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The Department of Defense's
Management of Services Acquisition:
An Empirical Analysis

29 November 2007

by

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Abstract

The purposes of this MBA project are to determine how best to collect empirical data regarding the current state of services acquisition management at the installation level within the Department of Defense and to conduct an initial analysis of collected data. The project designed a web-based, self-administered, cross-sectional survey using SurveyMonkey, a web-based survey engine. The survey's pilot test was conducted between mid-October and early November 2007 and obtained a 50-percent response rate. Of the respondents, 60 percent was Army, 20 percent was Marine Corps and 20 percent Air Force. The pilot test captured valuable data which was analyzed; however, improvements to the core survey may generate a higher response rate and provide a clearer picture of the current state of services acquisition management at the installation level within the Department of Defense. The results of this project will support on-going research in the area of services acquisition management.

Keywords: Services acquisition, acquisition management, survey methodology

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I.   Introduction

A.   Introduction

The volume of services, both in dollar amount and type, acquired by the Department of Defense (DoD) has steadily grown over the past few fiscal years. In the period between fiscal years 2000 and 2005, the DoD experienced a 73-percent increase in service contract costs in the operations and maintenance areas. The chief factors behind the growth in acquired services include: 1) the impact the Global War on Terrorism has had on the number of requirements and the resulting increase in the DoD's use of contractors to meet those needs, 2) the federal policy mandating reliance on contractors for functions not inherently governmental, 3) competitive sourcing and privatization programs within the DoD, and 4) headquarters personnel manning-level limitations—leading to dependence on contractors to complete new and expanded work requirements (GAO, 2007).

To achieve increased data granularity on these primary factors and an accurate weighting of each one's impact, empirical data needs to be collected and analyzed. We believe that data collection at the installation level throughout the DoD will provide the necessary granularity. Coding and analysis of this gathered data should clarify whether the recent trends will continue or abate and whether they are "treatable" or inherent to modern-day DoD services acquisition. Once the inherent nature of the current services acquisition situation is better understood, alternatives could be developed, and sound services acquisition management policy recommendations can be forwarded to DoD leadership for consideration and implementation.

Directly linked with the acquisition of services is the management of those acquired services. Apte, Ferrer, Lewis, and Rendon (2006) conducted exploratory research regarding the size, trends, and issues related to services acquisition. Data was collected through site visits to the Presidio of Monterey, Travis Air Force Base,

and the Naval Postgraduate School. One of their research findings was that despite the high expenditure levels for services, the acquisition management structure for service contracts is lacking. Unlike the management infrastructure for a large weapon system procurement program, which would have a dedicated program manager and robust management team, services acquisition procurement programs do not offer the same level of oversight. This deficiency opens the door for mismanagement.

Apte and Rendon (2007) conducted a follow-up research project which concentrated on the applicability of a program-management approach in managing acquired services within the DoD. The project provided further discussion of issues in services contracting, including the intangibility of service outcomes, co-production of services and the diversity of services. In their research, the principal investigators discussed basic concepts of program management and how those concepts are currently applied to the acquisition of products. Using this framework, the researchers analyzed services acquisition management at the installations they visited in the first project, in addition to Randolph Air Force Base in Texas. It was concluded that though some program management concepts were being applied, they were being applied inconsistently and did not necessarily build the framework for a program-management approach to services acquisition.

B.   Purpose

The purposes of this project are to determine how to best collect empirical data regarding the current state of services acquisition management at the installation level across the military services and to conduct an initial analysis of collected data. The results of this project will support on-going research (Apte et al., 2006, Apte & Rendon, 2007) being conducted by the Acquisition Research Program at the Naval Postgraduate School regarding the Department of Defense's management of services acquisition.

C.   Research Questions

This project attempts to answer several research questions:

Primary:

- What is the current state of services acquisition management at the installation level?

Secondary:

- What research method should be used to best evaluate the current state of services acquisition management, across all military services, in a uniform and unbiased manner?

- What is the best way to tailor the chosen research method to produce usable results?

- How should the chosen research method be tailored to answer the primary research question?

Examining these questions will provide information and data which will, in turn, facilitate the study of the six research questions posed by the aforementioned on-going research. These six research questions are: 1) What types of services are typically contracted for at military installations, and what is the annual expenditure for these services? 2) What types of acquisition strategies, procurement methods, and contracts are being used to acquire services? 3) How are these service contracts managed? 4) What types of organization/management structures are used to manage contracted services? 5) What training does contract and project/program management staff receive? and 6) Do the respective military services acquire and manage services differently?

D.   Service Categories

The *Federal Procurement Data System: Product and Service Codes Manual* identifies and describes 24 service categories used in the Federal Procurement Data System. The types of services provided for under these categories range from

special studies and analysis to utilities and housekeeping services. Table 1 provides the complete listing of service categories and associated PSC codes.

Table 1.   Product Service Categories and Codes

Service Category	Product/Service Classification (PSC) Code
Research and development	A
Special studies and analysis	B
Architect and engineering services	C
Data processing and telecommunications	D
Purchase of structures and facilities	E
Conservation and natural resources	F
Social services	G
Quality control, testing and inspection services	H
Maintenance and repair of equipment	J
Modification of equipment	K
Technical representative services	L
Operation of government-owned facilities	M
Installation of equipment	N
Salvage services	P
Medical	Q
Professional, administrative, and management support	R
Utilities and housekeeping	S
Photographic, mapping, printing and publication services	T
Educational and training services	U
Transportation and travel	V
Lease or rental of equipment	W
Lease or rental of facilities	X
Construction of structures and facilities	Y
Maintenance and repair of real property	Z

E.   Project Scope Limitations

The shear volume of services acquisition within the DoD, along with other limiting factors, decided the scope of this project. The first is the reduction in the number of service categories considered to seven of the 24 mentioned in Table 1. These seven service categories were selected for further examination based on data presented in the Government Accountability Office's (GAO) May 2007 report, *Defense Budget: Trends in Operation and Maintenance Costs and Support Services Contracting,* as shown in Table 2.

Table 2.   Changes in Service Contract Costs in Selected Categories
(GAO, 2007)

Fiscal year 2007 dollars in billions				
	Contract Costs		Change from Fiscal Year 2000 to 2005	
Service category	FY 2000	FY 2005	Amount	Percentage
Professional, administrative, and management support	$14.6	$30.1	$15.5	107
Maintenance and repair of equipment	7.7	12.3	4.6	60
Data processing and telecommunications	6.3	11.0	4.7	74
Medical	2.8	8.4	5.6	199
Maintenance and repair of real property	6.6	8.0	1.5	22
Utilities and housekeeping	3.9	7.0	3.1	79
Transportation and travel	3.4	6.6	3.3	97
Conservation and natural resources	1.7	2.3	0.7	39
Operation of government-owned facilities	2.3	2.1	(0.2)	(9)
Technical representative services	1.4	1.7	0.3	23
Special studies and analyses	1.2	1.5	0.2	19
Modification of equipment	1.1	1.4	0.3	29
Educational and training services	1.1	1.4	0.3	23
Other	1.3	2.0	0.7	58
Total	**$55.4**	**$95.9**	**$40.6**	**73**

The GAO considered 19 of the 24 service categories in the report. The seven service categories selected for consideration within this project, highlighted in Table 3 below, accounted for more than $83 billion in expenditures during fiscal year 2005, up from $45.3 billion in fiscal year 2000. The $83 billion spent on services in fiscal year 2005 accounted for roughly 87 percent of expenditures on services. Additionally, six of the seven selected categories of services showed the greatest percentage changed in dollars spent between fiscal year 2000 and fiscal year 2005.

Table 3.   Service Categories Considered by Project

Service Category	Product/Service Classification (PSC) Code
Professional, administrative, and management support	R
Maintenance and repair of equipment	J
Data processing and telecommunications	D
Medical	Q
Utilities and housekeeping	S
Transportation and travel	V
Maintenance and repair of real property	Z

We further limited our research to installations within the continental United States (CONUS) and eliminated international bases. This limitation arose from complications in accounting for data considering varying currency exchange rates, economies and operational situations indicative of divergent foreign locations, not to mention communications across time zones.

Another limitation is the number of military services to consider. Research should be completed across all four branches of military service. However, with limited personnel resources and the project team members' respective affiliation with the Army and Marine Corps, this project is limited to those military services'

installations. Investigation of all four services would be beyond the current capabilities of the project team, but follow-on projects to capture and analyze Air Force and Navy installations' data are already underway.

F.   Methodology

A survey methodology was used to facilitate the gathering of preliminary data and a survey was designed and issued to a sample audience to conduct a pilot test. The qualitative results of the pilot test were used to adjust the survey to increase survey reliability. The quantitative results of the pilot test were analyzed, and preliminary observations regarding the acquisition management of services are provided.

G.   Organization

This project is organized into five chapters. This introductory chapter is followed by Chapter II, which describes the aspects of survey methodology. Chapter III presents and discusses the survey created by this project using the survey methodology introduced in Chapter II. Chapter IV includes an initial analysis of data collected during the survey pilot test and recommendations for improving the survey for follow-on research projects. Chapter V concludes with the summary and implications of the analysis and includes recommendations for further study of the management of services acquisition within the Department of Defense. Appendix A provides a copy of the Naval Postgraduate School's Institutional Review Board (IRB) approval letter for the project's survey. Appendix B is the IRB approved survey as seen by the respondents on SurveyMonkey. Appendix C presents the raw data collected during the pilot test, and Appendix D lists general comments made by pilot test respondents.

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II.   Survey Methodology

A.   Introduction

Surveys of all types have been and continue to be widely used in virtually all areas of public policy. In the United States, the most notable survey is the decennial census conducted by the US Census Bureau. In addition to conducting the decennial census, the US Census Bureau conducts over 100 other surveys every year (US Census Bureau, 2007c). The other surveys carried out by the US Census Bureau focus on areas related to demographic or economic characteristics. Demographic surveys are conducted pertaining to areas such as housing; fishing, hunting, and wildlife-associated recreation; property owners and managers; income; and women- and minority-owned businesses (US Census Bureau, 2007a). Economic surveys are conducted regarding areas such as construction, foreign trade, manufacturing, mining, retail, wholesale and services (US Census Bureau, 2007b). The purpose of these surveys is to collect generic statistical information from individuals and establishments within the respective categories and to use the resulting statistics to shape public policy (US Census Bureau, 2007c).

There are numerous types of surveys, each with a different purpose. Despite the variability in survey types, each survey should follow some basic design steps and implement measures to protect respondents. The basic steps in designing a survey are: 1) define the objectives for the survey (Fowler, Jr., 1984); 2) determine how often the survey will be administered; 3) generate questions and completion instructions for respondents; 4) plan for how the data will be analyzed; 5) conduct a pilot test; 6) report the results (Fink, 2006).

B.   Types of Surveys

Surveys are just one method of collecting information to help describe, compare or explain various levels of knowledge both individual knowledge and/or societal knowledge. There are two basic types of surveys—interviews and self-

administered. Surveys can take one of a couple formats within each of these types. An interview type of survey can present the questions of the survey to the respondent via either the telephone or in-person. The respondent's answers are recorded and analyzed at a later dater (Fink, 2006).

Self-administered surveys, on the other hand, can be mailed to the respondent for completion and then returned to the administering authority. This format of survey can be conducted on-site at a centralized location, such as a public health clinic. Increasingly, self-administered surveys are being conducted on-line. The underlying characteristic of self-administered surveys is that the respondent is able to complete the survey alone and in private, or with the assistance of another person other than an interviewer (Fink, 2006).

The project team elected to create a self-administered survey, as this would be the best method for gathering the necessary information. In order to collect data to support this and follow-on projects, the mode of data collection is a web-based, self-administered type of survey. The necessity of utilizing a survey was to: 1) standardize measurement of responses, and 2) attain a greater level of granularity than that currently available in government-wide level reports (Fowler, Jr., 1984). Additional justifications for this survey format were the cost savings achieved by: 1) not having to mail the survey and postage-paid return envelopes to over 100 Army and Marine Corps CONUS installation and 2) the existence of a corporate account with the web-based survey engine SurveyMonkey at the Naval Postgraduate School.

C.   Advantages and Disadvantages

Each survey type brings with it its own characteristics, advantages and disadvantages. Table 4 outlines a comparison of the various survey types discussed above. The table highlights the basic characteristic of each survey type, the advantages and disadvantages of each, along with special needs considerations and cost elements for each type.

Table 4. Survey Comparison
(Fink, 2006)

	Self-Administered			Interviews	
	Mailed	**On-stie**	**Online**	**Telephone**	**In-person**
Characteristics	Paper and pencil	Paper and pencil	Internet based	Can be done with written script or computer assisted	Can be doen with a written script or computer assisted
Advantages	Can reach large geographic areas	Information is obtained immediately	Worldwide	Can explore answers with respondents	Same as telephone
	People are used to completing paper and pencil surveys	Questions about survey can be asked by respondents as they arise	Order of question can be programmed	Can assist respondent with unfamiliar words	
	Can take the survey with you and complete it anywhere	In some cases, surveys can be done with groups of people	Only "legal" answeres are accepted		
			Can give respondents links that explain unfamiliar words and help with difficult questions		
			Data are automatically entered and be automatically analyzed		
Disadvantages	Need a motivated sample to return survey. Many people think they have too much to do without also having to complete surveys	Limited to responses from just those who are on site	Need reliable access to Internet	Need trained interviewers	Need trained interviewers
	Respondents must be able to read, see, and write	Respondents must be able to read, see, and write	Respondent must be able to use a browser	Need to make sure respondent is home	Must find a suitable place to conduct interview
			Browser must suppot survey graphics	If using computer-assisted interviews, will need technical expertise to program them	
			System can go down or be unreliable		
Special needs	Up-to-date address list	Space and privacy for respondent to complete the survey	Technical expertise	Up-to-date phone numbers	If on-site, need space and privacy
	Follow-up mailings		Convincing method of ensuring privacy and confientiality	Schedule for reaching respondents	May be difficult or dangerous to go to person's home
	Incentives			Many need a sampling expert for random digit dialing	
				Incentives	
Costs	Printing, paper, envelopes, stamps, incentives	Printing, paper, incentives, survey supervisor, and possibly space for respondent to work	Mainly technical (e.g., someone who is experience in designing online surveys)	Training, incentives, telephones and telephone charges, computers and technical expertise, sampling expert, incentives	Trainging, space, travel, incentives

1.   Advantages of Web-based, Self-administered Questionnaire

A web-based, self-administered questionnaire has several benefits over other survey research methods. The first benefit of the selected survey format is the ease of presentation with visual and or audio aids (Fowler, Jr., 1984). By using computers, survey designers may incorporate visual and audio aids to further assist the survey respondents in understanding terms or questions (Fink, 2006). A second benefit is the potential to ask questions with lengthy or complex response choices. Self-administered surveys allow the respondents to take their time to read each question and consider all of the possible choices without feeling the pressure to provide a response to a person. An additional benefit is the ease of asking numerous questions that are similar. A fourth benefit of using a self-administered questionnaire is the respondent does not have to feel uncomfortable providing answers or opinions to another human face-to-face, as with in-person interviews (Fowler, Jr., 1984).

2.   Disadvantages of Web-based, Self-administered Questionnaire

The election of a web-based, self-administered questionnaire does bring several disadvantages as well. The first is the level of care and attention demanded by question design. If questions are not designed well, the respondent may not respond to the question or may provide an inaccurate response due to personal interpretation. Another disadvantage to this type of survey is the lack of having a researcher on-site to supervise the completion of the survey, answer any questions respondents may have, or monitor the quality of responses given (Fowler, Jr., 1984). A third disadvantage is in direct contrast to the advantage of being able to incorporate visual and audio aids in the presentation of the survey. For instance, not all respondents have access to the same software programs or computer hardware. Thus, if the survey design team incorporates visual and audio aids, they inherently incorporate risk as well (Fink, 2006).

D.   Pilot Test

Arguably the most important aspect of survey design is the conduct of a pilot test. A pilot test is the trial run of issuing the survey and collecting response data (Fink, 2006). One key survey aspect tested during this crucial methodology step is question clarity. In addition, the pilot test examines the appropriateness and applicability of survey questions in relation to the sample audience. Closely linked to this assessment is the verification that the collected data will provide the necessary information. Additionally, the pilot test provides insight into how consistent the collected data will be (Fink, 2006). A properly conducted pilot test will prove invaluable to those wishing to distribute a reliable and valid survey to the sample audience.

Receipt of accurate and sufficient information about the survey characteristics from a pilot test relies heavily on the response rate. The response rate is the percentage or portion of completed surveys received with respect to the total surveys issued (Fink, 2006). The recommended minimal response rate is between 50 and 60 percent (Babbie, 2001, as cited in Ruane, 2005).

Figure 1.   Response Rate Formula

$$\text{Response rate} = \frac{\text{Number of completed surveys received}}{\text{Number of surveys issued}} * 100\%$$

Self-administered surveys typically have lower preliminary response rates—less than 30 percent (Ruane, 2005). Some potential reasons for a low response rate are: 1) the survey does not reach participants and, therefore, they cannot complete it; 2) participants refuse to complete the survey, and 3) participants are unable to answer the survey due to illness or language barriers (Fink, 2006).

E.   Reliability and Validity

Reliability and validity are critically intertwined characteristics in a survey. Without either of theses key characteristics, the work that went into designing and performing a survey may have been for naught. A valid survey will always be a reliable one, but that same reliable survey may not always be valid for every instance (Fink, 2006).

An example of this link between reliability and validity is provided in the following scenario. A hospital administrator is consistently asked how many patient beds are in a certain ward of the hospital. If the administrator provides the same answer each time the survey is administered, the survey is said to be reliable. However, if the researchers and survey presenters claim the same survey question provides information as to the level of quality of medical care, the validity of the survey would then be called into question (Fink, 2006).

1.   Reliability

A survey, regardless of its format, must be reliable. A reliable survey is one that provides consistent measures of important characteristics despite underlying changes in the target audience. Underlying changes in the target audience refer to changes in experiences, restfulness, anger, and tension at each respective time the survey was completed by respondents (Fink, 2006). There are multiple means to check for reliability.

a.   Multiple Forms

The multiple-form means of assessing reliability should be utilized when the principal investigators will only have access to the target audience once. Under this method, information pertaining to a measure (such as a respondent's age) is obtained by asking two separate questions. One of the questions regarding age may ask the respondent to provide their age. The other question might ask the respondent's year of birth. If the answers to these individual questions are consistent, then reliability of the measure is achieved (Ruane, 2005).

b.   Split-half Technique

The split-half technique is used when the measure being examined is composed of multiple aspects. This technique is a means of inspecting the individual aspects to assess if they consistently and equally contribute to the composite measure. This method is implemented by asking the respondent a battery of questions. These questions are divided in two; each half of the list is considered a mini-list. If a comparison of the two mini-lists yields a high correlation, the entire list of questions is said to be reliable for assessing the measure.

2.   Validity

Just as there were multiple means of checking for reliability, there are multiple means of ensuring validity. There are four validity techniques—face, content, criterion and construct—survey designers can use to establish and test for validity in their survey measures (Ruane, 2005). Each of these respective validity techniques is discussed below.

a.   Face Validity

Face validity techniques simply ask if the measure appears to be okay or sound okay. Face validity assessment is subjective in nature and, therefore, can sometimes be called into question. An example of questionable face validity is connecting a fear of crime to a question that simply asks about one's feeling towards walking alone at night (Ruane, 2005).

b.   Content Validity

Content validity is important when the topic's definition is multifaceted and complex. Content validity is a subjective assessment made by the researcher-- whether the measurement captures all of the facets of the complex problem (Ruane, 2005). Often, it is difficult to capture the full meaning of the multifaceted and complex problem with just a single measurement or question.

c.   Criterion Validity

Criterion validity is not a subjective assessment of a measure, but rather uses empirical, objective data to explain the measure's validity. There are two dominant strategies to use when one checks for criterion validity—predictive and concurrent. If using predictive validity, the principal investigators show the measurement's validity when the measurement accurately forecasts a related outcome. When using concurrent validity, on the other hand, the investigators attempt to prove one measure's validity by obtaining similar measurements with different tests of the same concept (Ruane, 2005).

d.   Construct Validity

Construct validity is probably the most difficult of validity checks and involves theory and hypothesis testing. Theories are used to create hypotheses, which predict expected relationships between a measure and other variables. To claim construct validity, responses must support the hypothesis. Construct validity demands many man-hours and can be smaller, stand-alone research projects in and of themselves (Ruane, 2005).

F.   Ethics, Privacy and Confidentiality

A basic ethics guideline in all research involving human participants is the implementation of various measures to help ensure that no harm comes to any participant (Fowler, Jr., 1984). In addition to this "no brainer" ethical guideline, additional measures (which must be implemented by researchers conducting research involving human subjects at agencies which receive federal funding) are outlined in Part 46, Title 45 of the *Code of Federal Regulations*. Some of these additional measures include attaining informed consent from participants and approval from an Institutional Review Board (US DHHS, n.d.).

1. Informed Consent

Informed consent refers to the respondent's right to determine whether or not to participate in the research (Ruane, 2005). Ruane (2005) provides a sound discussion of four characteristics of informed consent. These are competence—the ability of the participant to decide whether to participate or not; voluntarism—the participant's ability to freely decide, without coercion or threat of retribution, to participate or not; full information—the right of the participant to be fully informed of all aspects of the research; and comprehension—the participant's ability to understand all information given to him/her.

The *Code of Federal Regulations* lists eight general requirements for informed consent. Each of these general requirements needs to be presented to the perspective participants so that they can consider all factors in their decision to participate or not. The eight general requirements are: 1) a statement that the project involves research, includes the purpose(s) of the research, anticipated duration of participation, and a description of the procedures, even experimental ones, that are being followed, 2) a description of foreseeable risks, 3) a description of benefits to the participant, 4) a list of procedures or other courses of treatment that might benefit the participant more, 5) a statement explaining the extent of measures to maintain participant confidentiality, 6) a description of compensation for research involving more than minimal risk to the participant, 7) the inclusion of the investigators' points of contact for answering questions or addressing concerns, and 8) a statement that participation in the research is purely voluntary (US DHHS, n.d.).

2. Institutional Review Board (IRB)

The Institutional Review Board (IRB) concept is in place to further provide protection to potential human research subjects. The implementation of an IRB is mandated by the *Code of Federal Regulation* for all agencies conducting research and in receipt of federal funding. The simplified purpose of an IRB is to review research proposals to ensure that the researchers have incorporated the other

mandatory stipulations of 45 *CFR* 46, such as all the elements of informed consent being provided to each participant. The IRB does possess the authority to waive certain aspects of 45 *CFR* 46—such as the researchers receiving a signed informed consent form from each participant when it can be demonstrated that the research effort could not practicably be completed without the requirement waiver.

An IRB is granted certain authorities by 45 *CFR* 46. The first of these is the authority to approve research proposals if there is a majority amongst the board members. In addition to approving research proposals, the IRB may mandate certain changes to the research proposal prior to granting its approval. Once the proposal is accepted, the researchers may not deviate from the approved protocol. If changes to the protocol need to be made, the principal investigators need to submit an updated protocol to the IRB for consideration. In a case in which an IRB disapproves a research proposal, a reviewing authority may not then approve the research. The IRB's decision is final (US DHHS, n.d.).

III. Services Acquisition Management Survey Design

A. Introduction

The last chapter provided a general overview of survey research methodology. Based on the advantages and disadvantages of various survey types, the project team elected to conduct a web-based, self-administered questionnaire in order to gather data regarding the current state of services acquisition management at the installation level for the Army and Marine Corps. This chapter presents the methods, justifications and logic that were used to create the web-based, self-administered questionnaire within the framework of survey research methodology.

B. Questionnaire Design

The questionnaire was designed to collect empirical data to stratify the participants by military branch of service, region within that service (as applicable) and by the particular installation. The steps taken in designing this survey are the same as discussed in Chapter II: 1) define the objectives; 2) determine how often the survey will be administered; 3) generate questions and completion instructions for respondents; 4) plan for how the data will be analyzed; 5) conduct a pilot test, and 6) report the results.

1. Objectives Defined

The objectives of the survey are directly linked to the authors' primary research question: What is the current state of services acquisition management at the installation level? In order to gain insight into the current state of services acquisition management, the survey first needs to collect data and information on the acquisition of services within the seven selected service categories. In addition to providing information on the types of services contracted, the survey needs to gather information on the acquisition strategies and procurement methods used to acquire the services. The third objective of the survey is to assess what

organizational and management structures are used and how they manage the contracts for services within the selected service categories. The final objective of the survey is to investigate what types of training the acquisition and project/program management team receives at each installation.

**2.	Survey Duration**

This survey was designed to be issued once in order to attain a cross-sectional snapshot of services acquisition management for each of the services. Even though this project only covers Army and Marine Corps CONUS installations, follow-on research projects will use this same survey to gain data and information for the other military services. By using the same core survey, the teams conducting the follow-on projects will be able to equally compare their results with the results of this project—therefore further exposing the acquisition management of services within the DoD.

**3.	Informed Consent and Completion Instructions**

When conducting a survey, a research team must provide the required information about the research project to potential respondents so they can make an informed consent statement. In designing the survey with the use of SurveyMonkey, the research team designated the first page the "Participation Statement." Here, the potential respondent is informed that the survey is part of a research project to help identify trends and best practices pertinent to the acquisition of services at the installation level. Respondents are also informed that the survey is completely voluntary and are provided with an estimated involvement time. A key component to this area is the conveyance that confidentiality and privacy will be maintained by not only the project team, but the institution as well. Lastly, the respondent is provided contact information for the project team and the IRB so that their questions and concerns can be handled efficiently and effectively. By including all of the information in the Participation Statement section, the team maintained compliance with 45 *CFR* 46.

Once the respondent elects to participate in the survey, the next webpage seen is the "Introduction." On this webpage, the purpose of the project is again conveyed to the participant, along with the survey's completion instructions. Participants are instructed to answer the questions to the best of their ability and are again informed that no personal information will be asked or recorded during the survey. Information on how to move back and forth throughout the web-based questionnaire is also provided. One of the benefits of using a commercial survey engine is the respondent does not need to complete the survey in one sitting. If the respondent needs to leave the survey site for any reason, the responses already selected will be saved, and the survey will continue from that point when the respondent returns to the website. Even though responses are saved for the respondents, no response information is forwarded to the researchers until the respondent selects the "Done" button following the final question of the survey.

4.   Question Design

The questions of the survey are organized into one of four groups— administrative, core, general and comments—for both ease of design and flow for the respondent. The administrative group of questions is presented to the respondent first, which helps identify the military service, geographical region, and individual installation the participant represents. In this and other sections of the web-based questionnaire, the project team utilized filter questions and a "skip-logic" tool provided by SurveyMonkey, whereby the participant's responses to earlier questions indicated the roadmap that would be followed through the rest of the questionnaire. The combination of these two techniques allowed the respondent to complete the questionnaire more rapidly by not having to read inapplicable questions. The two middle groups of questions—core and general—are more complex and are discussed in further detail next.

a.   Core Questions

The core questions request responses for each of the seven selected service categories and are further broken down into the following sub-groups: contract

characteristics, acquisition management methods, project team approach and services acquisition leadership. The individual questions for each subject service category are grouped together to facilitate ease of use for the respondent and to allow the respondent to think about and respond to one service category at a time.

(1) Contract Characteristics. The questions in this sub-group pertain to each of the seven selected service categories. The survey again identifies the seven service categories considered by the questionnaire and provides a basic roadmap for this segment of the survey. The purpose of these questions is to gain insight into the dominant type of contract being used in the acquisition of services at the installation level. Answers to these questions will also provide information for each service category regarding who—government or contractor—typically bears the risk associated with the contract and if there is enough competition for the services. The respondents are to base their selection on the typical contracts (for each service category) used in each fiscal year between 2002 and 2006. The characteristics examined in this section are competition (competitively bid or sole source), contract type (fixed-price or cost-type), and incentive/award (incentive fee or award fee or award term).

(2) Acquisition Management Methods. The questions in this sub-group also pertain to each of the seven selected service categories. The purpose of these questions is to gain insight into the types of management structures being used at installations. The respondent was asked to reply based on the dominant services acquisition management method used at his/her respective installation for the various phases of the acquisition process. The acquisition process phases are acquisition planning, solicitation, source selection, and contract administration. For each of these phases, the participant identified whether (in his/her experience) the phase was conducted at a regional, installation, or some other organizational level. An additional question in this sub-group led respondents to one of the next two questionnaire segments. The question asked the participant to identify whether a

project team approach was typically used in the acquisition of the respective service category at the installation level.

(3) Project Team Approach. The questions in this sub-group pertained only to those that identified a project team approach in the acquisition management method described above. If a project team approach was not selected in this section, SurveyMonkey logic allowed the participant to move onto the next sub-group of questions. The respondent was asked to identify the billet of the project team leader, such as a Program/Project Manager or Contracting Officer. A related question presented to participants was who, by billet or organizational level, generated and approved changes to the requirements for service contracts. The purpose of these questions is to provide insight into what types of contracted services typically use a project team approach and to further explain acquisition management methods used to manage services at the installation level.

(4) Service Acquisition Leadership. The questions in this sub-group pertained to all seven service categories and were introduced if the participant indicated that the project team approach was not dominantly used for that acquired service. For the applicable service categories, the participant was asked who, such as a Project/Program Manager or Contracting Officer, led the acquisition of that service at his/her installation. The participant was also asked who, by billet or organizational level, generated and approved changes to the requirements for service contracts. Again, the purpose of these questions is to gain insight into what types of contracted services typically do not use a project team approach and to further investigate acquisition leadership methods used at the installation level.

b.   **General Acquisition Management Methods Questions**

The general acquisition management methods questions examine service acquisition methods (in general) for the respondent's respective installation. The focus of this question group is a battery of 12 Likert-scale type statements. The respondents are asked to indicate their level of agreement of with each statement. Possible levels of agreement are: strongly disagree, disagree, neutral, agree and

strongly agree. Other questions in this group ask the participant about the types of training received by contract/acquisition staff, contractor surveillance and the length of time contract/acquisition staff members serve in their billets.

The last group of questions is presented to all respondents and offers the respondent the opportunity to make any general comments or provide other feedback regarding the topic of services acquisition. This is an important aspect of the survey to facilitate the collection of additional information and data that may not have been captured within the body of the questionnaire. In addition, the general comment block allowed the participants the opportunity to voice their concerns or make recommendations concerning the wording of individual questions, the length of time to complete the survey, or to provide other miscellaneous information.

5.   Data Analysis Plan

The plan for analyzing data is to use various statistical tools to conduct an initial analysis of the responses to help identify any trends or points of interest in the following categories: 1) intra-region, intra-military service, 2) intra-region, inter-military service, 3) inter-region, intra-military service, 4) inter-region, inter-military service, and 5) inter-military service.

C.   IRB Process

The project team submitted a Protection of Human Subjects package to the Naval Postgraduate School's IRB in accordance with the *Naval Postgraduate School Instruction 3900.4: Protection of Human Subjects* (NAVPGSCOLINST 3900.4) for consideration. The package included a description of the survey (i.e., anonymous, web-based, and self-administered), informed consent information, a request for waiver of signed consent forms due to the nature of the survey, participant completion instructions, and a copy of all survey questions. The IRB approved the researchers' package. A copy of the IRB approval letter is provided in Appendix A; the IRB approved questionnaire is presented in Appendix B.

D.   Pilot Test

The pilot test period was from late October to mid-November of 2007. It was conducted to ensure the individual questions and completion instructions were well written and easily understood by the respondent. Of the ten potential respondents contacted, six completed the web-based survey—generating a response rate of 60 percent, which was lower than expected. However, the empirical data and general comments provided by the respondents proved invaluable in generating overall survey reliability for use in follow-on research projects.

E.   Report of Results

Chapter IV presents an initial analysis of the empirical data received from the five respondents to the pilot test. Chapter IV also presents numerous recommendations for improving the questionnaire to: 1) facilitate follow-on research projects, and 2) potentially increase the response rate to help provide a clear picture of the current state of acquisition management of services at the installation level.

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IV.　　　　Analysis of Pilot Data

A.　Introduction

The pilot test obtained a response rate of 60 percent, or six completed surveys of the possible ten. Although six results are not statistically significant, they do provide some insight into the current state of acquisition management of services at the installation level within the DoD. This chapter presents an initial analysis of four service categories'—Professional, administrative and management support, Maintenance and repair of equipment, Data processing and telecommunications, and Transportation and travel—data collected during the survey's pilot test. The other three service categories examined during the survey's pilot test are not analyzed due to several factors which are discussed later in this chapter. In addition, this chapter presents an analysis of general acquisition management methods. Finally, it concludes with recommendations for improving individual questions and overall survey design—with the goal of facilitating an increased response rate during follow-on research projects.

B.　Respondents

The six responses received were all from installations within CONUS. Specifically, 67 percent of the responses came from Army installations, 17 percent from Marine Corps installations and 17 percent from Air Force installations. Regionally, 83 percent of responses were from installations west of the Mississippi River; 17 percent were from installations east of the Mississippi River. To protect respondent's privacy and maintain confidentiality, the identification of individual installations that responded is not provided—this information is maintained by the authors.

C.   Service Categories Not Analyzed

Three of the seven service categories examined during the survey's pilot test did not generate enough raw data or substantial general comments to warrant statistical analysis. The three service categories not analyzed are Medical (FSC Q), Maintenance and repair of real property (FSC Z) and Utilities and housekeeping (FSC S). Nearly all respondents skipped every question for each of these service categories. In the case of Maintenance and repair of real property and Utilities and housekeeping, the general comments supplied indicated that these service categories were part of an overarching Base Operating Support (BOS) contract. There were no general comments provided as to how Medical services were acquired.

D.   Service Categories Analyzed

The web-based, self-administered survey designed for this project was interested in seven of the 24 service categories, as discussed in Chapter I. In the survey's pilot test, responses regarding four of the seven service categories— Professional, administrative and management support (FSC R), Maintenance and repair of equipment (FSC J), Data processing and telecommunications (FSC D) and Transportation and travel (FSC V)—presented enough data for analysis and general conclusions regarding the current state of services acquisition management.

1.   Contract Characteristics

The vast majority of respondents, 88 percent, indicated contracts within these four service categories were predominantly bid competitively during the five-fiscal-year period evaluated by the survey. The remaining 12 percent indicated that the contracts were sole-sourced. Such a significant majority indicates that competition, at least for these service categories, is sought and adequate.

Fixed-price contract was the dominant contract type used for acquiring these services. Indeed, 70 percent of respondents reported using fixed-price contracts—

indicating that contractors bore the preponderance of risk. In contrast, 30 percent utilized cost-type contracts, placing a higher level of risk on the government.

Only one respondent indicated the use of incentives in the form of award fees. Award fees were only used in the acquisition of Maintenance and repair of equipment and Transportation and travel services. As reported, it would seem that incentives could be better utilized in contracts for these services, possibly to drive contractor performance. Yet the low use of incentives reported also shows less opportunities for abuse where incentives are awarded without the requisite superior performance level being met.

2.   Acquisition Management Methods

The data show that the acquisition phases for each of the service categories continue to be conducted at the installation level. The only exceptions to this trend were: 1) An Army installation reported the solicitation and source-selection phases for Maintenance and repair of equipment were completed at the regional level, and 2) A Marine Corps' installation indicated that it completes all acquisition phases at the regional level. The Marine Corps' responses were consistent with their transition to regional contracting offices over the past few years.

3.   Project Team Approach

Although data indicates that a high percentage of installations use project teams for the acquisition of services, none of the respondents indicated a program manager leads the services acquisition team. The dominantly identified billet leading the acquisition team was the contracting officer.

Table 5.   Project Team Approach Used

FSC Categories	Is a Project Team Approach typically used in the acquisition of services at your installation?		Who, on-site (at your installation), leads the acquisition of services?		Who owns (generates and approves changes to) the requirements for service contracts?	
	Yes	No	Contracting Officer	Customer	Contracting Officer	Customer
Professional, administrative and management	5	1	6		1	5
Maintenance and repair of equipment	3	3	5		1	4
Data and telecommunications	3	3	5	1	1	5
Transportation and travel	4	2	3	1		3
Total	63%	38%	90%	10%	15%	85%

Despite the indication that project teams are utilized in the acquisition of services, the project team concept is not employed in the same manner as in systems acquisition (in which a program manager leads the acquisition of the system and owns and writes the requirements for the system). The pilot survey results, however, indicate a possible disconnect between the contracting officer who leads the acquisition of services and the customer who owns and writes the requirements.

## E.   General Acquisition Management Methods

This segment of the survey included four questions on general acquisition management characteristics at the installation level, regardless of service category. These questions were followed by a battery of 12 statements asking the respondents to indicate their level of agreement with the given statement. Possible

levels of agreement were Strongly Disagree, Disagree, Neutral, Agree or Strongly
Agree. The indicated levels of agreement to some of these statements generate
several points of interest.

From the four questions on general acquisition management characteristics,
one point of interest is the responses to the length of time Contracting Officer
Representatives (COR) and Quality-assurance Evaluators (QAE) serve in their
billets. Interestingly, 83 percent of COR and QAE personnel serve in their billets 2
or less years. The implied high turnover rate, especially the 33 percent who serve a
year or less, can have negative impacts on the quality of contractor surveillance.

**Figure 2.   Time in Billet**
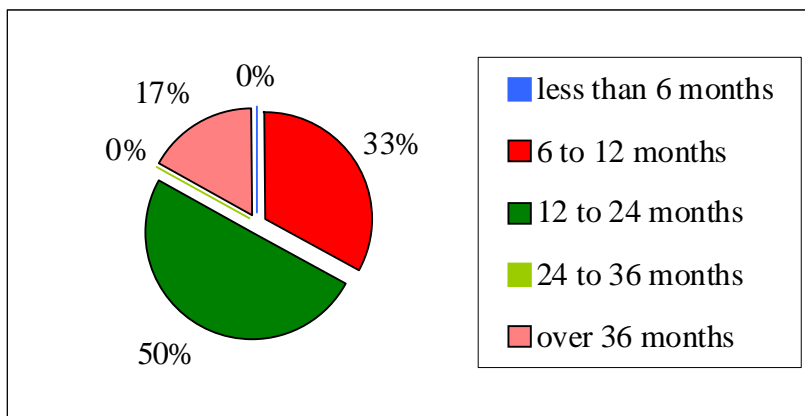
High turnover rates are indicative of increased training time as personnel take
time to learn the new position and of decreased level of concentration as personnel
tend to focus on follow-on assignments. These are some of the factors that lead to
lower quality service-contract oversight.

In the survey's last question, 12 statements describe aspects of services
acquisition, 11 of which should be the normal state of services acquisition at the
installation level. First, four of these statements pertain to service acquisition
personnel billets, manning levels, training and qualification. The results of the
survey, shown in Figure 3, confirm what the GAO has been reporting regarding the

services acquisition workforce: that it was and still is undermanned, undertrained and under-qualified. All of the respondents disagreed, some strongly, that there are an adequate number of billets for services acquisition management at the installation level. They also overall disagreed with the following statement, which said that acquisition management billets at the installation are adequately manned. It seems at 33 percent of installations, services acquisition management staff members are adequately trained or qualified, but at best they are not above 50 percent. Although the results show nothing new, they clearly indicate that things will not improve until the current management situation changes.

Figure 3.   Personnel Billets, Manning, Training and Qualification
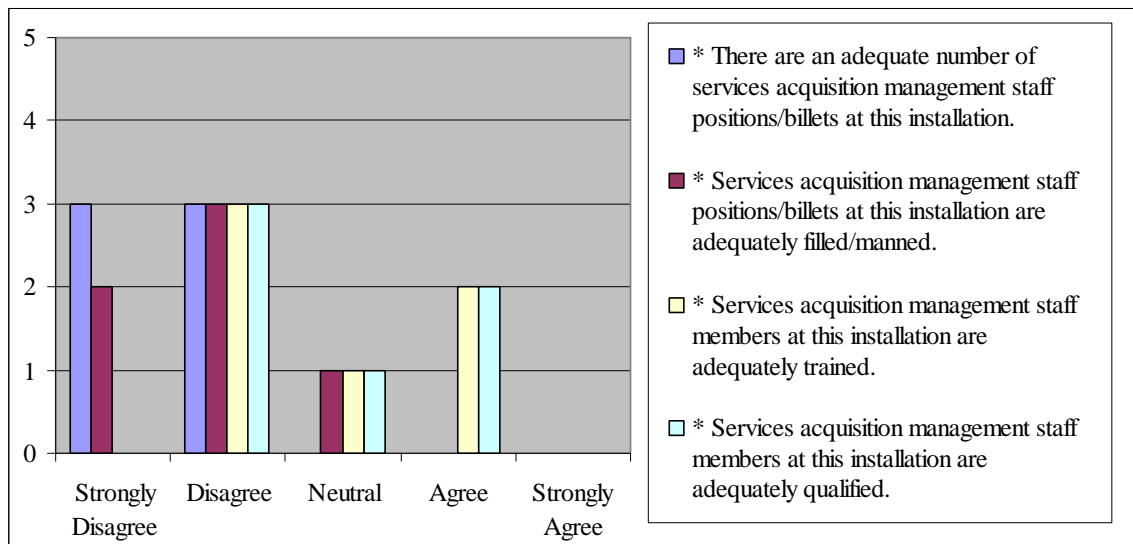
Two of the 12 questions investigate the use of a lifecycle approach for managing acquired services. Unfortunately, 50 percent of the respondents disagreed that a lifecycle approach is used at their respective installation (Figure 4) for both routine and non-routine services. The lack of a lifecycle approach for routine and non-routine services has the potential to place the government at a higher level of risk due to improper planning for the various phases in a service's lifecycle.
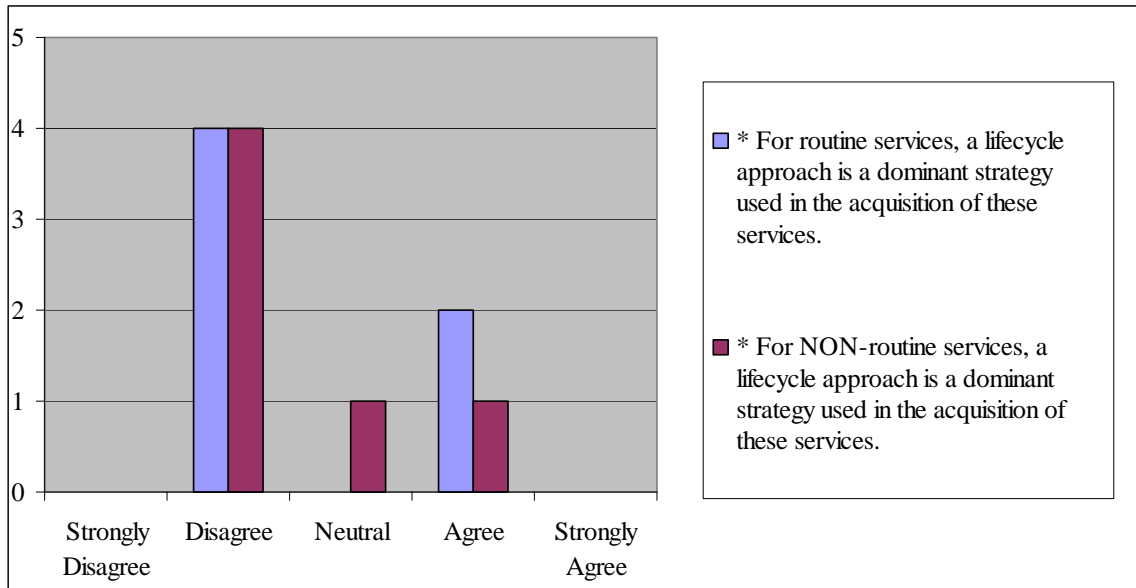
**Figure 4.   Lifecycle Approach**

Figure 5 depicts statements regarding Quality-assurance Evaluators—including their training and their performance of duties, as well as the level of oversight provided to monitor contractor performance (whether conducted by QAE or other personnel). The responses are spread across the spectrum, but are more negative than positive. Respondents overall agree that the training of QAE and submitting of reports but predominantly disagreed about affording a proper level of oversight to monitor contractor performance. This further confirms what the GAO has reported and shows that changes are still needed in this area, as oversight is vital to ensuring adequate contractor performance.

Figure 5.   Training and Oversight
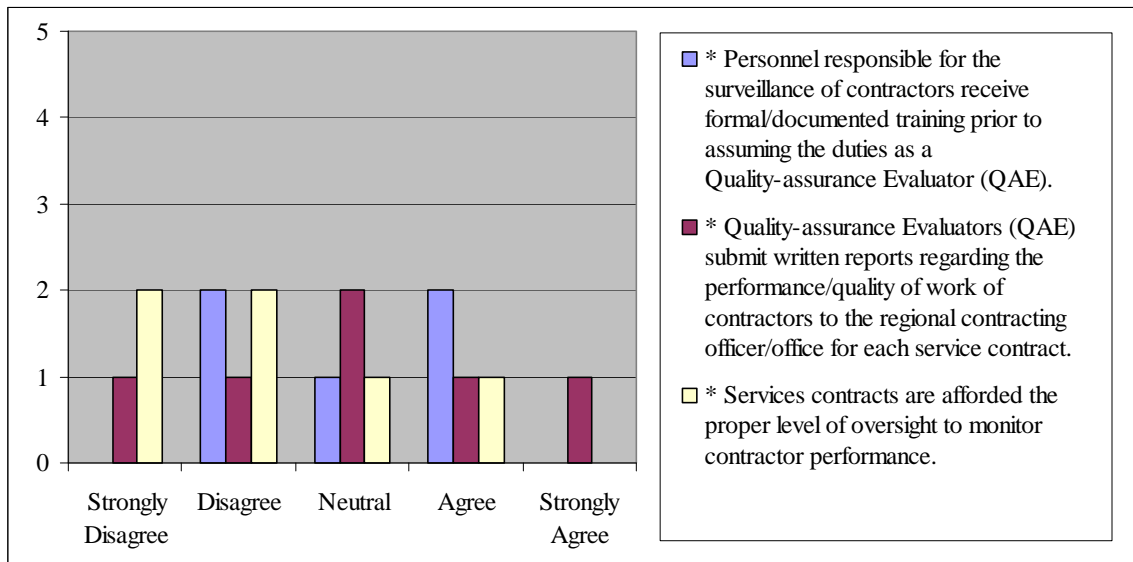
Finally, Figure 6 shows that the respondents predominantly agree that there is no discrepancy between requirements identification and Statements of Work/Objectives. Thus, the cost increase is not due to miscommunication of requirements and objectives. Respondents also agreed that market research was conducted for the acquisition of services.

Figure 6.   Positive Responses
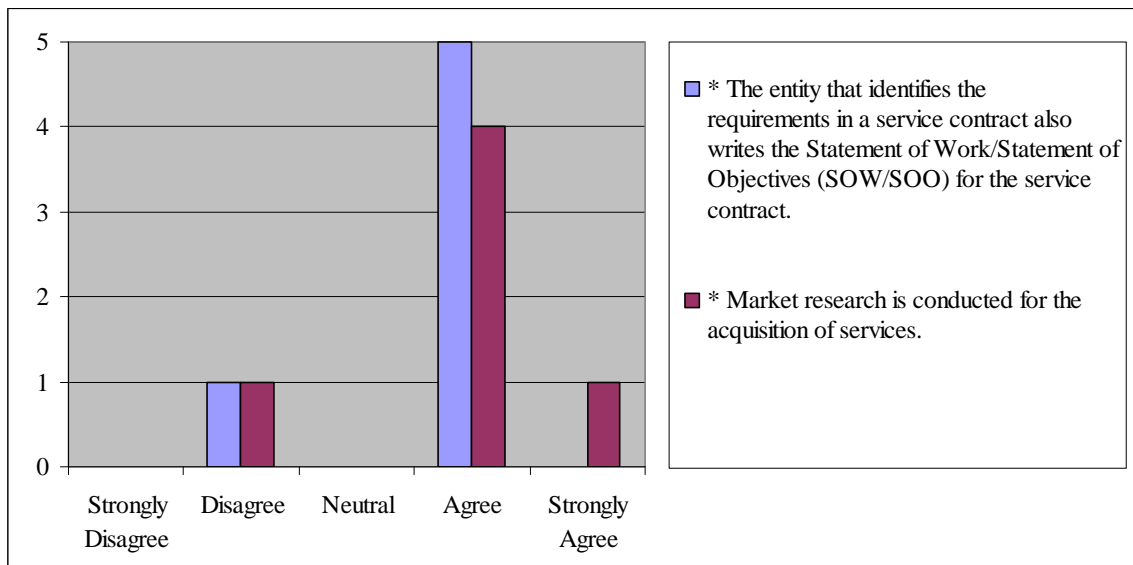
F.   Recommendations to Improve Survey

The completion of the pilot test not only gathered valuable data for analysis, it provided insight into how the survey questions were received by the respondents and whether the questions were applicable to the current state of services acquisition management.

The first survey improvement recommendation is to provide more concise and clear instructions to participants. The current completion instructions do not clearly state that a team approach may be used to answer the survey questions. A team approach to providing answers may improve the snapshot of acquisition management of services for that particular installation. The instructions still need to

be clear that each installation should only submit one complete survey and that individual team members should not submit partially completed surveys.

A second survey improvement recommendation is to decrease the number of survey questions presented at one time. The survey issued during the pilot test contains 85 questions, one of which has a subset of 12 questions. Although SurveyMonkey provides means to implement skip logic, 85 questions may be just too long. A means of shortening the survey would be to remove the three service categories—Medical; Utilities and housekeeping; and Maintenance and repair of real property—that did not generate enough data or information for analysis.

Another survey improvement recommendation is to create a survey based solely on a battery of questions that can be answered using a Likert-type scale. During the pilot test of the current survey, all respondents supplied an answer for each of the 12 questions. Future additional questions should ask if manning levels and billet fill rates have declined and should investigate the level of decline over the past five years. This tactic of asking questions may be faster for the respondent to complete and may still provide significant insight into the management of services acquisition.

A fourth survey improvement recommendation is to add a question within each service category that requests quantitative data regarding the dollars obligated for the service category in each year for a range of fiscal years. The recommended means to accomplish this is to provide the participant with several dollar value ranges and require that they select one of the ranges by checking a box. An alternative way of capturing quantitative data is to provide a blank text box and require the respondent to input data. The recommended method allows the survey designer to choose and format the dollar value ranges; the second method requires the survey designer to clearly convey to the participant the format of the dollar value entry (e.g., use of $ or comma or whole dollars).

Lastly, the survey should add a question asking each respondent to indicate the amount of time spent to complete the survey. The survey design options for this question—range or text box—are similar to those discussed above for dollars obligated.

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V. Summary, Conclusions and Recommendations

A.   Summary

The goal of this project was to gain insight into the current state of acquisition management of services at the installation level and to explore how to best collect empirical data in this area of study. Chapter II provided an overview of survey methodology, and, based on the advantages and disadvantages of various survey types, a web-based, self-administered survey was deemed the best method to collect the desired empirical data. Chapter III was a discussion of the various survey design aspects of the survey presented during the pilot test. Chapter IV analyzed the pilot test data for four of the seven service categories and made several recommendations to improve the survey to facilitate follow-on research projects. Here in Chapter V, the project's conclusions and recommendations for further study are presented.

B.   Conclusions

The most appropriate research method to collect the amount of desired data in this area of study is to conduct a web-based, self-administered questionnaire. The survey created for this project serves as a baseline for future research projects. Without a pilot test of a survey to test the questions in a real-world environment, researchers cannot expect reliable and valid survey results from a larger sample of the installation population. By incorporating the recommended design changes to improve the survey, further data collection efforts will yield higher-quality data and provide greater insight into the management of services acquisition at the installation level across the DoD.

The current state of services acquisition management at the installation level, as revealed by the initial analysis of survey pilot test data, demonstrates several of the key aspects causing increases in service contracts. Some of these aspects include deficit billet and manning levels, which are further exacerbated by

inadequate training and experience of acquisition personnel. The lack of robust project team and lifecycle approaches in the acquisition management of services is another factor contributing to ineffective and inefficient management.

C. Recommendations for Further Study

Acquisitions management, whether for a weapon system or a service, contains a broad range of topics, each of which generate multiple opportunities for further study and potential management-improvement recommendations. The authors present some possibilities for further study in the area of services acquisition management.

In Chapter IV, the discussion of which service categories were not analyzed identified that several service categories are sometimes grouped together under an overarching Base Operating Support (BOS) contract. Studies focusing on BOS contracts could examine the types of services typically bundled together in that type of contract. Empirical data could be collected to identify trends in contract characteristics, which acquisition management methods are used, or if the military services handle this type of contract differently.

Additional recommendations for further study focus on expansion. The first is to expand the geographical boundaries of the survey by issuing it to all CONUS and OCONUS installations for all of the military services. A worldwide survey would help identify trends between CONUS and OCONUS installations, along with trends between the military services.

Other expansion options include: 1) conduct surveys to capture empirical data regarding the other 17 service categories, 2) expand the number of fiscal years considered to identify long-term trends, and 3) create a survey to gather quantitative data on service contracts administered under the Simplified Acquisition Process.

One last recommendation for further study in the management of services acquisition is to examine other DoD agencies and field activities, such as the

Defense Logistics Agency (DLA), the Defense Finance and Accounting Service (DFAS) and the Defense Technical Information Center (DTIC).

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