC. On a scale of 5 to 1, 5 being an attribute that was absolutely critical and 1 being an attribute that was not important, we were able to score the overall importance of each avoidance factor using the represented firms' responses. In our survey, 74% (the sum of both critical and very important responses) reported the "inability to get the job done" as the most important element that kept them from partnering with other PMCs. The second most important factor was the perception of professionalism. In our sample, 69% of respondents reported that the lack of professionalism within a partner company was enough justification to avoid working with it. Finally, the third most important factor that would cause a represented company to avoid another PMC was the perception of bad administration practices. More than 69% of participants indicated that a company with bad administrative practices was a company to avoid. We considered senior managers' past negative experiences with firms that had poor administrative practices as the reason for avoiding firms with this trait, whether the trait was real or perceived. To investigate this premise, we ran correlations on each element, as we did with the cooperation factors in the preceding paragraph.
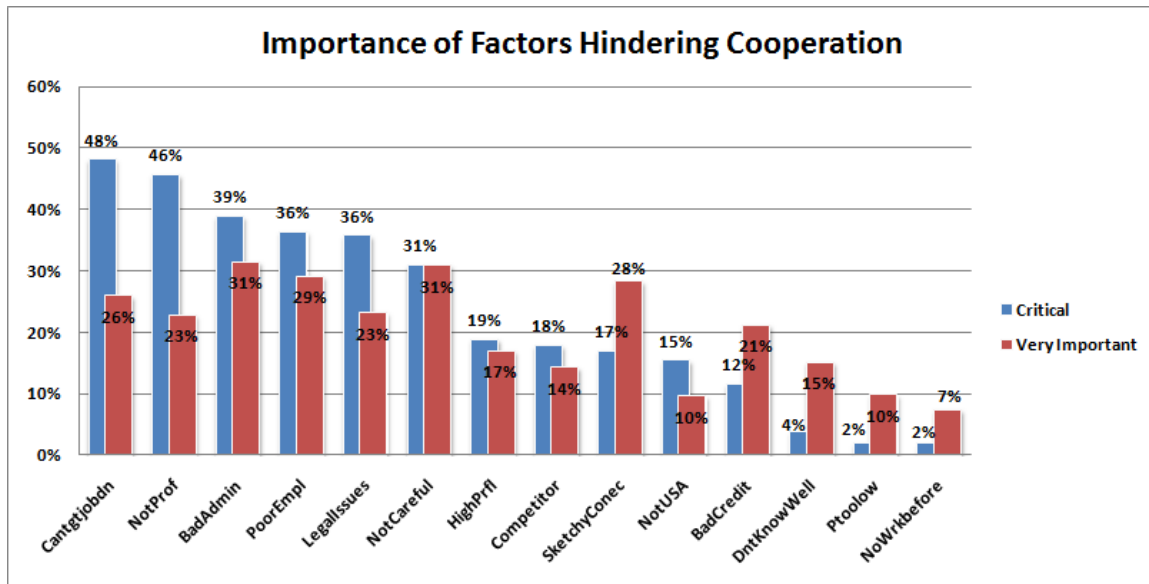
Figure 13. Importance of Factors Hindering Cooperation

Table 10 shows all the correlations between the 14 factors that would cause a company to avoid other PMCs. Not surprisingly, many of these factors are so detrimental to relationships between firms that they are highly correlated with one another. The data suggests that "not being professional," "not being careful," "having a poorly administered company," "hiring poor quality employees," and "the inability to get the job done" all contribute to the perception that a potential partner might also have other problems such as bad credit issues. The highest correlations in this data set were "hiring poor quality employees" and "bad administration practices" (.831). The next highest correlation was between "bad administration practices" and "the inability to get the job done" (.757). The factors that discourage competition indicate that respondents view poor administrative practices to be highly connected with a firm's legal problems and positively correlated with financial troubles as well. This reaffirmed our presumption that senior managers in the PM industry view poor business administration practices as an indicator of a firm's other hidden problems. The high degree of correlation between the many of these factors reinforces the importance of high-quality business relationships within the PM industry.

One should note that "the inability to complete a job" is highly correlated with "undesirable connections" (.516), "not being professional" (.704), "not being careful enough" (.713), "bad administration practices" (.757), and "poor-quality employees" (.675). This reveals that members of PMCs use a very refined heuristic when evaluating companies with which to work. Whether it is from personal experience or by observing other companies within the industry struggle with bad partnerships, our respondents definitely believe these factors play a significant role in how well a firm executes a contract. Given that PMCs are predominately staffed by highly trained professionals from the military, law enforcement, and business world, they demand the same level of proficiency in any potential partner firm and would actively avoid a firm exhibiting any of these negative traits.

Finally, some of the traits with little or no correlations with other factors were companies that "priced too low," companies that "competed in the same space" as our respondents' firms, and firms that "had connections to other disreputable companies." According to the data, all three of these factors appeared to have little influence on most of the other factors that would cause a PMC to avoid partnering with another firm. Surprisingly, whether a company is American-based or not had little impact on other factors that caused a PMC to avoid another company. This observation in the correlation table is supported by the low frequency of respondents valuing this factor as critical or very important. Hence, the excellence of a PMC appears to be based on the quality of the employees, their professional skills, and the ability to get the job done—all traits that help build and maintain a PMC's reputation as a superior firm in the PM industry.

Table 10.   Correlations: Factors that Discourage Cooperation

	Price toolow	Comp etitor	Bad Credit	Legal Issues	NoWrk before	Dnt Know	Sketchy Conec	Not USA	Not Prof	High Prfl	Not Careful	Bad Admin	Poor Emp	Cantgt jobdn
Ptoolow	1.000	0.179	0.680	0.252	0.421	0.445	0.001	0.550	0.319	0.299	0.327	0.187	0.221	0.250
Competitor		1.000	0.369	0.398	0.346	0.369	0.122	0.163	0.186	0.320	0.258	0.074	0.206	-0.036
BadCredit			1.000	0.498	0.625	0.553	0.155	0.641	0.537	0.429	0.602	0.401	0.535	0.445
LegalIssues				1.000	0.429	0.280	0.346	0.324	0.574	0.574	0.623	0.652	0.504	0.488
NoWrkbefore					1.000	0.630	0.447	0.544	0.708	0.372	0.560	0.511	0.540	0.477
DntKnowWell						1.000	0.162	0.434	0.356	0.412	0.504	0.301	0.501	0.337
SketchyConec							1.000	0.043	0.609	0.205	0.343	0.548	0.535	0.516
NotUSA								1.000	0.397	0.374	0.417	0.418	0.427	0.465
NotProf									1.000	0.374	0.680	0.734	0.727	0.704
HighPrfl										1.000	0.678	0.505	0.435	0.363
NotCareful											1.000	0.696	0.668	0.713
BadAdmin												1.000	0.831	0.757
PoorEmpl													1.000	0.675
Cantgtjobdn														1.000

C.   Summary of Analysis

Throughout this chapter, we have endeavored to present this information in a meaningful manner to help DoD acquisition professionals better understand the US-based PM industry. All of the data collected indicates that the US-based PM industry is a highly diversified network of companies that provide a wide range of services primarily to US Government agencies and the military. The majority of PMCs contract or hope to contract with the DoD and DoS and are actively engaged in four or more market segments. PMCs appear to be most active in the training and advisory market segment with security detachments—once a principal portion of many PMCs business structure, now ranked in the 50th percentile of market segments.

We know that professionalism and the ability of a PMC to complete a mission, to hire quality employees and to manage its firm well are elements that the PM industry as a whole seeks when establishing partnerships. Conversely, the absence of these same three elements (together with business practices not considered careful enough) will likely deter a firm to partner with another PMC. However, one must always consider price as an independent variable when firms contract with one another. Firms with cheap foreign labor will still be subcontracted because of the potential for higher revenues. Finally, we know that the PM industry is branching into growth markets, such as Africa, in preparation for the eventual cessation of hostilities in both Iraq and Afghanistan. PMCs are also actively pursuing a strategy

of vertical integration by acquiring smaller firms or increasing their service footprint in an effort to remain viable once combat operations terminate in the future. This strategy represents a blurring of the lines between traditional defense contractors and the realm of the dedicated Private Military Company.

THIS PAGE INTENTIONALLY LEFT BLANK

V.   Future of the Industry

A.   Introduction

The Department of Defense (DoD), Department of State (DoS), and other government agencies must understand the future of the private military (PM) industry and how it will change once conflicts in Iraq and Afghanistan come to a close. To answer the question of why it is so critical to understand how this industry will change in the future, one simply needs to examine the US Government's own internal reporting on the PM industry. A Congressional Budget Office (CBO) investigation of the three largest operations of the past 15-years provides some interesting data, displayed in the graph below (as cited in Schwartz, 2009).
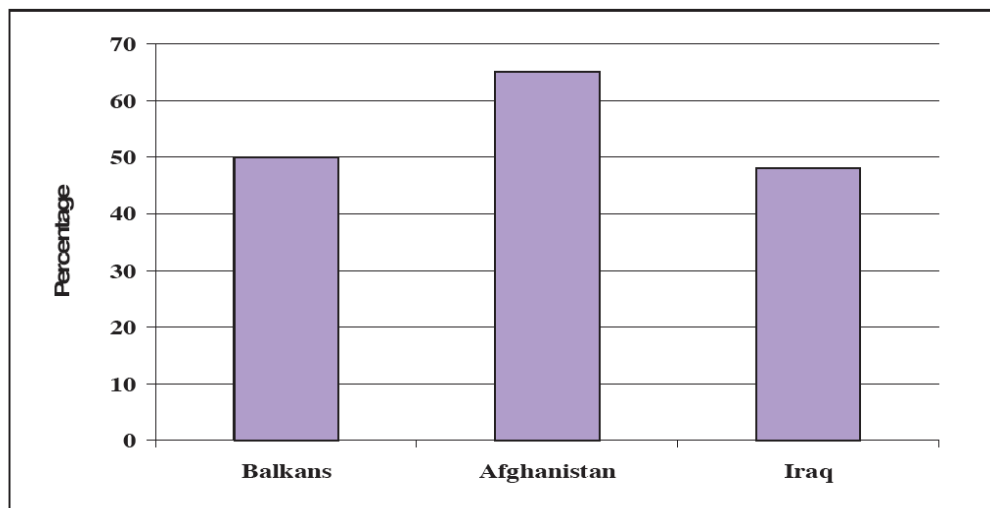
Source: Congressional Budget Office. *Contractors' Support of U.S. Operations in Iraq.* August 2008. pg 13; Afghanistan and Iraq: CRS Analysis of DOD data

Figure 14.   Contractors in USCENTCOM, 2008
(as cited in Schwartz, 2009, p. 13)

Figure 14 shows that by 2008, approximately 50% of the entire workforce within the United States Central Command's (USCENTCOM) areas of operation (AOR) was comprised of contractors. The above data falls right in line with a USCENTCOM *Quarterly Contractor Census Report* from March 31, 2009 (as cited in Schwartz, 2009). USCENTCOM posted the numbers of personnel for both troops

and contractors currently in Iraq, Afghanistan, and the entire USCENTCOM Theater. We created Figure 15 in order to show a visual comparison of contractor and troop strength based on USCENTCOM statistics.
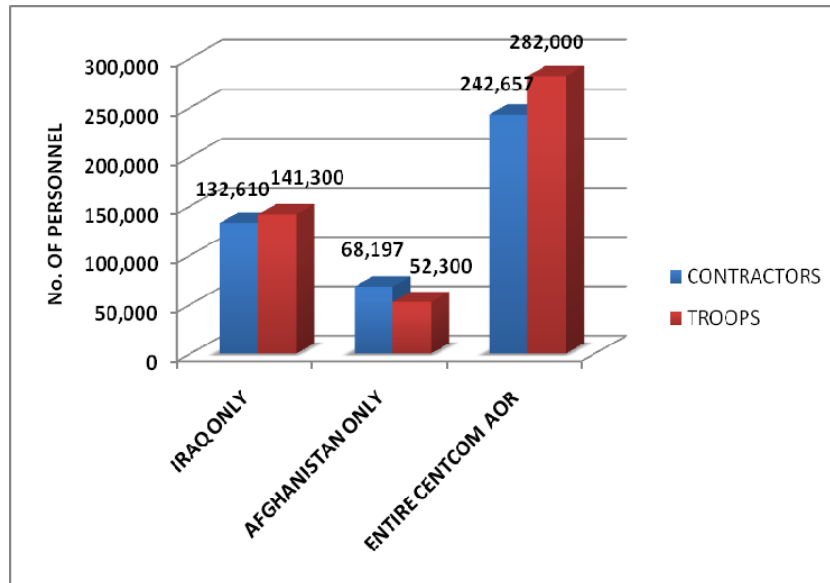
Figure 15.   Contract Personnel in USCENTCOM
(from Schwartz, 2009 p. 4-6)

As seen above, the ratios are almost 1:1 across the spectrum. More specifically, in Iraq, the ratio is .94:1 in favor of troops. Amazingly, in Afghanistan, the ratio is 1.30:1 in favor of contractors. In the entire USCENTCOM area of operations, the ratio is .86:1 in favor of troops. The Congressional Research Service (CRS) report referenced (Schwartz, 2009) above admits a glaring oversight on the part of DoD. It points out the fact that DoD does not report the kinds of services that contractors provide in Afghanistan as it did in Iraq, making it difficult to compare and contrast the two areas of operation.

If this increase in contractors is going to be the standard for major operations in the future, DoD must be meticulous in its review and selection of private military companies (PMCs). An understanding how PM insiders—senior executives of PMCs—perceive the future of their own industry provides government officials a rare insight into the direction the industry is headed in the near-term and could aid decision-makers as they select PMCs for future contracts. Our survey helps to fill

some information gaps in the CBO and CRS reports, but it is not conclusive because the data harvested from the open-ended questions are professional opinions. However, the insight these industry professionals provide, along with increased industry transparency in the coming years as DoD increases oversight will help paint a comprehensive picture of an industry that has become a strong component of the Military-industrial complex (Schwartz, 2009).

B.   Data Analysis

The third part of our questionnaire contained six questions relating to the future of the PM industry. Items 19-24 of the questionnaire (Appendix A) asked about subjects such as industry growth, future services and demand thereof, future client base, expected competition, the biggest challenges that lie ahead, and the greatest anticipated opportunities. Analysis of the responses provided great insight as to how the industry sees its future.

1.   Item 19: Future of the Industry

In Item 19, we asked participants to answer the question: "In the future, do you think the industry will grow, shrink, or remain about the same? Why?" Sixty-five respondents (92%) answered this question. The responses to this question are very important for DoD. Overwhelmingly, the industry believes it will grow in the future. Nearly 60% of the respondents answered in favor of growth. Of the 37 answers supporting growth, 40% of those cited either security concerns or a growing threat as the reason for growth. The other respondents were almost equally divided (20-23%) as to whether the industry will shrink or stay the same. More than 50% of the 13 respondents who see the industry shrinking in the future said the cause would be due to political pressure, which we interpret to mean the pressures a new Democratic administration might receive to cut overall Defense spending or withdraw troops from Iraq and Afghanistan. Nearly all the remaining respondents who

indicated the industry would remain the same referenced budget issues as the primary reason. We interpret this to mean that funding cuts will come to government agencies, which will have a negative effect on future growth.
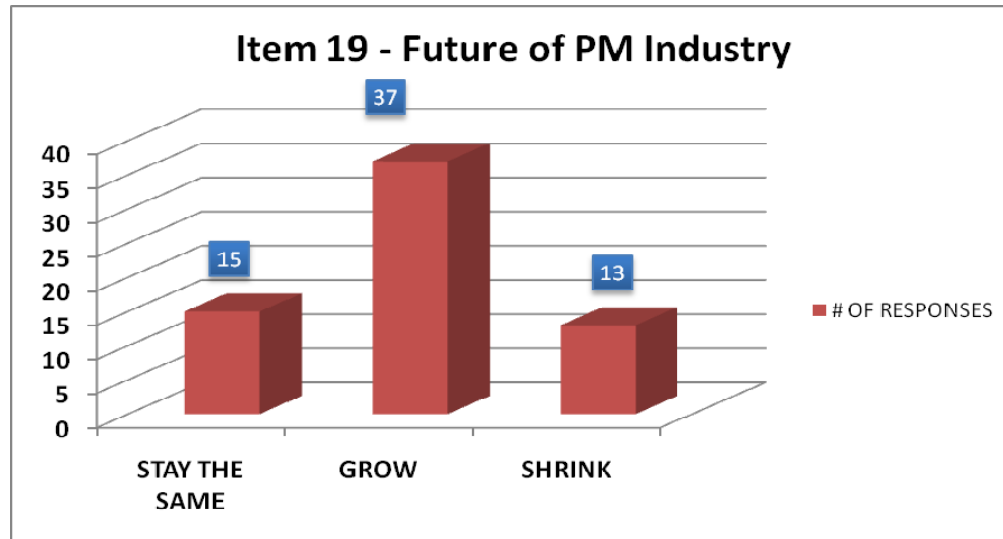
Figure 16.   Frequency Graph: Future of the PM Industry

2.   Item 20: Future of Services Demanded

In Item 20, we asked participants to answer, "In the future, what services do you think will be most in demand and where?" Although many respondents suggested that demand would increase in the intelligence or cyber security services, there were too many different answers to provide us with data from which we could draw any conclusions. The answers covered the entire spectrum of services that PMCs typically offer, but several respondents did have similar responses to this question. Some of the related answers to this item revealed the following suggestions:

- Need for more secure DoD information technology infrastructure and cyber security

- Increased need for Chemical, Biological, Radiological, and Nuclear (CBRN) protection

- Increased need for intelligence training and intelligence support services

- Management of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR), and

- Increased need for information security and homeland defense

3.   Item 21: Changes in Client Base

In Item 21, we asked participants to answer, "Do you expect your client base to stay the same or change? If you expect a change, what changes do you anticipate?" On this item relating to client bases, we received 67 complete responses (94% of total sample). Twice the number of respondents thinks the industry's client base will change in the future. Shifting focus from Iraq and Afghanistan to other geographic areas was the number one reason for this response. Many respondents indicated that they believed both the Iraq and Afghanistan areas of operation would diminish and that their firms would need to expand or offer other types of services. Inevitably, and as indicated in Chapter IV of this project, PMCs will spend money to provide the service that they anticipate will be of the highest demand.
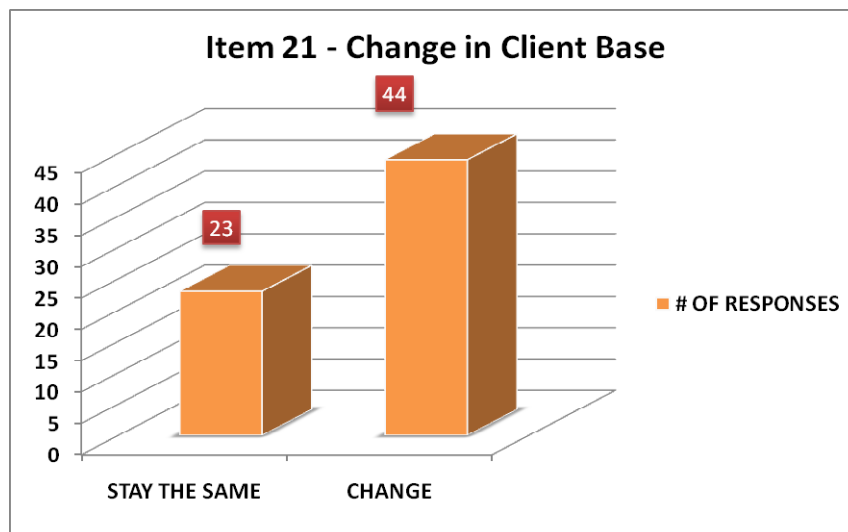
Figure 17.   Changes in Client Base

4. Item 22: Changes in Competitors

In Item 22, we asked participants to answer, "Do you expect to compete against the same competitors in the future or will they change? If they change, what changes do you anticipate?" Ninety percent of participants answered Item 22. Respondents see their competitors remaining the same in the future by a ratio of 3:1. The 17 respondents that believe competition will change cited acquisitions of smaller firms by larger firms or that many small firms will go out of business as the reasons for indicating change within the industry.
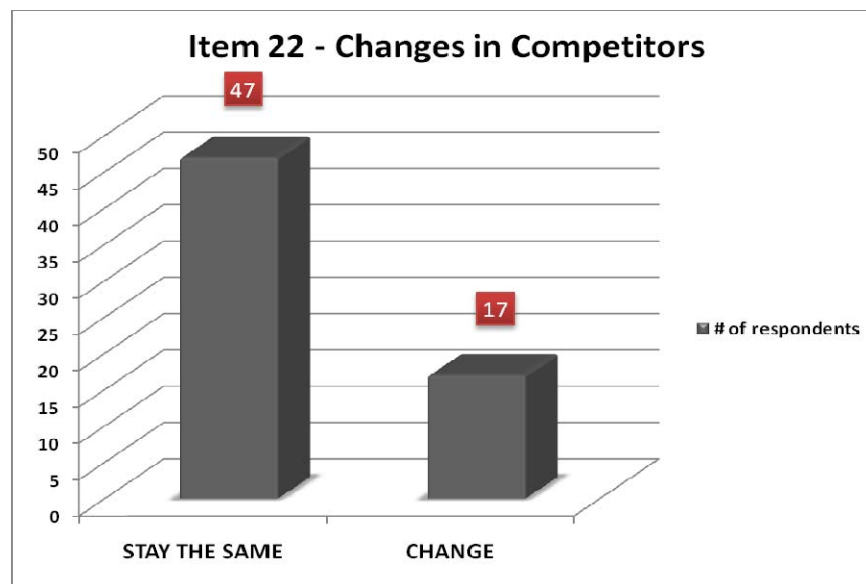
Figure 18.   Changes in Competitors

5. Item 23: Future Challenges Facing the Industry

Figure 19 illustrates the frequency distribution of responses to Item 23, "What do you think are the biggest challenges the industry faces in the future?" Thirty-five percent of respondents felt the biggest challenge facing the industry in the future was reduced customer budgets. The second-most-cited challenge facing the industry was increased regulation by Congress or other government entities. Interestingly enough, this belief is the same as those respondents who think the industry will remain the same because of Federal budgetary constraints (See Item 19). It appears there is a strong connection between how the Federal government is

funding contracts and how that method affects the way the PMCs see the industry developing in the future. Surprisingly, credibility received the fewest number of responses. Even after recent events with Xe (formerly Blackwater) and ArmorGroup North America (AGNA), PMCs seem to view their government-outsourced services as indispensible, regardless of how the public or Congress may perceive them.
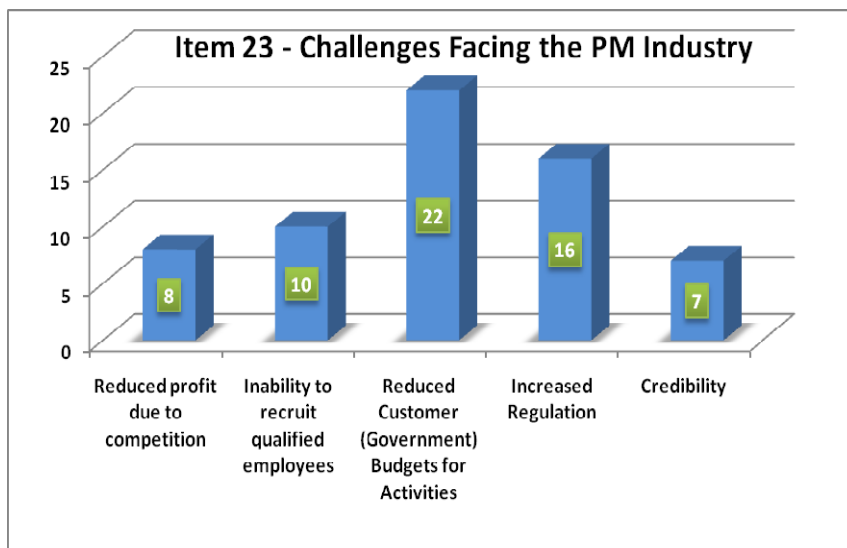
Figure 19.   Challenges Facing the PM Industry

6.   Item 24: Future Opportunities for the Industry

In Item 24, we asked participants to answer, "What do you think are the biggest opportunities for the industry in the future? Why?" It was difficult to find consent amongst the participants on what the "biggest" opportunity was for the PM industry in the future. Many respondents left this item blank or provided answers that only reflected their particular service sector. We had hoped to uncover some industry trends from this question, but an analysis of the responses was not possible given the diverse data collected. Therefore, we have included the participants' raw responses in Appendix F for the reader to review.

C.   Assessment on the Direction of the Industry

In summary, the data analysis revealed that respondents believe the PMC industry will continue to grow; its client base will change; the competition will most likely remain the same; and, the industry will face one of the biggest challenges of all in the perception of reduced government budget for PM activities.

We agree that the industry will continue to grow despite the fact that more and more PMCs have been portrayed poorly by the media. A 2005 RAND Corporation study believes that DoD and, more specifically, the Department of the Army, has stretched itself so thin that it couldn't possibly maintain operations without the help of some PMCs, especially those that provide logistics support (Davis, 2005). Military members that were once trained to do these logistics-type jobs have now been re-designated to perform combat-related functions, and this has created an almost permanent position for contractors. We believe the driving factor regarding the client base will be determined not only by future government budgetary and economic decisions but also by foreign policy. Those companies that do not continue to make a profit will cease to exist, and larger companies will acquire those that achieve steady growth.

The industry competition will most likely remain the same along the spectrum of the types of services provided, but we feel it will vary immensely if the focus shifts to another geographic location such as Africa or South America, where a few PMCs have already begun working.

We agree that one of the biggest challenges facing the industry will be the budget activity of the US Government and how it ultimately decides to allocate Defense dollars. We also believe that this issue is somewhat driven by politics and is a current concern because of the recent administration change. The issue will continue to resurface and disappear as administration politics changes sides in the future.

Although some of the respondents indicated Africa or Asia as potential areas for industry growth (some of our data supports participants' assertion that Africa is a growth market—See Chapter IV), we cannot predict the next major AOR for the industry as operations in Iraq and Afghanistan inevitably come to an end. We do, however, wish to point out that we strongly believe the industry will flex according to demand for services regardless of the AOR in which the next conflict surfaces.

The bottom line is that billions of dollars have been spent on PMCs in support of both Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) because PMCs provide a vital service to governments around the globe. A recent CBO estimation puts DoD obligations from 2003-2007 at almost $76 billion for contracts in Iraq. For FY 2007 and early 2008, DoD lists the bill at $30 billion ($5 billion for OEF and $25 billion for OIF) (Schwartz, 2009). The US has invested billions of dollars and now relies heavily on PMC support across all spectrums. Because contractors are nearly 1:1 in both Iraq and Afghanistan, it would be extremely difficult (and possibly very costly) to terminate the use of PMCs. If US Government agencies can better manage the contracts and the companies they hire, then the industry can tailor its support to better meld with the Country's objectives around the globe (Commission on Wartime Contracting in Iraq and Afghanistan, 2009). The future for the PMC industry will remain opportunistic, especially if the military continues its downsizing trend in the coming decades.

THIS PAGE INTENTIONALLY LEFT BLANK

VI   Conclusion and Recommendations

A.   Conclusion

This study is a unique and beneficial addition to the field of private military (PM) industry research. Our main contribution and success was the amount and type of data we were able to capture, first-hand, from the executives and operators inside the PM Industry. Our analysis of this data reveals some interesting results, but we have only scratched the surface. The data lends itself to more advanced analysis techniques and has the potential to unveil a wide range of other findings (discussed below), which we hope other researchers will pursue.

In summary, our results (discussed in Chapters IV and V) present a current snapshot of the PM industry based on questionnaire answers given by a sample population of PM industry respondents. Our analysis of the data reveals a clear distribution of companies and the services they provide, the niche markets and customers they target, and the cooperation and competition they exhibit with other companies. We also provide an analysis on the PM industry's potential for growth and possible trajectory into the future.

We conclude from our analysis that the PM industry is a highly diversified network of companies, growing in demand, and moving to vertically integrate as time goes on. The PM industry, like other service industries, is highly dynamic and will change rapidly to meet the demands of its customers. Presently, these major customers are the Department of Defense (DoD) and Department of State (DoS). As the operations of these government agencies grow, shift, or halt, private military companies (PMCs) will follow suit. Ultimately, PMCs will adapt both their services and geographical markets to "follow the money" created by the continued use of government-outsourced services to supplement military forces around the globe.

Regardless of the continued use of PMCs, we feel the dynamic nature of the market will continue to make it difficult to neatly define and categorize a so-called "PM" industry. Service sectors are blurred and have transformed greatly since Singer's (2003a) initial investigation into the industry from 1991-2003, Avant's examination in 2005, and the Dew and Hudgen's report of 2008. The PM industry largely appears to be consolidating—an idea also supported by Singer's (2003a, p. 85) observations of L-3 Communication's acquisition tactics. We believe the PM industry has the propensity to become a collection of "big box" players and competitors who will leverage their brand names, financial capital, and reputation to win contracts, grow, and survive. Through mergers, acquisitions, or flexibility, they will fulfill the demands of any developing niche market and, as a result, will continue to grow larger and more diverse.

Additionally, PMCs are carving a permanent place for themselves in the government-outsourced service landscape. They have history and performance on their side. Over the last ten years, with major involvement and success in wars such as Operation Iraqi Freedom and Operation Enduring Freedom, they have become integral part of the Military-industrial complex. The PM industry is becoming a "legitimate" industry (if it wasn't already), in which firms like SAIC, BAH (Booz Allen Hamilton) and CSC (Computer Sciences Corporation) now resemble other large companies within the defense sector like aerospace giants Boeing and Lockheed Martin. SAIC is a perfect example of how big these PM companies have become. As of 2007, it led American private companies in individual government contracts, with 9,000 contracts—many of which were worth over $10 million each (Bartlett & Steele, 2007). Also, in SAIC's most recent annual report, it claimed over $10 billion in revenues from government contracts, an increase of 68% since 2005 (SAIC, 2009c).

If the PM industry remains on this path, it is important that we continue to collect and analyze data to help find and identify the most competent, reliable and effective companies. The DoD initial attempts to collect data are just beginning, and research projects like ours will aid decision-makers with contract selection and

ensure that selectees will be the most qualified performers. Selecting the right companies for the right contracts will greatly reduce the chances that PMCs will undermine US missions and policies around the globe.

B.   Recommendations for Further Research

According to Schwartz (2009), DoD did not begin gathering data on contractors until the latter half of FY 2007. Our data, while helpful, is only a small contribution to this effort. Several gaps in our analysis still need to be filled. In order to better assist acquisition and government officials, we suggest further research of the PM industry in the following areas:

- With the use of our collected data, a social network analysis can be conducted and applied to business-to-business interaction and behavior. A study such as this can help create rules and regulations to keep contracting competitive, while still delivering the goods the US Government needs. It can also answer questions such as, "Should rules be focused on incentivizing large firms to act in a certain way and hope for a trickle-down effect; how diverse do regulatory statutes need to be in order to capture the important corners of the industry; what ideas appeal broadly in the field, and what do firms that others aspire to be like have in common?" (Kruse, 2009, October 29). Currently, graduate students from the University of California at Irvine are beginning this type of research.

- The GAO reported that DoD quarterly contractor reports were routinely not being checked for accuracy or completeness (Scwartz, 2009). To help correct this problem, DoD implemented the Synchronized Pre-deployment Operational Tracker (SPOT) to monitor contract personnel during contingency operations. SPOT will be fully functional this fiscal year and used to track contractors in Iraq and Afghanistan. The DoD may benefit from a study measuring the effectiveness and efficiency of this control system.

- As noted in our study, because the industry landscape changes routinely, acquisition professionals would benefit from the most accurate and current information on PM companies. To satisfy this requirement, we recommend a comprehensive update and improvement of the Dunar et al. (2007) PMC database. The database

should also include fields that identify the services each company provides. Additionally, to be more user-friendly, the database should be web-based, regularly managed, and made available to DoD and/or other government agencies.

- A report produced by The Commission of Wartime Contracting (CWC) calls for the removal of restrictions imposed in 1990 that require DoS to use Lowest-priced Technically Acceptable (LPTA) evaluation criteria to ensure maximum competition when selecting contracts for Foreign Service buildings (CWC, 2009). The report indicates that this practice drives more expensive, but often more talented and better-suited PMCs away (2009). The DoS and DoD may benefit from research to develop an alternative system or criteria for selecting PM contractors.

- What is the role of Service Disabled Veteran's Organization (SDVO), Veteran-owned (VO), and 8a (small businesses) in the PM industry? Is there lack of involvement from these firms, and if so, why? Are their roles in this industry changing? Are DoS and DoD contract awards disproportional to the number of SDVO, VO, and 8a firms eligible to compete? An investigation into how these firms compete in the government-outsourced service sector would be beneficial to understanding their roll in the PM industry.

Appendix A.   Survey Instrument

Private Military/Security Industry
Naval Postgraduate School
Graduate School of Business and Public Policy

Control No. _____

INSTRUCTIONS: Please select the best answer for each question. You do not need to fill in the bubble. Simply mark the answer with an ⊠ or ☑ as appropriate.

Section A – Company Information

1. In what country is your headquarters located?
_____

2. In the past 18 months, where has your company conducted operations?

	Exclusively	Mainly	Somewhat	Little	None
United States	O	O	O	O	O
Europe	O	O	O	O	O
Middle East	O	O	O	O	O
South Asia	O	O	O	O	O
Asia Pacific	O	O	O	O	O
Africa	O	O	O	O	O
Latin America	O	O	O	O	O

3. What is the approximate number of permanent employees in your company?

Fewer than 50	51 – 200	201 – 500	501 – 1000	More than 1000
O	O	O	O	O

4. In the past 18 months, how many non-permanent or contracted workers were employed by your company?

Fewer than 50	51 – 200	201 – 500	501 – 1000	More than 1000
O	O	O	O	O

5. Where did your employees develop the professional or technical skills that are critical to your company's success? (Select all that apply)

	Exclusively	Mainly	Somewhat	Little	None
Military	O	O	O	O	O
Military – Special Forces	O	O	O	O	O
Law Enforcement	O	O	O	O	O
Intelligence Services	O	O	O	O	O
Legal Services	O	O	O	O	O
In-house Training	O	O	O	O	O

6. Where does your company recruit employees? (Select all that apply)

	Exclusively	Mainly	Somewhat	Little	None
United States	O	O	O	O	O
Europe	O	O	O	O	O
Middle East	O	O	O	O	O
South Asia	O	O	O	O	O
Asia Pacific	O	O	O	O	O
Africa	O	O	O	O	O
Latin America	O	O	O	O	O

7. What is your company's approximate annual revenue? (In U.S. Dollars)

Less than 1 million	1 – 50 million	51 – 500 million	501 – 999 million	More than 1 billion
O	O	O	O	O

8. To what degree are your company's services directed to the following customers? (Select all that apply)

	Exclusively	Mainly	Somewhat	Little	None
U.S. Department of Defense (DoD)	O	O	O	O	O
U.S. Department of State (DoS)	O	O	O	O	O
U.S. Agency for International Aid (USAID)	O	O	O	O	O
Other U.S. Agencies	O	O	O	O	O
U.S. State and Local Governments	O	O	O	O	O
Non-U.S. Government Agencies	O	O	O	O	O
Corporations & Businesses	O	O	O	O	O
Private Citizens	O	O	O	O	O
The United Nations (UN)	O	O	O	O	O
NATO	O	O	O	O	O
Non-Governmental Organizations (NGOs)	O	O	O	O	O

9. What defense-related technical services or government-outsourced solutions does your company offer its clients? (As a percentage of your total business)

	Very large (> 50%)	Large (31% - 49%)	Moderate (11% - 30%)	Small (< 10%)	Not part of our business
Training, Advising, & Mentoring	O	O	O	O	O
Intelligence Services	O	O	O	O	O
Logistical/Transportation	O	O	O	O	O
Base Operations/Facilities Management	O	O	O	O	O
Security Details (Armed/Unarmed)	O	O	O	O	O
Maintenance & Repair	O	O	O	O	O
Construction Services	O	O	O	O	O
Explosive Ordnance Disposal/De-mining	O	O	O	O	O
Medical Services	O	O	O	O	O
Legal Services	O	O	O	O	O
Aviation-related Services	O	O	O	O	O

Private Military/Security Industry

Naval Postgraduate School
Graduate School of Business and Public Policy

10. If your company provides services not listed in the question above, please specify what kind of services your company offers.
_____
_____

Section B – Business Factors

11. What characteristics set your company apart from other competitors in the industry? (i.e., employees, experiences, training, company ethos, competencies, etc.)
_____
_____

12. Which companies have competed directly against your company in the last three years? (List any company YOU deem a competitor.)
_____
_____

13. From the list above, what company do you consider your most significant competitor? Why?
_____
_____

14. Thinking of your company and the field today, if an opportunity arose, which entities would you consider subcontracting to or for? (Name as many or as few as appropriate.)
_____
_____

15. Why would you consider working with the companies listed above? (Select all that apply; you may choose different reasons for different companies.)

	Absolutely Critical	Very Important	Important	Somewhat Important	Not Important
They are priced appropriately.	O	O	O	O	O
Don't compete directly in the same space.	O	O	O	O	O
Absence of credit problems.	O	O	O	O	O
Absence of legal issues.	O	O	O	O	O
Worked for them before.	O	O	O	O	O
Our company knows them well.	O	O	O	O	O
Their connections may help grow our business.	O	O	O	O	O
They are American-based.	O	O	O	O	O
They are professional.	O	O	O	O	O
They are low-profile.	O	O	O	O	O
They are careful.	O	O	O	O	O
They are well administered.	O	O	O	O	O
They hire well-qualified employees.	O	O	O	O	O
They get the job done.	O	O	O	O	O
They have a special corporate status.	O	O	O	O	O

16. Thinking of your company and the field today, with which companies would you avoid working? (Name as many or as few as you deem appropriate.)
_____
_____

17. During the past 18 months, with how may other private military companies has your company worked? (Subcontracted to/for, joint ventures, etc.)

None	1 – 5	6 – 10	11 – 25	More than 25
O	O	O	O	O

18. Why would you avoid working with a company listed above? (Select all that apply; you may choose different reasons for different companies.)

	Absolutely Critical	Very Important	Important	Somewhat Important	Not Important
They price too low.	○	○	○	○	○
You directly compete in the same space as them.	○	○	○	○	○
You have concerns about their credit problems.	○	○	○	○	○
You have concerns about legal issues.	○	○	○	○	○
You have not worked for them before.	○	○	○	○	○
You do not know them well.	○	○	○	○	○
You do not like entities with which they are connected.	○	○	○	○	○
They are not American-based.	○	○	○	○	○
They are not professional.	○	○	○	○	○
They are too high-profile.	○	○	○	○	○
They are not careful enough.	○	○	○	○	○
They are not well administered.	○	○	○	○	○
They do not hire well-qualified employees.	○	○	○	○	○
They cannot get the job done.	○	○	○	○	○

Section C – Future of the Private Military/Security Industry

19. In the future, do you think the industry will grow, shrink, or remain about the same? Why?
_____
_____

20. In the future, what services do you think will be most in demand and where?
_____
_____

21. Do you expect your client base to stay the same or change? If change, what changes do you anticipate?
_____
_____

22. Do you expect to compete against the same competitors in the future or will they change? If change, what changes do you anticipate?
_____
_____

23. What do you think are the biggest challenges the industry faces in the future?
_____
_____

24. What do you think are the biggest opportunities for the industry in the future? Why?
_____
_____

Section D – Additional Comments

25. Please share any additional comments you might have about the industry.
_____
_____
_____
_____
_____
_____
_____

Appendix B.   Cover Letter to Participants

NAVAL
POSTGRADUATE
SCHOOL

August 4, 2009

Dear Survey Participant,

I am a professor at the Naval Postgraduate School (NPS) leading a team of active-duty Navy and Marine Corps Officers who are conducting a study into the growing private military/security industry as part of their Master of Business Administration (MBA) work at NPS.

We are trying to better understand some aspects of the industry. Enclosed with this letter is a short questionnaire that asks some questions about your firm and the industry. Please look over the questionnaire and, if you are willing to, complete as much of it as you can. Then mail it back to us in the postage-paid envelope provided. It should take no more than 15 minutes of your time.

The survey is anonymous. We do not need to know who you are, so please do not write your name on the questionnaire.

We hope you will take a few minutes to complete this questionnaire. Without the help of people like you, it would be impossible to build up knowledge of your industry – which is playing such an important role in our national security.

Sincerely,

Nicholas Dew, PhD
Graduate School of Business and Public Policy
Naval Postgraduate School
Monterey, CA 93943

http://www.nps.edu/academics/schools/GSBPP/

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix C. E-Mail to Participants

Sir or Ma'am,

I am a U.S. Marine/Naval Officer working on my MBA at the Naval Postgraduate School in Monterey. As part of the school's graduation requirement, I am researching the growing private military industry. Since your company provides services to the U.S. Government, I'm asking if you would please help me complete my research by participating in a short survey.

If you or a fellow manager is willing to participate, all I need is a corporate mailing address, and I will mail an anonymous survey with a prepaid return envelope. Rest assured that all information collected in this survey is anonymous and will never be published in any format that discloses the participants.

I want to thank you in advance for your participation and for taking the time to consider my request. If you would like additional information, please contact me using the e-mail provided below. I can also send additional information about the research upon request.

Sincerely,

Name
Rank, Service

Naval Postgraduate School
Graduate School of Business and Public Policy
xxxxxxxxx@nps.edu

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix D.   Acronyms and Abbreviations

Below are common acronyms used throughout this report to describe the private military industry, government agencies, or other military terms.

AFRICAP	US Department of State, Africa Peacekeeping Program
AFRICOM	United States Africa Command
AOR	Area of operations
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CBO	Congressional Budget Office
CIA	Central Intelligence Agency
CRS	Congressional Research Service
CWC	Commission on Wartime Contracting
DHS	Department of Homeland Security
DoD	Department of Defense
DoS	United States Department of State
EOD	Explosive Ordnance Disposal
FBI	Federal Bureau of Investigation
FIPS	Federal Information Processing Standard
FLOT	Forward Line of Troops
HUMINT	Human Intelligence
IDIQ	Indefinite delivery/indefinite quantity contract
IRB	Institutional review board
IT	Information technology
LOGCAP	US Army's Logistics Civil Augmentation Program
LPTA	Lowest-priced Technically-acceptable
MBA	Master of Business Administration
NATO	North Atlantic Treaty Organization
NGO	Non-governmental organization
NPS	Naval Postgraduate School

OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
PFDS-NG	Federal Procurement Data System—Next Generation
PM	Private Military
PMC	Private military company or privatized military company
PSD	Personal security detachment
SBA	Small Business Administration
SDVO	Service-disabled Veteran Owned business
SPSS	Statistical Package for the Social Sciences (statistical software)
UCI	University of California at Irvine
UN	The United Nations
USCENTCOM	United States Central Command
VO	Veteran-owned business

Below are abbreviations used in the various tables and figures presented throughout this report. These abbreviations correspond to items in our questionnaire (Appendix A).

American	They are American-based.
AppPrice	They are priced appropriately.
BadAdmin	They are not well administered.
BadCredit	You have concerns about their credit problems.
Cantgtjobdn	They cannot get the job done.
Careful	They are careful.
Competitor	You directly compete in the same space as them.
DntKnowWell	You do not know them well.
GoodAdmin	They are well administered.
GoodConned	Their connections may help grow our business.
GtJbDn	They get the job done.
HighPrfl	They are too high-profile.
KnowWell	Your Company knows them well.
LegalIssues	You have concerns about legal issues.

LowPrfl	They are low profile.
NoCompete	Don't compete directly in same space.
NoCredProb	Absence of credit problems.
NoLegProb	Absence of legal problems.
NotCareful	They are not careful enough.
NotProf	They are not professional.
NotUSA	They are not American-based.
NoWrkbefore	You have not worked for them before.
PoorEmp	They do not hire well-qualified employees.
Prof	They are professional.
Ptoolow	They price too low.
QualdEmp	They hire well-qualified employees.
SketchyConec	You do not like entities with which they are connected.
SpclCprStatus	They have a special corporate status.
WFcorps	They have worked for corporations.
WFDoD	They have worked for US Department of Defense.
WFDoS	They have worked for US Department of State.
WFNATO	They have worked for the North Atlantic Treaty Organization.
WFNGO	They have worked for non-governmental organizations.
WFnonUSG	They have worked for non-US Government agencies.
WFoUS	They have worked for other US Agencies.
WFpvtctzn	They have worked for private citizens.
WFStates	They have worked for US State and local governments.
WFUN	They have worked for the United Nations.
WFUSAID	They have worked for US Agency for International Development.
Wrkbefore	You have worked for them before.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix E.   Dyncorp Example Contract

USASPENDING.GOV

SEARCH

HOME | ABOUT | SPENDING | DOWNLOADS | RELATED RESOURCES | DATA QUALITY | FAQ |

PRINTER-FRIENDLY

BY CONTRACTOR

Search by name: Go

Top 100 Contractors (2009)   Go

▸ Awards by contractor state
▸ Awards by cong. district of contractor
▸ Advanced search for contractors

BY PLACE OF PERFORMANCE

Overview of congressional districts   Go

State: Alabama   Go

▸ Advanced search by place of performance.

BY CONTRACTING AGENCY

Overview by major agency   Go

▸ Advanced search by agency

OTHER

▸ By competition process used
▸ By Type of Contract Used
▸ By product or service purchased

Competition and service, 2009   Go

Contract Transaction #66231871 (FY 2009)

Expanded Detail on Individual Transactions for FY 2009

Search Criteria Used (More)

Federal Fiscal Year	2009
Level of Detail	Extensive (detailed info)
Output	HTML GO

Award # 1

Amounts (Award) ?

Dollars Obligated	$91,000,000
Current Contract Value	$91,000,000
Ultimate Contract Value	$91,000,000

Purchaser Information (Award) ?

Major Agency	Dept. of State
Modified Contracting Agency	1900: STATE, Department of
Contracting Agency	STATE, Department of
Contracting Office	AQMMA
Funded by Foreign Government or International Org.	X

Contract Information (Award) ?

Date Signed	02/02/2009
Effective Date	01/30/2009
Current Completion Date	02/28/2010
Ultimate Completion Date	02/28/2010
Award Type	Delivery Order
Reason For Modification	Funding Only Action
Type of Contract Pricing	Combination of two or more types (for awards only)
Letter Contract	X
Multi-Year Contract	No
Performance-Based Service Contract	No
Cost Accounting Standards Clause	No
Contract Description	Provide advisors and support services (life and mission support, security services, Information Technology (IT) and communications support services) in support of the Iraq Criminal Justice Development program as directed by the Bureau for International Narcotics and Law Enforcement Affairs (INL) of the U.S. Department of State
Purchase Card As Payment Method	No
Number of Actions	1
National Interest Action	None
Program Source Agency	
Program Source Account	
Program Source Description	

Contractor Information (Award) ?   (Award # 1)

Vendor Name	DYNCORP
Vendor Alternate Name	DYNCORP INTERNATIONAL LLC
Vendor Legal Organization Name	DYNCORP
Vendor Doing Business As Name	TECH SERVICES APS3 GOOSE CREEK
Vendor Name from Contract	DYNCORP INTERNATIONAL LLC
Vendor Address Line 1	6500 WEST FREEWAY, SUITE 600

Vendor Address City	FORT WORTH
Vendor Address State	TX: Texas
Vendor Zip Code	761162187
Vendor Country	USA
Vendor Congressional District (Modified)	Invalid code: TX12
Vendor Site Code	6084618980000PR
Vendor Alternate Site Code	761162187
Vendor DUNS Number	6084618980000
CCR Renewal Date	06/20/2004
Parent Company Name	Dyncorp International Inc.

Principal Place of Performance (Award) ?

Place Congressional District (Modified)	Invalid code: ZZ
Place of Performance Country	Invalid code: IZ

Product or Service Information (Award) ? (Award # 1)

Major Product or Service Code	R: Professional, admin, and management support services
Product or Service Code	R499: Other Professional Services
Principal NAICS Code	561210: Facilities Support Services
Govt. Furnished Equipment or Property	No
Use of EPA Designated Products	Not Required
Contract Bundling Reason	Not a bundled requirement
Consolidated Contract	No

Record Information (Award) ?

Identifying Agency ID	1900: STATE, Department of
Procurement Instrument ID	SAQMMA08F4761
Modification Number	M011
Transaction Number	0
Fiscal Year	2009
IDV Agency ID	1900: STATE, Department of
IDV Procurement Instrument ID	SLMAQM04C0030
IDV Modification Number	0
XML Schema Version	1.3

Competition Information (Award) ? (Award # 1)

Competition Category	Full and open competition
Extent Competed	CDO: Competitive Delivery Order
Number of Offers Received	3
Pre-award Synopsis Requirement	No
Commercial Item Acquisition Procedures	D
Commercial Item Test Program	No
Small Business Compet. Demonstration Program	No
A-76 (FAIR Act) Action	No
Solicitation Procedures	NP: Negotiated Proposal / Quote
Type of Set Aside	NONE: No set aside used.
Evaluated Preference	No Preference used

Contract Marketing Data (Award) ?

Fee Paid For Use of IDV	$0

Contractor Characteristics (Award) ?

Number of Employees	14,250
Annual Revenue	$3,064,359,936
8A Firm	No
Hist. Underutilized Business Zone (HUBZone) Firm	No
Small Disadvantaged Business	No
Sheltered Workshop (JWOD Provider)	No
Historically Black College or University	No
Educational Institution	No

Appendix F. Participant Responses to Item 20

Raw responses to Item 20, "In the future, what services do you think will be most in demand and where?"

Security/CIUDOI
In our industry, I believe [information] security will be a growth market and info data mining
Training & exercise, planning, OCONUS [outside the continental US]
Law enforcement - Mexico, Latin, Africa
Cyber security - worldwide
Too many to list - executives traveling abroad will always require security
Security and emergency planning. Private military operations will flatten out
Security, finance support, Tech Development
Intelligence—Middle East and South East Asia
Anything requiring intelligence analysis
Intel, Program security, R&D. Intel will be a global issue. PS in the HQ's and SCIF's. R&D mainly stateside
Continuity of Operations (COOP), Vulnerability analysis, security evaluations. Demand will be everywhere
HUMINT [human intelligence] CONUS
More outsourcing to commercial airlines of additional services
Advisor, personnel recovery
Security surveillance—Europe, Middle East, Latin
Climate change, renewable energy
Training + security in S/W [southwest] Asia + South America
Cleared base ops\fire & EMS\armed, cleared security
IT & communication support; [warzones?]
Info sharing, Info Assurance
Equipment maintenance—USA as deployed aviation and ground assets are returned from engagement
Cyber and logistics
UXO [unexploded ordnance] US construction and design- build- global
Logistics support and base maintenance/support services to DoD worldwide
PSD—Middle East
Everything and anything surrounding HUMINT
Logistics, training, IT—Asia
Data capture, collection, and filtration, and dissemination in all of the Islamic cells around the globe
Intel services
Security & remote medical

Training
Training so troops have more home station time
Language and regional area studies immersion- ISAF Program
Training, security services, staff augmentation
Humanitarian based support services
Training and security services
IT support
Mideast; Eastern Europe; Africa
Cyber security, IT support to intelligence and decision making, training
Special operations support of high technology equipment & services
Identity management global
Home health for elderly, communications services
Simulations, enhanced C4ISR, supply chain management
VIP protection services, training
Armed protection force, emergency response
Intel services worldwide. Sensors for border patrol, UAVs and surveillance.
IT- infrastructure and service-shipboard/command centers
Variety of specific security solutions to DoD and DHS
High risk training is needed for overseas work
IT services for all government agencies
For us, it is going to be superior quality training in CONUS
Basic security, executive protection, intelligence support, R&D support, security consulting, support services to PSC/PMC companies
CBRN defense: in the US
Healthcare, cyber security. Nationwide/Global
HUMINT worldwide
Armed patrol response
Middle East, Africa
Armed guards
Green technology
Intelligence training and services, aviation services, special operations training and services

List of References

Alabarda, Y., & Lisowiec, R. (2007). *The private military firms—Historical evolution and industry analysis.* Monterey, CA: Naval Postgraduate School.

Avant, D.D. (2005). *The market for force: The consequences of privatizing security.* Cambridge, UK: Cambridge University Press.

Baldauf, A., Reisinger, H., & Moncrief, W.C. (1999). Examining motivations to refuse in industrial mail surveys. *Journal of the Market Research Society, 41*, 345-353.

Barlett, D.L., & Steele, J.B. (2007). Washington's $8 billion shadow. *Vanity Fair.* Retrieved November 11, 2009, from http://www.vanityfair.com/politics/features/2007/03/spyagency200703

Blackwater's dark heart. (2009, August 21). *The Economist*, 50-51.

Commission on Wartime Contracting in Iraq and Afghanistan. (2009). *Lowest priced security not good enough for war-zone embassies.* Arlington, VA: CWC.

Commission on Wartime Contracting (CWC). (2009). *Defense agencies must improve their oversight of contractor business systems to reduce waste, fraud, and abuse.* Arlington, VA: Author.

Congressional Budget Office (CBO). (2008). *Contractors' support of U.S. operations in Iraq.* Washington, DC: Author.

Conover, W.J. (1999). *Practical nonparametric statistics* (3rd ed.). New York: John Wiley & Sons.

Davis, L.E., Polich, J.M., Hix, W.M., Greenberg, M.D., Brady, S., Sortor, R.E. (2005). *Stretched thin—Army forces for sustained operations.* Arlington, VA: RAND Corporation.

Dew, N., & Hudgens, B. (2008). *The evolving private military sector: A survey.* Monterey, CA: Naval Postgraduate School.

Dew, N., & Hudgens, B. (2009). *Market niches in the private military sector: An initial look.* Monterey, CA: Naval Postgraduate School.

Dillman, D.A. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, NJ: Wiley.

DoD Office of Small Business Programs. (2009, August 13). *Veteran-owned small business policy.* Retrieved November 10, 2009, from http://www.acq.osd.mil/osbp/programs/index.htm

Dunar, C., III, Mitchell, J., & Robbins, D., III (2007). *Private military industry analysis: Private and public companies.* Monterey, CA: Naval Postgraduate School.

DynCorp Int, Inc. (2009, September 28). *DynCorp international—Press release.* Retrieved October 12, 2009, from http://www.dyn-intl.com/press-releases.aspx

Federal Business Opportunities. (2009, September 11). *AFRICAP recompete.* Retrieved October 5, 2009, from https://www.fbo.gov/?s=opportunity&mode=form&id=6b6d9c1b9038d29c359098583401933f&tab=core&_cview=1

Federal Procurement Data System. (1998, August). *Product and service codes manual.* Retrieved October 12, 2009, from http://www.fpdsng.com/downloads/service_product_codes.pdf

Greer, T.V., Chuchinprakarn, R., & Seshadri, S. (2000). Likelihood of participating in mail survey. *Industrial Marketing Management, 29*, 97-109.

Haynes, D.V. (2009, August 12). Dyncorp billed U.S. $50 million beyond costs in defense contract. [Electronic version]. *The Washington Post.*

Hedgpeth, D. (2009, September 29). DynCorp to buy Alexandria firm as it seeks wider government work. *Washington Post*, p. 2.

Keller, G. (2009). *Statistics for management and economics* (8th ed.). Mason, OH: South-Western Cengage Learning.

Kidwell, D. (2005). *Public war, private fight? The United States and private military companies.* Fort Leavenworth, TX: Combat Studies Institute Press.

Kotler, P., & Keller, K.L. (2009). *Marketing management* (13th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Kruse, K. (2009, October 29). [E-mail correspondence with researchers].

L-3 Communications. (2008). *December 31, 2008, Annual Report.* [Data files]. Retrieved DATE, 2009, from L-3 Communications corporate website, http://www.l-3com.com

Lambakis, S.J. (2004, December). Reconsidering asymmetric warfare. *Joint Forces Quarterly, 36*, 102-108.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology,* 22(140), 1-55.

ManTech. (2009, September 11). *Management team*. Retrieved October 19, 2009, from http://www.mantech.com/about/mgmt.asp

Morningstar Investments. (2009, October 10). *Morningstar stylebox*. Retrieved October 14, 2009, from http://quicktake.morningstar.com

OMB. (2009a). *USAspending.gov contract: Transaction #67616118.* Retrieved October 8, 2009, from http://www.usaspending.gov

OMB. (2009b). *USASpending.gov—products and services purchased*. Retrieved October 8, 2009, from http://www.usaspending.gov/fpds/index.php?reptype=a

Ploch, L. (2009). *Africa command: U.S. strategic interests and the role of the U.S. military in Africa.* Washington, DC: Congressional Research Service.

Private Military.org. (2009, September 11). *Definition of private military companies*. Retrieved October 22, 2009, from http//www.privatemilitary.org/definition.html

SAIC. (2009a). *SAIC corporate fact sheet.* McLean, VA: Author.

SAIC. (2009b). *SAIC signs agreement to acquire R. W. Beck, Inc.* Retrieved October 12, 2009, from http://investors.saic.com/releasedetail.cfm?ReleaseID=393957

SAIC. (2009c). *SAIC 2009 annual report.* [Data file]. Retrieved October 12, 2009, from the SAIC Corporate website, http://investors.saic.com/sec.cfm

Schwartz, M. (2009). *Department of Defense contractors in Iraq and Afghanistan: Background and analysis.* Washington, DC: Congressional Research Service.

Singer, P.W. (2003a). *Corporate warriors, the rise of the privatized military industry*. Ithaca, NY: Cornell University Press.

Singer, P.W. (2003b). Peacekeepers, Inc. *Policy Review*, 59.

Spulber, D.F. (1998). *The market makers: How leading companies create and win markets*. New York: McGraw-Hill.

Stier, K. (2009, September 11). Afghan embassy scandal's link to cost-cutting security. *Time*. Retrieved November 9, 2009, from http://www.time.com/time/world/article/0,8599,1921648,00.html

Thomas Jager, G. K. (2007). *Private military and security companies. Changes, problems, pitfalls and prospects.* Wiesbaden, Germany: Vs Verlag.

Thompson, L. (2009). *Prepared statement.* Statement before the Commission on Wartime Contracting. Washington, DC: US Congress.

US Africa Command. (2009, September 12). *U.S. Africa command FAQs*. Retrieved October 4, 2009, from http://www.africom.mil/AboutAFRICOM.asp

US Department of State (US DoS). (2008, June 27). *AFRICAP IDIQ solicitation SAQMMA08R0237.* Arlington, VA: Author.

2003 - 2009 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting

Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness

- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

A complete listing and electronic copies of published research are available on our website: www.acquisitionresearch.org

THIS PAGE INTENTIONALLY LEFT BLANK