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SYSTEM ACQUISITION MANAGEMENT: EXPLORING THE RELATIONSHIP BETWEEN PROGRAM AND CONTRACT MANAGEMENT PERSONNEL AT AIR FORCE PRODUCT CENTERS

THESIS

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System Acquisition Management: Exploring the Relationship Between Program and Contract Management Personnel at Air Force Product Centers

THESIS

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Abstract

The purpose of this study was to test if relationship problems exist between program and contract management personnel working in system-level acquisition throughout Air Force Materiel Command (AFMC). We used a survey instrument to examine a representative sample of program and contract management personnel assigned to various product centers.

A similar study was conducted at Aeronautical Systems Division in 1991. However, the survey instrument was inadequate for deriving rigorous results. Consequently, we improved upon the prior survey and obtained more definite findings.

Survey results showed that most program and contract managers believe conflict exists. Also, six of the twelve independent variables studied, (confidence in counterparts, goal compatibility, value in counterparts, communication, travel, and role ambiguity) significantly contributed to the conflict model. Furthermore, matrixed organizations, program management courses not teaching how to deal with contract managers, and the acquisition process itself, were identified as possible conflict contributors, but were not included in the model.

Recommendations for improving the program/contract management relationships were subsequently offered to AFMC and suggestions for future research were given.

SYSTEM ACQUISITION MANAGEMENT: EXPLORING THE RELATIONSHIP BETWEEN PROGRAM AND CONTRACT MANAGEMENT PERSONNEL AT AIR FORCE PRODUCT CENTERS

I. Introduction

This chapter provides the foundation for our thesis. The reader will find background information on relationships within an organization and the general issue of the program management (PM) and contract management (CM) personnel relationship within the Air Force system acquisition environment. Furthermore, the problem statement, investigative questions, and scope/limitations of our research are addressed in this chapter. Additionally, definitions pertinent to the entire thesis follow the scope/limitations section. Finally, we will close this chapter with a summary and a thesis overview.

Background

Organizations are formed and exist to accomplish specific objectives and goals. To accomplish these objectives and goals, communication and cooperation between different groups and their members are necessary and central issues within an organization. People from different work groups and departments must share their experiences and

expertise to capture synergy and create new services and products (Tjosvold, 1988:425). Synergy, communication, and cooperation are especially necessary between program and contract management acquisition personnel within the Air Force.

Program management (PM) and contract management (CM) personnel must function together as a team in acquiring systems, supplies, and services (Babina, 1993:25). Each group has their distinct role in the acquisition process. The program manager and program management community are responsible for acquiring a system to meet a need while staying within and balancing quality, cost, schedule, and performance (Pursch and Garrett, 1991:14). In contrast, the contracting officer and the CM community support the program manager and the PM community by managing the complicated and detailed contractual requirements that accompany so many contracts today, especially in the acquisition of major systems (Beck, 1985:26 and Pursch and Garrett, 1991:14). Therefore, PM and CM personnel must constantly work hand-in-hand, relying on each other's skill and expertise in their own roles, in order to acquire a major system effectively and efficiently.

In light of these distinct roles, combined with the environment in which they operate, a high amount of cooperation must exist between the program and contract management personnel. A successful program management/contract management relationship will strongly

influence the final quality, cost, and delivery of an acquisition (Belev, 1989:88).

General Issue

Within the system acquisition work force, a cohesive relationship between PM and CM personnel is vital to the successful procurement of systems, supplies, and services. The importance of this interaction between program management and contract management personnel increases proportionately with acquisition complexity (Pursch and Garrett, 1991:14). Despite the inherent importance of a cohesive PM and CM relationship, the individuals who assume these two key acquisition roles often appear to the acquisition community be working in opposite directions, rather than working together as a team to achieve the common goal--providing the highest quality systems at the lowest possible cost (Pursch and Garrett 1991:14).

With the recent Department of Defense (DOD) emphasis on total quality management in defense acquisitions, Headquarters Air Force Materiel Command, particularly Contract Management (PK), and Program Management (XR) offices, have expressed an interest in this issue. Due to this interest, Major General Kenneth E. Eickmann, AFMC Staff Director, sponsored the study to include the survey used to collect information about the relationship between program and contract management personnel.

Problem Statement

The purpose of our research was to examine whether relationship difficulties exist between PM and CM personnel. If it exists, what is the problem and how can it be resolved?

Investigative Questions

Our research problem, outlined above, was answered through the following investigative questions:

1. Does a conflict exist between PM and CM personnel?
2. Is there role ambiguity between PM and CM personnel?
3. Is there a PM and CM communication problem?
4. Are PM and CM goals compatible?
5. Is there cooperation between PM and CM personnel?
6. Is there a good working atmosphere between PM and CM personnel?
7. Do PM and CM personnel view each other as valuable to the acquisition process?
8. Do PM and CM personnel have confidence in each other?
9. Does job related travel effect the PM/CM relationship?
10. Are PM and CM personnel accepted by each other?
11. When PM and CM personnel work together, are there positive accomplishments?
12. When PM and CM personnel work together, is there group commitment?
13. Are PM and CM tasks dependent on one another?

We attempted to answer each of the above investigative questions through several opinion statements in a survey

with interval scales. Through these opinion statements, we aspired to capture the attitudes and perceptions of the respondents in relation to the concepts presented in the above investigative questions.

Scope of Research

The scope of our research focused on the relationship existing between system-level program management and contracting management personnel within the Air Force Materiel Command product centers. These product centers include: Electronic Systems Center at Hanscom AFB, MA; Human Systems Center at Brooks AFB, TX; Aeronautical Systems Center at Wright-Patterson AFB, OH; and Space and Missile Center at Los Angeles AFB, CA. Our research did not include any other service within the Department of Defense that performs system-level acquisition. Additionally, we did not include base-level program management and contracting management personnel.

Definitions of Terms

In order to ensure a common understanding between the reader and the researchers, key terms and concepts are defined below. This is done in an effort to avoid misinterpretation and confusion by the reader.

> Acquisition - The process of obtaining supplies, services, or systems by contract with appropriated funds, weather the supplies, services, or systems exist or must be created (Bova, 1992:2).
>
> Contract Manager - The acquisition professional responsible for managing the complicated and detailed

contractual requirements between the U.S. government and the contractors (Pursch and Garrett, 1991:14). For this research, contract manager includes the following acquisition personnel: buyers, purchasing agents, material managers, contracting officers, price analysts, procurement specialists, and directors of contracting.

Program Manager - An individual charged with the responsibility for design, development, and acquisition of the system/equipment, and design, development, and acquisition of integrated logistic support (Bova, 1992:47). As defined in this research, the term program manager includes the following: project officers/engineers/managers, logistics engineers, and program directors.

System Acquisition - The procurement of an entire weapon or support program including peculiar support equipment, supplies, spare parts, technical orders and manuals, training and training equipment, maintenance equipment, facilities, and personnel (McCarty and Rowland, 1991:17). For this research, systems acquisition is limited to Air Force product centers within Air Force Materiel Command.

Summary and Overview

In government acquisition, PM and CM personnel must work together in the procurement of systems, supplies, and services. A positive relationship between these two professional groups is essential in acquiring these goods and services at the highest quality and the lowest cost. The purpose of our research is to examine whether relationship difficulties exist, and if they do, how can they be resolved. We pose investigative questions tapping the possible concepts to answer the management question. The scope of our research is limited to Air Force system-level program and contract management personnel.

The remainder of our thesis contains four chapters. In Chapter II, Literature Review, we briefly address the broad issue of organizational relationships. Then, we provide a comprehensive review of what has been written and is already known about the relationship between program management and contract management personnel. Next, we define the factors which we believe can contribute to conflict between the PM and CM personnel. Finally, we give our justification for the needed research.

Chapter III, Methodology, addresses our research design and instrument. Also, we describe the construction method and plan for our chosen instrument type. After the description of the instrument-building process, we describe how the instrument was administered. Finally, we conclude this chapter by describing the methods used to analyze the data gathered, and by providing statistical assumptions and limitations of our research.

Chapter IV, Findings, consists of a presentation of the data collected from our survey and the statistical analysis performed on this data.

The final chapter, Chapter V, presents the conclusions of the study and recommendations for further studies exploring the relationship between program and contracting management personnel.

II. Literature Search and Review

Introduction

The purpose of this literature review is to assimilate the concepts and constructs from published information regarding relationship barriers between the PM and CM community in the system acquisition environment. To accomplish this review, we briefly address the broad issue of relationships within organizations. Next, we narrow our review to the literature explaining the general relationship between PM and CM personnel. Then, the main emphasis of our literature review is presented, focusing and concentrating on the central issue of the interaction between PM and CM personnel. Following this, we present our analysis and opinion of the known research and literature relating to the PM and CM relationship. Based on the above, we define and address possible factors that could adversely affect the PM/CM relationship and relate these factors to our investigative questions addressed in chapter one. We close this chapter by providing the justification for our research on the problem statement: Do relationship difficulties exist between PM and CM personnel?

Organizational Relationships

An organization is a social entity composed of people or groups of people who interact with each other to achieve a common goal or set of goals (Robbins, 1990:4). These

goals are accomplished in social systems that are anchored in attitudes, perceptions, beliefs, motivations, habits, and expectations of human beings; the very foundation of relationships (Katz and Kahn, 1978:37). The relationship patterns existing in an organization do not just emerge; rather, they are premeditated. Therefore, the relationship patterns among the members should be balanced and harmonized to minimize redundancy while ensuring that critical tasks are completed in fulfillment of goals (Robbins, 1990:4). Goal attainment is probably the most widely used criterion of organizational effectiveness (Robbins, 1990:53). It is directly related to the extent to which members within an organization understand each other's roles, exchange ideas and knowledge with one another, and work for the collective good of the parties involved (Tjosvold, 1988:428). To be effective, people in one group must know and understand the functions and objectives of other groups within their organization. With this knowledge and understanding, they will be able to communicate and cooperate successfully (Tjosvold, 1988:432).

Cohesive relationships are another measure of group effectiveness (Gibson and others, 1991:277). Cohesiveness can be defined as a force acting on the members to remain in a group that is greater than the forces pulling the member away from the group (Gibson and others, 1991:277). A cohesive group is one then, where the individuals are attracted to one another (Gibson and others, 1991:277).

Gibson states that a group may be attractive to an individual for several reasons:

1. The goals of the group and the members are compatible and clearly specified.
2. The group has a charismatic leader.
3. The reputation of the group indicates that the group successfully accomplishes its tasks.
4. The group is small enough to permit members to have their opinions heard and evaluated by others.
5. The members are attractive in that they support one another and help each other overcome obstacles and barriers to personal growth and development (Gibson and others, 1991:277).

Dr. Randy Boxx and others indirectly support the above views by forwarding a premise that cohesion between individuals and groups in an organization is greater when the individuals and groups have equivalent goals and objectives (Boxx, and others, 1991:203). However, this is often overlooked and de-emphasized in making management decisions (Boxx, and others, 1991:204). Furthermore, major components of cohesion are the realization by an employee that he or she contributes to organizational accomplishments and is rewarded for his/her contributions (Boxx, and others, 1991:204). One noteworthy point about the research conducted is that it was performed on middle- and upper-management government employees in the federal highway and transportation department (Boxx, and others, 1991:197). We make an inference that the highway and transportation employees studied are comparable to Air Force system

acquisition employees. We draw this parallel because both groups work for or with the U.S. government and must comply with numerous governmental rules and regulations to obtain a "system." For example, a roadway is a system the highway and transportation department acquires, while an aircraft would be a defense-related system acquisition for the Air Force.

The PM and CM Relationship

In reviewing the literature on the relationships between PM and CM personnel, we noted that all the authors agree that this relationship should be based on mutual cooperation and trust (Block and Hadlow, 1975:83-88; Beck, 1985:26; Dembling and Cavanaugh, 1988:29-33; Belev, 1989:83; Cook and Champlain, 1990:4-7; Pursch and Garrett, 1991:14-17). In addition, cultivating a team relationship between PM and CM personnel is based on a collective understanding of each other's roles and responsibilities (Beck, 1985:27; Babina, 1993:26). Although the PM/CM relationship must be built on cooperation and trust, it is often characterized by tension created by the differing roles and responsibilities of the PM and CM personnel (Dembling and Cavanaugh, 1988:32). The PM personnel's main responsibility is acquiring the system. In contrast, the CM personnel's foremost obligation is to support the PM community by ensuring the contract is in compliance with the numerous federal policies and regulations for acquisition (Pursch and

Garrett, 1991:14). These role differences serve as a check and balance between these two groups (Beck, 1985:26; and Cook and Champlain, 1990:7). The PM community develops the acquisition plan, while the CM community ensures that the acquisition plan is carried out in accordance with all the applicable laws and regulations. In contrast, to keep this check and balance intact and functioning properly, some individuals do not believe that the tension which characterizes the PM/CM relationship can or should be eliminated (Dembling and Cavanaugh, 1988:32). Although these articles relate to the relationship between the PM and CM personnel, most were subjective in nature and only one of the above articles contained inferences based on empirical data (Cook and Champlain, 1990:7).

Analytical Research on the PM/CM Relationship

The most extensive analytical research performed to date on the relationship between contract management and program management personnel was performed by a critical process team (CPT) located at Aeronautical Systems Division of Air Force Systems Command (now known as Aeronautical Systems Center, Air Force Materiel Command) as reported by Pursch and Garrett (1991:14-17). Aeronautical Systems Division (ASD) administered an internal survey to 600 program management and contract management personnel. The survey investigated whether an interface problem existed between the PM and CM community in the purchasing and

contract administration of supplies, services, and systems.

The survey was distributed in March 1991 to military officers (second lieutenant to general) and civilians (GS-5 to Senior Executives). With 441 useable observations, two major conclusions were derived from the data:

> More than 60 percent of the PM community and 85 percent of the CM community agreed that a conflict exists between PM and CM personnel. Thus, a PM/CM conflict does exist in many System Program Offices.
>
> The PM/CM personnel conflict is both real and significant in terms of its adverse impacts on mission success (Pursch and Garrett, 1991:17).

Additionally, according to the survey results, Pursch and Garrett considered the following to be significant contributors to the PM/CM conflict:

(1) Contracting personnel are guided by the Federal Acquisition Regulation (FAR) and program managers are guided by schedule concerns (program milestones).

(2) Program managers do not plan or coordinate acquisition strategy with all functionals early enough, resulting in reactive versus proactive contract management.

(3) Program mangers and contracting officers assume each other's roles (authority). Thus, PMs and contracting personnel overstep their actual expressed authority, each assuming some of the authority of the other, sometimes yielding constructive changes.

(4) Program managers travel too much, making internal organizational communications and coordination between PMs and contracting personnel difficult at best.

(5) Contracting personnel give program mangers inconsistent advice for resolution of contracting issues because of varying degrees of experience and job knowledge. This inconsistent contracting advice leads PMs to the practice of asking various contracting personnel for advice, until PMs get the answer they want to hear. (Pursch and Garrett, 1991:16-17)

Based on the above, Pursch and Garrett concluded their article with a report of recommendations to improve the relationship between the two acquisition disciplines:

> Each needs to learn more about the other's role and how to interact with each other more successfully. A possible solution would be for the DOD academic institutions to revise the curricula in all systems acquisition-related courses to include blocks of instruction that facilitate interfacing between the two groups.
>
> Team building concepts should also be a part of the curricula.
>
> Exercises should be developed where each group could have an opportunity to serve in the other's role.
>
> Finally, product division/centers involved in systems acquisition, such as ASD, should consider structuring a system to permit newly assigned officers and civilians an opportunity to temporarily serve in each other's position. (Pursch and Garrett, 1991:17)

Negative Factors Affecting the PM/CM Relationship

The program and contract management relationship can be affected by many factors. Based upon the literature review and research, we hypothesize the following factors as contributing sources to the general concept of conflict between program and contract management personnel. In this research, we attempt to answer the first investigative

question, "Does a conflict exist between PM and CM personnel?" posed in Chapter I, by answering the remainder of the investigative questions. We theorize these questions make up some of the negative factors that could adversely affect the PM/CM relationship.

Role Ambiguity. Role ambiguity can be defined as uncertainty about what the occupant of a particular office is supposed to do (Katz and Kahn, 1978:206). Research has shown that the consequences of role ambiguity are directly related to reduced performance and strained relationships (Rizzo, House and Lirtzman, 1971:151). In systems acquisition, the PM and CM personnel have many distinct roles. However, we also believe that there are many overlapping roles in the performance of everyday duties. Investigative question 2 asks, "Is there role ambiguity between PM and CM personnel?" By answering this investigative question, we will try to determine the extent role overlap exits between program and contract managers.

Communication Problems. Communication is defined as the exchange of information and the transmission of meaning---it is the very essence of an organization (Katz and Kahn, 1978:428). Investigative question 3 asks, "Is there a PM and CM communication problem?" Communication difficulty is one of the most frequently cited sources of conflict between individuals and groups within organizations (Robbins: 1990:424). Distortions in communication occur both horizontally and vertically within the organization.

The less the differing units (groups) communicate and know about each other's jobs, the less collaboration will take place, thus leading to unreasonable demands and conflict (Miller, 1959:253). Another source of communicative conflicts is the willful withholding of information by one unit from another (Robbins: 1990:425). Answering this investigative question will help us decide whether there is communication problem between the program and contract management communities relationship.

Goal Compatibility. Investigative question 4 asks, "Are PM and CM goals compatible?" Specialization and differentiation create groups with different goals which can be sources of conflict (Robbins, 1990:315). The goals of separate groups within an organization may become primary to the group members, and when achievement of group goals becomes more important than accomplishment of the organization's goals, conflict can result (Selznick, 1949). When this question is answered, it will help us decide if the goals of the PM and CM communities are in conflict with one another.

Cooperation Problems. Cooperation is the ability of people or groups to work together in unison to achieve a goal or set of goals (Widmeyer and others, 1989:71). The more individuals who cooperate within a group, the more effective the group will be in reaching group goals (Widmeyer, 1989:71). We attempt to measure cooperation by

answering investigative question 5, "Is there cooperation between PM and CM personnel?"

Negative Working Atmosphere. A positive working atmosphere facilitates the performance and interaction of group members (Mossholder, 1982:575). The PM and CM working atmosphere is certainly no exception to this generally accepted premise. Investigative question 6, "Is there a good working atmosphere between PM and CM personnel?", tries to measure the environment which currently exists between PM and CM personnel.

No Value Added. In the spirit of total quality management, we ask investigative question 7, "Do PM and CM personnel view each other as valuable to the acquisition process?" By answering this question, we strive to determine if these two professions view each other as contributors to the procurement process. Group and organizational relationships are built upon the degree of contributions from the parties in the relationship (Widmeyer, 1989:75). If members of a group (PM or CM) are viewed as non-contributors by the other, an inharmonious relationship will likely result.

Lack of Confidence. Confidence can be described as the amount of trust an individual has in the abilities of others and the individual's belief about the goodness of another's judgements or choices (Sniezek, 1992:124). A lack of confidence in group members can cause dissension in the PM/CM relationship. Investigative question 8, "Do PM and CM

personnel have confidence in each other?" tries to capture how PM and CM personnel feel about each other's abilities, judgement, and guidance.

Too Much Travel. One common assumption in systems acquisition is that program managers travel too much limiting their availability to interact with contracting personnel, thus putting a strain on the PM/CM relationship (Pursch and Garrett, 1991:16). By asking investigative question 9, "Does job related travel affect the PM/CM relationship?", we attempt to validate the above assumption.

Lack of Acceptance. Acceptance is not necessarily agreeing with another person, but it is believing in what a person says and/or does, without harboring judgements against them (Filley, 1975:66-67). Acceptance as a professional facilitates the exchange of opinions and concerns, thus enhancing the PM/CM relationship. By asking investigative question 10, "Are PM and CM personnel accepted by each other?" we attempt to find out if there is friction in the relationship based on lack of acceptance between PM and CM personnel.

Lack of Group Accomplishments. There is a circular connection that exists between organizational accomplishments and the development of successful relationships between organizational members (Widmeyer and others, 1985:72). Supportive relationships between organizational members leads to organizational accomplishments and success; which, in turn, results in the

increased development of the relationships within the organization (Widmeyer and others, 1985:72). We investigate this factor with investigative question 11, "When PM and CM personnel work together, are there positive accomplishments?"

Lack of Group Commitment. Group commitment can be defined as the strength of group members' desires to remain in a group (Gibson and others, 1991:277). We address this factor by asking investigative question 12, "When PM and CM personnel work together, is there group commitment?" Highly cohesive groups consist of individuals who are motivated to be together and tend to be effective in their performance (Gibson and others, 1991:277). By answering this question, we attempt to determine the extent PM and CM personnel are committed to working together on group projects.

Mutual Task Dependence. Investigative question 13 inquires, "Are PM and CM tasks dependent on one another?" Mutual task dependence refers to the extent to which two groups in an organization depend upon each other for assistance, information, compliance, or other coordinative activities to complete their respective tasks effectively (Robbins, 1990:418).

> When groups are forced to interact with each other, there is a definite escalation in the potential for conflict. However, the interaction does not have to lead to conflict. It can also lead to friendly and cooperative relations. If there is a history of antagonism between the groups, mutual task dependence will intensify it. Similarly, it will intensify friendly relations as well (Robbins, 1990:418).

Within the system acquisition environment, the program and contract management personnel must, at a minimum, interact daily with each other. By answering this investigative question, we strive to determine the strength of dependency between the program and contract management personnel in system-level acquisitions.

Justification for Proposed Research

The PM and CM cohesive relationship is important to the total cost and quality of system acquisitions throughout the Air Force (Belev, 1989:88). Because of this important principle, our research builds upon the published information dealing with the relationship between program management and contract management personnel. Knowledge gained through our research may not only provide data on whether a relationship problem exists, but may also provide an additional foundation for changing the current training procedures and management of these key acquisition professionals. More specifically, our research will strive to expand upon ASD's research and substantiate some of their conclusions by developing a survey instrument and surveying additional system acquisition centers.

Literature Analysis and Conclusion

The overall postulate of the literature reviewed on organizational relationships addressed the general importance of effective communication, cooperation, and cohesiveness among different groups. Without effective

communication and cooperation, members of each group will not be able to understand each other's roles and responsibilities in the acquisition process. In addition, a group with low cohesion does not possess interpersonal attractiveness for its members. With regard to the PM and CM relationship, little has been written or researched on this subject. Most of the articles pertaining to program managers, contract managers, or both, focused on the actual roles and the importance of each discipline in system acquisition, rather than the actual interaction between the program management and contract management communities. Only ASD, as presented in Pursch and Garrett's article, pressed forward with the research on the PM and CM roles and analyzed the relationship through statistical analysis to draw conclusions on factors affecting the relationship.

The investigative questions presented in Chapter I represent possible factors which could negatively impact the PM and CM relationship. These concepts were further explored and defined for our research through additional literature review in the field of behavioral sciences and organizational behavior.

Although much has been written on the subject as addressed above, actual objective research in any form is limited. Therefore, we believe our study is justified because it attempts to fill the vacuum of subjectivity with objective research in this important area. The following chapter looks forward by specifically addressing the

methodology we use in conducting the research to answer the management and investigative questions posed in Chapter I.

III. Methodology

Introduction

This chapter describes the methodology used to accomplish the research objectives and answer the investigative questions posed in Chapter I. It includes a description of the development of the questionnaire, a characterization of the data collection plan, and the statistical tests used in processing and analyzing the data.

Research Design

Based on the information reported in Chapter II, we determined that the most appropriate method to obtain data on the PM and CM relationship was through an ex post facto design involving an interrogative survey. This study was an extension of the cross-sectional research reported by Pursch and Garrett (see Chapter II). Our study expanded upon this research by surveying additional system acquisition centers (i.e., product centers) and developing a new survey instrument measuring additional variables possibly affecting the relationship.

Population and Sample Selection

Our population of interest was all the military and civilian program management and contract management personnel performing system acquisition within Air Force Materiel Command at the following four systems acquisition Product Centers: Aeronautical Systems Center, Electronic

Systems Center, Human Systems Center, and Space and Missile Center. These product centers were chosen because they represent approximately 85 percent of all the program and contract management personnel that perform system-level acquisition within the Air Force. Through the Air Force ATLAS system, we calculated the size of the population to be 6798 individuals (3669 military personnel and 3129 civilian personnel). Using a confidence level of 95 percent, a sample size of 364 is sufficient to make inferences for a population up to 7000 (Sekaran, 1992:253). Eight hundred survey packages were randomly distributed to the population of interest (11.7 percent of the population) in the expectation of having at least a 50 percent return rate for 400 observations. Usually, there are many questionnaire recipients who do not respond to surveys--a normal response rate can range from 30 to 70 percent depending on the population of interest and the interest of the population on the issue (Emory and Cooper, 1991:333). Based on our analysis of past AFIT graduate students' surveys, with the proper sponsorship, return rates ranged from 50 to 75 percent.

The individuals were selected based on the last number of their Social Security Number. For each career field at each product center, we used the random number generator feature on a Texas Instrument BAII Plus calculator to select a number (0 through 9) to designate individuals to include in our sample. Table 1 shows the number of surveys sent to

each product center, and the number of valid responses from that center.

TABLE 1

NUMBER OF SURVEYS SENT & RESPONSES RECEIVED

PRODUCT CENTER	# SURVEYS SENT	SURVEY RESPONSES	PERCENT RESPONDING
ASC	479	244	50.9
ESC	114	48	42.1
SMC	160	70	43.8
HSC	47	23	48.9
TOTAL	800	385	48.1

Instrument Development

The survey instrument used by ASD in 1991 was developed by a Critical Process Team as part of a Total Quality Management (TQM) initiative to focus on what was considered to be a significant problem--the highly strained relationship between PM and CM personnel (Pursch and Garrett, 1991:15). Its main purpose was to evaluate the PM and CM relationships (Pursch and Garrett 1991:15). The survey consisted of 22 opinion statements attempting to measure 22 variables to examine whether conflict existed between program and contract management personnel located at ASD. However, the survey had several shortcomings. First, nine out of the twenty-two opinion statements were double-barrelled in nature. That is, the items lent themselves to different possible answers because two or more opinions are

requested by a single survey item (Sekaran, 1992:204). Second, there were some ambiguous, leading, and loaded questions. Third, the instrument was not pretested. Last, internal validity was questionable. This was analyzed through Cronbach's Coefficient Alpha, which is the statistical procedure employed to ensure reliability, an important element of internal validity (Sekaran, 1992:126). Reliability coefficients range from 0 to 1. A coefficient closer to 1 indicates greater reliability, or less random error associated with measurement of the variable under consideration (Sekaran, 1992:126). Although the over all Cronbach Alpha for the entire ASD survey was 0.78, we believe the reliability and thus the validity of the survey was questionable since the Cronbach Alpha was derived from these one-item scales. Because of the above shortcomings, limited inferential statistics could be employed; therefore, descriptive statistics performed the major role in the analysis of the data. As a result, we believe the survey instrument needed improvement to measure the variables of interest. Thus, this survey instrument provided a starting point for our instrument development.

We used a four-step approach in developing our research instrument. First, after reviewing the literature and the prior ASD survey, we determined a more rigorous instrument was needed to answer the investigative questions outlined in Chapter I and to generalize to the population of interest. Second, we drafted questions to capture objective facts

(demographic data), and more importantly, subjective feelings, perceptions, and attitudes (opinion statements) about the program and contract management personnel relationship. We retained many of the underlying concepts from ASD's survey, but reworded them where necessary to eliminate the doubled-barreled, ambiguous, leading, or loaded survey items. The next step was the design and organization of the complete survey package. We drafted the introduction and instructions, randomly arranged the sequencing of questions, and formatted the overall survey. Finally, the draft survey was given to several faculty from the Graduate Management Systems Department at AFIT to identify omissions and excesses, solicit feedback, and ensure that undesirable psychometric qualities were eliminated.

Instrument Pretesting

The survey was pretested before mailing it to the sample. This was done to identify weaknesses in our survey instrument. We administered the pretest to 14 program management and 14 contract management personnel (18 fellow graduate students and 10 personnel currently located at ASC) with prior and/or current system acquisition experience.

Analyzing the responses on the pilot survey using Cronbach's Alpha reliability procedures identified scale shortfalls. Table 2 was used to determine the degree of

internal consistency using the initial Cronbach's Alpha scores on the pilot test (Sekaran, 1992:287).

TABLE 2

CRONBACH'S COEFFICIENT ALPHA: CLASSIFICATION VALUE

ALPHA	CLASSIFICATION
.00 to .59	Poor
.60 to .79	Acceptable
.80 to .89	Good
.90 to 1.00	Excellent

(Sekaran, 1992:287)

The adjusted Cronbach's Alpha for the variables are summarized in Table 3 below. The data was analyzed using the Statistical Analysis System Procedures Guide (SAS Institute Inc., 1990:138-139) version 6 on a VAX 4400 computer to asertain the reliability for the variables. As can be seen, the different scales ranged from a low Cronbach's Alpha of 0.61 to a high of 0.87. The data from which this table was generated is shown in Appendix C.

TABLE 3

PILOT SURVEY: CRONBACH'S COEFFICIENT ALPHA RESULTS

SURVEY SECTION	NO. OF ITEMS	ADJUSTED ALPHA
Communication	4	.80
Goal Compatibility	3	.61
Cooperation	6	.81
Coordination	4	.74
Working Atmosphere	4	.85
Value	3	.84
Confidence in Counterparts	6	.87
Travel	3	.80
Acceptance	4	.79
PM/CM Accomplishments	4	.84
Group Commitment	4	.76
Mutual Task Dependence	5	.74

As a result of the Cronbach's Alpha of the scales and the comments received from the pilot survey respondents as well as the AFIT faculty members, we made modifications to some items and added additional ones with the objective of improving the reliability and validity of the survey instrument. Additionally, due to the feedback and our subsequent research, we added a section measuring "role ambiguity" to increase the overall construct validity of the instrument.

After the collection of the final survey data from the respondents, we checked the reliability of our instrument again. Even when well-validated measures are used, it is always a good idea to check for the interitem consistency reliability of the variables (Sekaran, 1992:287). Table 4 shows the result of the data analyzed using SAS procedures

(SAS Institute Inc., 1990:138-139) to ascertain the reliability for the variables. In addition, the results of the pre-test survey's Cronbach Alphas are provided for comparison to the final instrument's Cronbach Alphas.

TABLE 4

CRONBACH'S ALPHA FOR THE VARIABLES

SURVEY SECTION	NO. OF ITEMS	FINAL ALPHA	PRE-TEST ALPHA
Role Ambiguity	4	.77	*
Communication	8	.85	.80
Goal Compatibility	4	.73	.61
Cooperation	6	.83	.81
Working Atmosphere	4	.89	.85
Value	4	.77	.84
Confidence in Counterparts	8	.86	.87
Travel	2	.81	.80
Acceptance	6	.86	.79
Group Accomplishments	4	.80	.84
Group Commitment	5	.75	.76
Mutual Task Dependence	6	.73	.74

* Variable not included in the pre-test survey

The results indicate that the Cronbach's Alpha for most of the variables improved, while five showed only marginal decreases, indicating satifactory stability across samples. Thus, the internal consistency reliability of the measures used in this research are considered good and adequate for further analysis (Sekaran, 1992:287).

The correlation of all the variables indicates Cronbach's Coefficient Alpha of 0.91 for the entire instrument. According to Sekaran, this high Alpha indicates excellent internal consistency of the instrument (Sekaran,

1991:287). The full results of the analysis for the instrument reliability are shown in Appendix E.

Final Survey Instrument

The final survey was sponsored at the command level of AFMC and approved by Air Force Manpower and Personnel Center's survey control office (AF SCN 93-23) for official research. It consisted of a cover letter and three parts (Appendix B). The cover letter, signed by the research sponsor, Major General Kenneth E. Eickmann AFMC/CS, provided background on the study and encouraged recipients to complete the questionnaire. Part I, Background Information, was designed to collect demographic information from six questions that were used to identify differences among the respondents. Respondents were asked to provide the following: their education level, military or civilian status, rank or grade, job function, and acquisition experience. Part II, Opinion Statements, contained 94 statements. Of those, 61 made up 12 scales (see Investigative Questions) covering the domain of interest. The remaining 33 survey statements did not measure any particular variable, but were other possible contributors to conflict. The responses to these statements were limited to a seven-point, Likert-type scale ranging from strongly disagree to strongly agree. Part III, Personal Responses, had a total of four open-ended statements and questions providing the respondents an area for personalized comments

about the PM and CM relationship. Based on information gathered during the survey pretest, the average time a respondent spent on completing the final survey was 35-40 minutes.

Data Collection

We felt a mail survey for this type of research was more appropriate than direct observation for several reasons. First, the geographic locations of different centers and time constraints placed on the researchers made observation impractical. Second, information on internal attitudes and options can rarely be derived except through questioning. Finally, the mail survey is perceived as being more impersonal, providing more anonymity than the other survey methods (Emory and Cooper, 1991:333).

The surveys were sent by mail 8 March 1993 directly to 800 individuals working at Air Force product centers, (i.e., Aeronautical Systems Center, Electronic Systems Center, Human Systems Center, and Space and Missile Center). The surveys included the cover letter, survey instructions, questionnaires, answer sheet (AFIT Form 11E), and a self-addressed return envelope. The cover letter and Part III of the survey included a deadline date of 30 March 1993. Based on our inferences from several survey research studies, we believe the suspense date of 30 March provided ample time to respond to the survey. Once a respondent completed the survey, he or she personally sealed the survey in a pre-

addressed return envelope. This ensured respondent confidentiality and compliance with Air Force privacy act requirements and may have aided in increasing the response rate and facilitating prompt return of the survey (Emory and Cooper, 1991:333).

Validity

Even in the best designed studies, there are always concerns about internal validity of the instrument and the generalizability to the population of interest (Sekaran, 1992:171). Internal validity examines the consistency, logic, and therefore the credibility of the entire design and execution of the study. It includes how well an instrument measures the concepts it is supposed to measure (Emory & Cooper, 1991:179). External validity refers to the extent the results found in the study are generalizable to the actual population (Sekaran, 1992:126). We address our action to ensure internal and external validity below.

Internal Validity

The primary threat to internal validity in this study is instrumentation, or adequate measurement of the variables by the instrument used (Emory & Cooper, 1991:179). The internal validity was ensured primarily through applying content validity tests to the measuring instrument. Content validity addresses whether a measure includes an adequate and representative set of items that tap the concept under study (Sekaran, 1991:171). Experts in the field of study

can help determine content validity (Sekaran, 1991:172). We consulted with faculty from the Department of Graduate Management Systems, Air Force Institute of Technology on item wording and content. Furthermore, content validity was strengthened through the pretest on program and contract acquisition personnel, subsequent evaluation of the results, and the editing and addition of scale items. For this research, we believe our survey adequately covered the topic under study.

We assumed the construct validity of our instrument to be sound. Construct validity testifies to how well the result obtained from the use of the measure fits the theories around which the instrument is designed (Sekaran, 1991:173). Reliability is a necessary condition for establishing this type of validity of measurement, and as shown the reliability for each scale was quite acceptable (see Table 4). It was assumed that the 12 concepts addressed in the literature can cause conflict between program and contract management personnel. The scales in the survey have been shown to accurately measure those twelve concepts. To provide some evidence of construct validity, a correlation analysis between the dependent variables under study and the concept being measured (conflict between program and contract management personnel) was accomplished. The results show most of the independent variables are significantly correlated with one another, and

10 of the 12 are significantly correlated with the dependent variable, conflict.

External Validity

External validity refers to the extent of generalizability of the results of a study to other people, events, or settings (Sekaran, 1992:127) given that the study is internally valid. Emory and Cooper lists the three major threats to external validity: the reactivity of testing on X; the interaction of selection; and, other reactive factors (Emory and Cooper, 1991:425). The first threat, reactivity of testing, deals with the sensitization of subjects through pretesting. In our research, we used a separate (but similar) group for the pretest so this threat was effectively absent. Concerning the interaction of selection, the population was randomly sampled through the requirement that members were randomly selected to complete the survey based solely upon the last digit of their Social Security Number. Thus, the threat to external validity through selection was effectively minimized. The last threat, other reactive factors, refers to those factors artificially induced in any research setting. For example, respondents may answer differently due to the knowledge that they are participating in a survey. To overcome this, directions before each part of the survey requested honest and thoughtful responses to all questions. Additionally, directions at the beginning of the survey stated that

respondents were not to place their name anywhere on the survey package. As a result, this last threat to external validity was also minimized as much as possible. Considering that these threats have been addressed and minimized, our research should be valid for describing the population of AFMC program and contract management personnel engaged in system acquisition activities.

Data Analysis

Our plan of analysis was through descriptive and inferential statistical tests. First, descriptive statistics were done to find the measure of central tendency and dispersion for the survey items. Then, we constructed frequency distributions through the use of bar charts and frequency tables to show how individuals responded to the demographic items. The above analysis provided a sound feel for the data. The first inferential tests conducted were t-tests to determine if significant differences existed between program and contract management personnel. The t-test is used to determine if the difference between two groups' mean scores (i.e., program and contract management personnel) for a particular variable is large enough to be considered a true difference or the result of random differences due to sample selection for two variables (McClave and Benson, 1991:427). Following this, we calculated the Pearson's product-moment coefficients of correlation to measure the relationships between the

criterion (conflict) and each predictor (communication, cooperation, mutual task dependence, etc.). That is, we estimate the direction and significance of the relationships between all the variables of interest. Finally, we performed stepwise regression on 12 independent variables against the dependent variable conflict to find the largest contributing factors. This procedure can identify the most important predictors in explaining the variance in the criterion variable (Sekaran, 1992:269). The statistical analysis performed on the data was conducted using SAS/STAT User's Guide (SAS Institute Inc., 1990).

Assumptions and Limitations

Statistical analysis of the survey data require the following assumptions:

a. Observations must be independent.
b. Populations have equal variances.
c. Measurement scales are at least interval.
d. Observations are drawn from normally distributed populations (Emory and Cooper, 1991:530).

The survey uses a seven-point, Likert-type scale for the opinion statements, and we assume that intervals among the verbal anchors approach equality. Whether a particular scale is interval or ordinal is often a matter of judgement by the researchers (Emory and Cooper, 1991:176). Therefore, we assume the Likert-type scales in our survey have the characteristics of interval data, and parametric statistic tests are appropriate (Emory and Cooper, 1991:176).

Summary

We separated the research into two phases. The first was a literature review which provided insight into the program and contract management relationship. This helped identify key areas to investigate in order to determine the possible factors which could negatively affect their relationship. The results of this phase of the research are reported in Chapter II. In this chapter, we specifically described the second phase of the research effort--the methodology for accomplishing the study. We selected an ex post facto design involving a survey to measure variables affecting the PM/CM relationship. Four Air Force Systems Acquisition Centers (ASC, ESC, HSC, and SMC) comprised the population of interest.

We described the development of the survey instrument with the the final Cronbach's Coefficient Alpha of .91. This indicated excellent internal consistency in the instrument.

Next, we addressed the issue of instrument and external validity in our research. We believe external validity to be sound and relatively free from confounding factors.

The primary statistical test to be used in answering the investigative questions was t-tests. Additional analysis will be performed through descriptive statistics, Pearson's product-moment correlation between the variables, and stepwise regression. The results of the questions investigated in this research are presented in Chapter IV,

Data Analysis and Discussion. Recommendations, findings, and conclusions based on the results of these analyses are drawn in Chapter V.

IV. Data Analysis and Discussion

Overview

This chapter provides the results of the research and includes the analysis of those results. Topics discussed include survey response rate, demographics of the sampled population, and reliability of the survey instrument. Next, we present the analysis of the results, and address several other issues not directly related to the investigative questions, but of interest to the researchers. These issues could be compared with similar items in ASD's survey. Finally, we provide a summary of the data analysis section.

Notes on Presentation of Data Analysis

Prior to addressing the investigative questions some discussion of survey response rate, respondent demographic, and instrument reliability is appropriate. Throughout this chapter, percentages are rounded and may not sum to 100 percent. Not every respondent answered all the survey items, but the .95% confidence level was maintained. Unless otherwise specified, percentages are based on the total number of respondents to each particular survey item.

Survey Response Rate

As outlined in chapter III, a total of 800 surveys were mailed to four Air Force Materiel Command product centers. A survey response rate of 50 percent was the goal. Out of the 800 surveys mailed out, 430 were sent back. Of these,

31 were returned with the message "return to sender, addressee unknown," which reduced our sample size from 800 to 769. Based on the above, there were 399 out of 769 data collection forms returned, for a 51.9% response rate. However, of the 399 data collection forms returned, 14 were unusable for data analysis. Consequently, there were a total of 385 valid observations (see Table 1). As noted in Chapter III, a total of 364 observations are needed to make inferences for a population size of 7000, based on a 95 percent confidence level (Sekaran, 1992:253). Therefore, we considered the observation size of 385 to be sufficiently large to perform meaningful data analysis.

Respondent Demographics

Evaluating the survey respondent characteristics provided us an estimate of how well the respondents match the population of interest. The frequency and percentage breakouts of the key demographic items follow.

Military/Civilian and Job Function

Table 5 is a comparison of the population of interest to the valid survey respondents by military and civilian program and contract management personnel.

TABLE 5

COMPARISON OF SURVEY RESPONDENTS TO POPULATION

JOB FUNCTION	POPULATION OF INTEREST* MIL	POPULATION OF INTEREST* CIV	SURVEY RESPONDENTS MIL	SURVEY RESPONDENTS CIV
PM	3313 (65%)	1812 (35%)	187 (66%)	96 (34%)
CM	356 (21%)	1317 (79%)	31 (31%)	70 (70%)
Totals	3669 (54%)	3129 (46%)	218 (57%)	166 (43%)

* Source: Air Force ATLAS Data Base

From the data in this table, we can infer that the number of valid survey observations is representative of the population of interest in terms of both the percentage of military and civilian employees and in PM and CM personnel in comparison to the population of interest. Furthermore, our inference is supported by the additional demographic data in the other categories defined below.

Tables 6 and 7 on the next page, show the distribution of the ranks for the military and grades for the civilian respondents by job function. Due to privacy act regulations, we were unable to obtain the civilian grade structure for the population. As a result, the following tables only provide characteristics of the respondents.

TABLE 6

RESPONDENT'S MILITARY RANK BY JOB FUNCTION

	RANK					
GROUP	E-1 TO E-9	O-1 & O-2	O-3	O-4 & O-5	O-6	O-7 & ABOVE
PM	1 (.5%)	48 (26%)	80 (43%)	57 (30%)	1 (.5%)	0 (0%)
CM	1 (3%)	2 (6%)	13 (42%)	14 (45%)	1 (3%)	0 (0%)
TOTAL	2 (1%)	50 (23%)	93 (43%)	71 (33%)	2 (1%)	0 (0%)

TABLE 7

RESPONDENT'S CIVILIAN GRADE BY JOB FUNCTION

	GRADE					
GROUP	GS-5 TO GS-9	GS-11/ GS-12	GS/GM 13-14	GM-15 & ABOVE	SES	OTHER
PM	5 (5%)	32 (33%)	42 (44%)	16 (17%)	1 (1%)	0 (0%)
CM	3 (4%)	41 (59%)	23 (35%)	3 (4%)	0 (0%)	0 (0%)
TOTAL	8 (5%)	73 (44%)	65 (39%)	19 (11%)	1 (1%)	0 (0%)

Location

Tables 8 and 9 on the following page, compare the population of interest to the valid observations (N=385) by location and job function.

TABLE 8

COMPARISON OF RESPONDENTS TO LOCATION (ASC & ESC)

LOCATION	POPULATION ASC		RESPONDENTS ASC		POPULATION ESC		RESPONDENTS ESC	
GROUP	MIL	CIV	MIL	CIV	MIL	CIV	MIL	CIV
PM	1729 (56%)	1376 (44%)	100 (56%)	79 (44%)	523 (76%)	162 (24%)	29 (81%)	7 (19%)
CM	190 (19%)	796 (81%)	13 (20%)	52 (80%)	69 (24%)	217 (76%)	9 (75%)	3 (25%)
TOTAL	1919 (47%)	2172 (53%)	113 (46%)	131 (54%)	592 (61%)	379 (39%)	38 (79%)	10 (21%)

TABLE 9

COMPARISON OF RESPONDENTS TO LOCATION (SMC & HSC)

LOCATION	POPULATION SMC		RESPONDENTS SMC		POPULATION HSC		RESPONDENTS HSC	
GROUP	MIL	CIV	MIL	CIV	MIL	CIV	MIL	CIV
PM	877 (82%)	192 (18%)	49 (89%)	6 (11%)	184 (69%)	82 (31%)	10 (67%)	5 (33%)
CM	62 (21%)	240 (79%)	4 (27%)	11 (74%)	35 (35%)	64 (65%)	5 (63%)	3 (37%)
TOTAL	939 (68%)	432 (32%)	53 (75%)	17 (25%)	219 (60%)	146 (40%)	15 (65%)	8 (35%)

Education

Figure 1 highlights the distribution of respondents education level by job function. Note, there were three missing respondents for this demographic item; therefore, total N = 382.

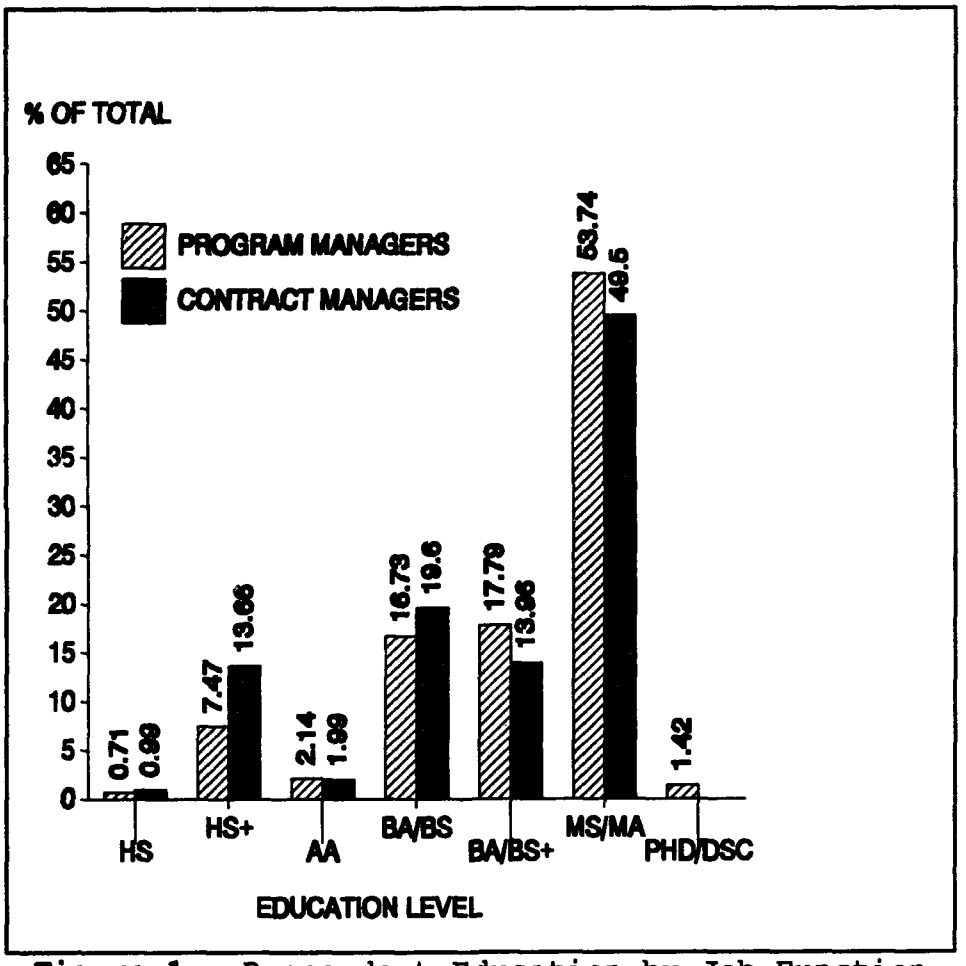

Figure 1. Respondent Education by Job Function

Based upon the data, the mean education level for the respondent PMs was slightly beyond a master's degree. For the CMs, the mean education level was slightly below a master's degree. In fact, 155 of 281, or approximately 55%,

of the PMs reported having a master's degree or higher, and 50 of 101, or 50%, of the CMs reported having a master's degree or higher.

Experience

Figure 2 highlights the percentage distribution of the PM and CM respondents by years of acquisition experience. For this demographic item, N = 383.

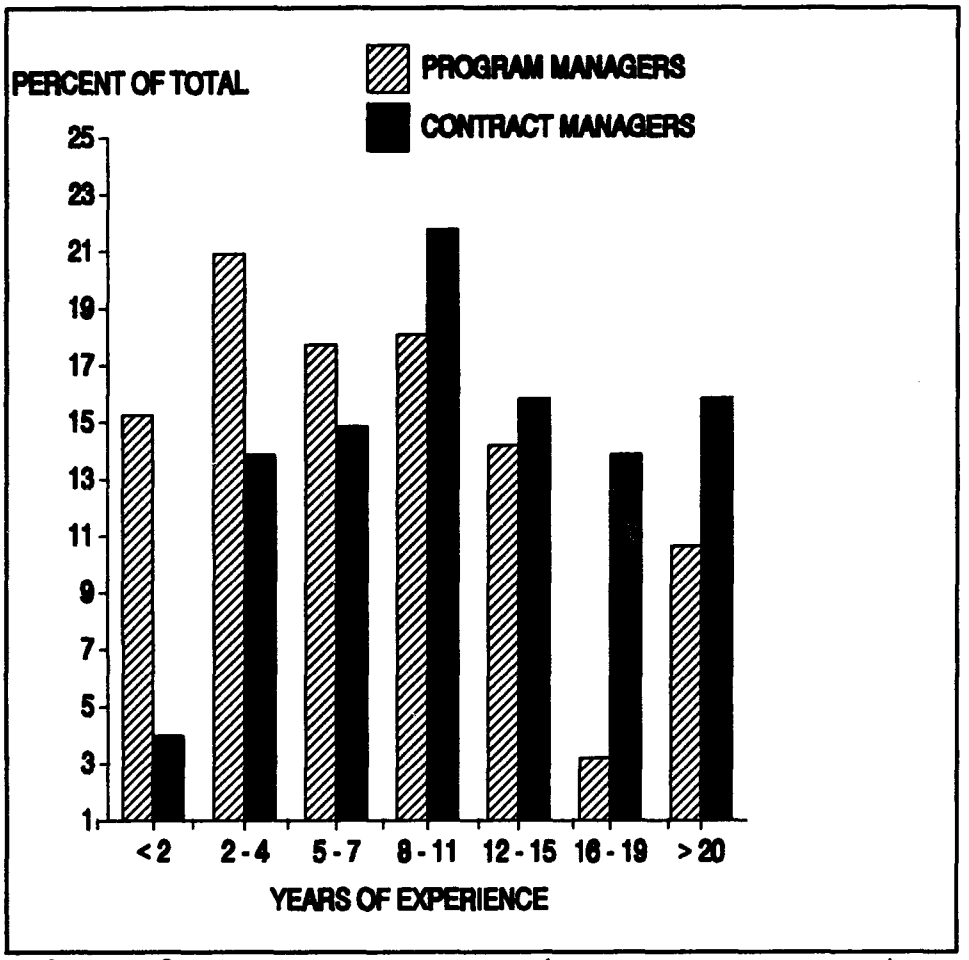

Figure 2. Respondent Experience by Job Function

Based upon the above data, the mean acquisition experience level for the PMs was between 5 and 8 years and between 8 and 12 years for the CMs. Additionally, 68 of 101, or 67%, of the responding CMs reported having more than 8 years of acquisition experience. On the other hand, only 130 of 282, or 46%, of the PMs reported having more than 8 years of experience.

Analysis of Investigative Questions

Tables 10, 11, 12, and 13 summarize the variables of interest in the survey instrument by the items used in their scales. In answering the investigative questions, we used the frequencies, means, and standard deviations of the variables (see Appendix D). A seven-point Likert scale was used for all survey responses. In addition, t-tests were used to see if statistically significant differences existed between the means of the PM and CM personnel. From these descriptive and inferential statistics, we attempted to answer the investigative questions and the overall management question--whether real or perceived relationship difficulties exist between PM and CM personnel. Correlational and stepwise regression analyses were performed to gain additional insight in understanding the interaction between and among the variables. We used an alpha level of 0.05 for all statistical tests (except for the stepwise regression, where we used alpha level of 0.10 because we were willing to accept additional statistical

risk in drawing inferences from the results) as the benchmark for measuring the statistical significance of the results.

TABLE 10

SUMMARY OF VARIABLES & SURVEY ITEMS

VARIABLE OF INTEREST	SURVEY ITEMS
Role Ambiguity	13. I know what's expected of me when working with my counterpart. 40. I'm sure of my responsibilities when working with my counterpart. 50. I'm sure of my role in the acquisition process. 66. I know my counterparts role in the acquisition process.
Communication	24. PMs and CMs plan their work activities together. 45. Acquisition strategy isn't coordinated early enough between PM and CM personnel. 55. There is insufficient communication between PM and CM personnel. 58. My counterparts withhold info necessary for me to do my job. 62. Communication between PM and CM is poor. 67. Issues are mutually solved between PM and CM personnel. 73. PMs and CMs present a united front when dealing with the contractor. 75. There is good communication between PM and CM personnel.
Goal Compatibility	6. The goals for PM and CM personnel are cooperative. 27. The goals for PM and CM personnel are competitive. 34. The goals for PM and CM personnel are in conflict. 48. The goals for PM and CM personnel are independent.

TABLE 11

SUMMARY OF VARIABLES & SURVEY ITEMS (cont'd)

VARIABLE OF INTEREST	SURVEY ITEMS
Cooperation	9. PM and CM personnel work together well. 30. There is cooperation between PM and CM personnel. 37. My counterparts know what is needed to get the job done. 82. My counterpart helps me finds ways to do a better job. 83. My counterparts are unwilling to spend the necessary time it takes to get the job done. 94. My counterpart encourages me to give my best effort.
Working Atmosphere	57. There is a spirit of teamwork between PM and CM personnel. 79. When working with my counterpart, the atmosphere is friendly. 87. There is a cooperative atmosphere when working with my counterpart. 91. The atmosphere is productive when working with my counterpart.
Value In Counterparts	49. When I work with my counterparts, value is added to the acquisition process. 63. My counterparts are valuable to the acquisition process. 78. My counterparts add no value to the acquisition process. 88. My counterparts help me reach my goals in the acquisition process.

TABLE 12

SUMMARY OF VARIABLES & SURVEY ITEMS (cont'd)

VARIABLE OF INTEREST	SURVEY ITEMS
Confidence In Counterparts	21. My counterparts trust my judgement. 42. My counterparts are effective in doing their work. 61. I trust my counterpart's judgement. 77. I have confidence in the skill of my counterpart. 86. I can rely on my counterparts not to make my job more difficult. 90. My counterparts follow my guidance. 92. PM and CM personnel are suspicious of each other. 93. There is distrust between PM and CM personnel.
Travel	17. My counterparts travel too much. 38. I can't get my work done because my counterparts are TDY too often.
Acceptance	11. I am free to express my opinions with my counterparts. 29. My counterparts don't understand my role in the acquisition process. 32. My counterparts accept my opinions. 39. My counterparts follow my guidance. 53. My counterparts understand my concerns. 69. My counterparts accept me as a professional.

TABLE 13

SUMMARY OF VARIABLES & SURVEY ITEMS (cont'd)

VARIABLE OF INTEREST	SURVEY ITEMS
Positive Accomplish-ments	12. When a decision has been reached with my counterparts, I feel positive about the decision. 33. I am satisfied with the oppor-tunities I have to develop my job skills when working with my counterparts. 54. I feel I accomplish something worthwhile when working with my counterparts. 70. When working with my counterpart, I feel I accomplish something worthwhile for the program.
Group Commitment	15. I feel a responsibility towards my counterparts. 36. When I work in a group with my counterpart, I am committed to the group. 65. PMs and CMs are committed to each other in group projects. 80. When my counterpart and I work together on a team, I support the team. 96. I look forward to working with my counterpart.
Mutual Task Dependence	14. My job requires that I work with my counterparts. 35. I depend on my counterparts for info I need to do my job. 72. Most of my job activities aren't affected by my counterparts. 81. My counterpart's job activities affect my job activities. 89. I need my counterpart's help to get my work done. 95. My counterparts need my help to get their work done.

Question 1

Investigative question 1 asked, "Does a conflict exist between PM and CM personnel?" We determined that the other investigative questions needed to be answered first before we could fully address this question. However, survey item 25 stated, "There are conflicts between program and contract management personnel." The mean response for the PMs was a 4.75, with a standard deviation of 1.51. The mean response rate for the CMs was 5.00, with a standard deviation of 1.61. The t-test results indicated no significant difference existed between the means for PMs and CMs ($t = -1.39$, $\rho < .05$, see Appendix D). In addition, the frequency responses for PMs indicates 195 of 281, or 69%, answered the item positively. Also, the frequency response for the CMs indicates 71 of 100, or 71%, agreed with the statement. From the above responses, we can infer that most PM and CM personnel perceive that conflict exists. After the other investigative questions are answered, we will revisit this question in the Summary of Analysis section of this chapter.

Question 2

Investigative question 2 asked, "Is there role ambiguity between PM and CM personnel." This was addressed by survey items 13, 40, 50, and 66 (see Table 10). The Cronbach's Coefficient Alpha for this variable was 0.77. The PM group had a mean response of 5.42, and a standard

deviation of 1.04. The CM group had a mean of response of 5.84 and a standard deviation of 0.91 ($t = -3.54$, $\rho < .01$, see Appendix D). The above indicates the null hypothesis is rejected, thus a significant difference exists between the means of the two groups with the variable in question. From the above response, we infer that there is a strong possibility that there is role ambiguity among both PM and CM personnel in systems acquisition. Also, CMs perceive higher levels of role ambiguity than PMs.

Question 3

Investigative question 3 sought to answer the following, "Is there PM and CM communication problems?" This variable was measured through eight survey items (24, 45, 55, 58, 62, 67, 73, and 75; see Table 10). The Cronbach's Coefficient Alpha for communication was 0.85. The mean response rate for the PMs was 4.38, with a standard deviation of 1.19. The mean response for the CMs was a 4.00, with a standard deviation of 1.30 ($t = 2.65$, $\rho < .01$, see Appendix D). This indicates a significant difference between the means of the PMs and the CMs. We infer from the above response that PMs perceive more communication problems than CM personnel, but both have some difficulty in communicating with their counterparts.

Question 4

Investigative question 4 asked, "Are PM and CM goals compatible?" This variable consisted of survey items 6, 27, 34, and 48 (see Table 10). The Cronbach's Coefficient Alpha for this variable was 0.73. T-test analysis reveals a mean response of 3.17 for the PMs and a 3.65 for the CMs, with a standard deviation of 1.21 and 1.27 for the PMs and CMs respectively. The null hypothesis is rejected ($t = -3.32$, $\rho < .01$, see Appendix D), indicating a significant difference between the PM and CM respondents. The overall negative response to this item implies that both groups think their goals may not be compatible with their counterpart's goals, and the difference between them may be suspect due to the relatively low reliability.

Question 5

Investigative question 5 asks "Is there cooperation between PM and CM personnel?" Survey items 9, 30, 37, 82, 83, and 94 comprised this variable of interest (see Table 11). The Cronbach's Coefficient Alpha for this variable was 0.83. The t-test results show a mean response of 4.84 for the PMs and a 4.44 for the CMs, with a standard deviation of 1.13 and 1.16 for PMs and CMs respectively ($t = 2.96$, $\rho < .01$, see Appendix D). Thus, indicating a significant difference between the means of the PMs and the CMs. We deduce from the responses that PMs think they receive more cooperation

from CM personnel than CMs perceive occurring between PM and CM personnel.

Question 6

Investigative question 6 asks, "Is there a good working atmosphere between PM and CM personnel?" This variable was answered through survey items 57, 79, 87, and 91 (see Table 11). The Cronbach's Coefficient Alpha for this variable was 0.89. The t-test results indicate a mean of 5.13 for the PMs and a 4.95 for the CMs, with a standard deviation of 1.18 and 1.09 for PMs and CMs respectively ($t = 1.32$, $\rho > .05$, see Appendix D). This indicates no significant difference between the means of the PM and CM respondents. The responses imply that both PMs and CMs equally believe a good working relationship exists between them.

Question 7

"Do PM and CM personnel view each other as valuable to the acquisition process?" This variable was answered through survey items 49, 63, 78, and 88 (see Table 11). The Cronbach's Coefficient Alpha for this variable was a 0.77. The mean response for the PMs was 5.73 with a standard deviation of 0.92 and the mean response for the CMs was 5.69 with a standard deviation of 0.93 ($t = .44$, $\rho > .05$, see Appendix D). Thus, there is no significant differences between the mean PM and CM responses. We deduce from these responses that both groups believe equally that their counterparts are valuable to the acquisition process.

Question 8

"Do PM and CM personnel have confidence in each other?" This investigative question was answered through survey items 21, 42, 61, 77, 86, 90, 92, and 93 (see Table 12). The Cronbach's Coefficient Alpha for this variable was a 0.86. The mean response for the PMs was 4.93 with a standard deviation of 1.05. On the other hand, the mean response for the CMs was a 4.65 with a standard deviation of 1.05 ($t = 2.22$, $\rho < .05$, see Appendix D). The alpha level of less than .05 indicates a significant difference between the means. While there is a difference in the means, the positive responses for both groups indicate that PMs and CMs do have confidence in each other.

Question 9

"Does job related travel effect the PM/CM relationship?" This investigative question tried to determine whether on the job travel had any detrimental impact on how well PMs and CMs could accomplish their respective jobs. This variable was answered through survey items 17 and 38 (see Table 12). The Cronbach's coefficient Alpha for this variable was a 0.81. The mean responses were 2.92 and 4.30 for PMs and CMs respectively, and the standard deviations were 1.36 for PMs and 1.53 for CMs ($t = -8.34$, $\rho < .01$). The above indicates a strong significant difference between the PMs and CMs means. The responses show the PMs were on the negative side of the scale while the CMs were on

the positive side. As a result of the above, we infer that while the CMs think PMs travel too much, they do not believe it interferes with their job performance. Additionally, PMs don't think that CM travel is an issue in contention.

Question 10

"Are PM and CM personnel accepted by each other?" We hypothesized this to be a contributing factor of conflict, and used survey items 11, 29, 32, 53, and 69 (see Table 12) to answer this investigative question. The Cronbach's Coefficient Alpha for this variable was a 0.86. The mean response for the PMs was a 5.20 with a standard deviation of 1.04, while the mean response for the CMs was a 4.90 with a standard deviation of 1.15 ($t = 2.38$, $\rho < .05$, see Appendix D). The t-value and alpha level indicate a significant difference in the means between these two groups. From these responses, we infer that while both groups are accepted by each other, CMs think they are somewhat less accepted as professionals by PMs than PMs think they are accepted as professionals by CMs.

Question 11

"When PM and CM personnel work together, are there positive accomplishments?" This investigative question was answered through survey items 12, 33, 54, and 70 (see Table 13). The Cronbach's Coefficient Alpha for this variable was a 0.80. The mean response for both the PMs and the CMs was a 5.22, and the standard deviation for the PMs was a 1.01,

while the CMs was a 1.02 ($t = -0.02$, $\rho > .05$, see Appendix D). This indicates no significant difference between the means of the two groups. Results of the data show both groups equally believe that positive outcomes result when they work with each other.

Question 12

"When PM and CM personnel work together, is there group commitment?" This investigative question was answered by survey items 15, 36, 65, 80, and 96 (see Table 13). The Cronbach's Coefficient Alpha for this variable was a 0.75. The mean response for the PMs was a 5.51 with a standard deviation of 0.81, while the mean response for the CMs was a 5.58 with a standard deviation of 0.86 ($t = -0.66$, $\rho > .05$, see Appendix D). Thus, indicating no significant difference between the means of the two groups. We conclude from the data that both groups are equally committed to each other when they work together in the same group.

Question 13

"Are PM and CM tasks dependent on one another?" This investigative question was answered through survey items 14, 35, 72, 81, 89, and 95 (see Table 13). The Cronbach's Coefficient Alpha was 0.73 for this variable of interest. The mean response for the PMs was a 5.47 and a 5.81 for the CMs, and the standard deviation for both groups was a 0.84 ($t = -3.37$, $\rho < .01$, see Appendix D). This t-test and alpha level indicates a significant difference between the means.

While both groups responded positively, CMs believe more strongly than PMs that their tasks are dependent on the tasks of their counterparts.

Summary of Variable Results

Table 14 on the next page, provides a summary of the PM and CM responses to the variables of interest. The mean responses for program and contracting management personnel were different on 7 of the 13 variables at the .05 level of significance. The largest difference between the two groups was in the travel variable. This difference was split between the negative and positive side of the scale.

TABLE 14

SUMMARY OF MEANS FOR VARIABLES

VARIABLES OF INTEREST	MEAN PM	MEAN CM
Conflict	4.75	5.00
* Role Ambiguity	5.42	5.84
* Communication	4.38	4.00
* Goal Compatibility	3.17	3.65
* Cooperation	4.84	4.44
Working Atmosphere	5.13	4.95
Value In Counterpart	5.73	5.69
Confidence In Counterpart	4.93	4.65
* Travel	2.92	4.30
* Acceptance	5.20	4.90
PM/CM Accomplishments	5.22	5.22
Group Commitment	5.51	5.57
* Mutual Task Dependence	5.45	5.81

* Indicates statistically significant difference between the groups at alpha of < .05

Correlation of Variables

Linear relationships between the variables of interest were calculated using the Pearson's product-moment coefficient of correlation. This indicated the direction, strength, and significance of the bivariate relationships among the variables in our study. Correlation between two variables can range from -1.0 to +1.0. However, when assessing the correlation between two variables that are expected to be different from one another, a perfect correlation almost never exists in reality (Sekaran,

1992:265). It is important to know whether the correlation between two variables is significant. A strong relationship is considered to exist between variables with Pearson correlations of .50 or greater. Conversely, weak correlations between two variables indicates little or no relationship between the variables of interest (Sekaran, 1992:266). In addition, a significance of $\rho \leq .05$ is the conventionally accepted significance level in social science research (Sekaran, 1992:265). Table 15 gives the intercorrelations among the variables of interest.

TABLE 15

(CORRELATIONS OF VARIABLES)

	ACCEPT	ACCMPLSH	ATMOS	COMM	COOP	COMMIT	CONFID	ROLES	TASKDEP	TRAVEL	VALUE	GOALCOM	CONFLICT
ACCEPT	1.0000												
	0.0												
ACCMPLSH	0.7572	1.0000											
	0.0001	0.0											
ATMOS	0.7302	0.7135	1.0000										
	0.0001	0.0001	0.0										
COMM	0.6248	0.5423	0.7106	1.0000									
	0.0001	0.0001	0.0001	0.0									
COOP	0.7203	0.7152	0.8298	0.7340	1.0000								
	0.0001	0.0001	0.0001	0.0001	0.0								
COMMIT	0.6015	0.6788	0.7092	0.5388	0.6754	1.0000							
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0							
CONFID	0.7538	0.6762	0.8511	0.7086	0.8378	0.7088	1.0000						
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0						
ROLES	0.4143	0.4546	0.3263	0.3720	0.2972	0.4859	0.3582	1.0000					
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0					
TASKDEP	0.2843	0.3381	0.1943	0.0927	0.1674	0.4559	0.1863	0.4201	1.0000				
	0.0001	0.0001	0.0004	0.0927	0.0023	0.0001	0.0007	0.0001	0.0				
TRAVEL	0.1041	0.1307	0.0672	0.0912	0.0822	0.0539	0.0762	0.0445	-0.0085	1.0000			
	0.0589	0.0175	0.2235	0.0981	0.1363	0.3295	0.1673	0.4207	0.8773	0.0			
VALUE	0.6329	0.7047	0.7116	0.5392	0.7011	0.7402	0.7143	0.4089	0.3970	0.0796	1.0000		
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.1489	0.0		
GOALCOM	0.5200	0.4815	0.6140	0.6026	0.6588	0.4669	0.6342	0.2362	0.1408	0.0857	0.5979	1.0000	
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0104	0.1203	0.0001	0.0	
CONFLICT	0.3234	0.2752	0.3992	0.4464	0.4290	0.2935	0.4540	0.0756	-0.0167	0.1423	0.2651	0.4658	1.0000
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.1704	0.7631	0.0096	0.0001	0.0001	0.0

As the results indicate, five of the correlations are greater than 0.75 (acceptance-accomplishments; working atmosphere-cooperation; confidence-acceptance; confidence-working atmosphere; and, confidence-cooperation). According to Sekaran, if correlations are higher than 0.75, one may wonder whether or not the two correlated variables are different and distinct and could raise doubts about the validity of the measures (1992:293). After reviewing the items comprising the survey scales and the data results, we surmise that our variables are measuring different and distinct concepts. Furthermore, Sekaran states if two variables are strongly correlated, one can not infer a causal relationship; the only safe inference is that a linear trend exists between the two variables (Sekaran, 1992:100). The correlations between the dependent variable (conflict) and the independent variables are all in the expected direction, except for mutual task dependency which would be expected since most PM and CM tasks are dependent on one another and a decreased dependency would likely decrease the amount of conflict.

Multiple Regression Analysis

Whereas the correlation indicates the strength between two variables, it gives us no idea how much of the variance in the dependent variable (conflict) will be explained when independent variables are shown to simultaneously influence it. The procedure for calculating the amount of variance

explained in the dependent variable by the independent variables is known as multiple regression analysis (Sekaran, 1992:269). Stepwise regression procedures in SAS provided a means of identifying only those variables which significantly contributed to the regression model (see Appendix F).

Of the 12 independent variables used in the stepwise procedures, 6 were significant at the 0.10 level in identifying the variance in the dependent variable (conflict). Table 16 below shows a summary of the stepwise regression results; the complete outcome of regressing the 12 independent variables against conflict can be seen in Appendix F.

TABLE 16

SUMMARY OF STEPWISE REGRESSION

Multiple R = 0.5584
Model R Square = 0.3119

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	6	246.05099982	41.00849997	24.40	0.0001
Error	323	542.92172745	1.68087222		
Total	329	788.97272727			

Variable	Parameter Estimate	F	Prob>F
INTERCEP	8.17243689	143.07	0.0001
COMM	-0.24359200	7.41	0.0068
CONFID	-0.44803819	14.06	0.0002
ROLES	0.14463038	3.43	0.0648
TRAVEL	-0.24105433	4.36	0.0375
VALUE	0.32504048	7.61	0.0061
GOALCOM	-0.36698141	20.26	0.0001

The Multiple R (0.5584) is the correlation of the 6 independent variables with the dependent variable after all the intercorrelations among the 6 independent variables are taken into account. The F Statistic produced ($F = 24.40$, $\rho < .0001$) means that conflict is significantly predicted, in part, (31%) by a combination of the 6 independent variables. These 6 variables may be important, however, the best prediction emerges based upon correlation with the criterion and intercorrelations among the predictors.

Analysis of Frequency Response Statements

Some opinion statements in our survey did not directly contribute to the measurement of the variables of interest. Based on our literature review and talking to personnel within the PM and CM community, we included opinion statements which could possibly identify other contributors to the relationship difficulties between PM and CM personnel. With these items, we looked at whether PMs and CMs agreed or disagreed with the statements and compared the means of the two groups to identify differences of opinion. Table 17, gives a summary of these items and indicates those on which the two groups disagreed. These items were also measured by seven-point Likert scales. The range of the scale was from strongly disagree (1) to strongly agree (7) (See Appendix B).

TABLE 17

SUMMARY OF MEANS FOR FREQUENCY ITEMS

ITEM	SURVEY OPINION STATEMENT	MEAN PM	MEAN CM
7*	Counterparts concerned with FAR	6.32	3.86
8	There is overlap between PM & CM	4.80	4.71
10*	COs have too much authority	3.78	1.88
16	Counterparts are made aware of events	5.87	6.08
18*	Too many civilians in PM	3.11	2.62
19*	Training differences causes problems	4.06	4.82
20*	CM business orientation causes	3.33	3.92
22*	Conflict because CM in matrix org	4.18	2.66
23*	For PMs, ends justify the means	3.37	4.99
26*	CMs impede acquisition process	3.94	2.50
28*	Counterparts concerned w/pqm	4.66	6.12
31*	PMs have too much authority	2.73	4.22
41*	Conflict because PMs are tech	3.44	4.49
43	Counterparts' location limits my work		2.62
44	For CMs, ends justify the means	2.72	2.56
46	Conflict interferes with duty	4.05	4.30
47*	PMs impedes acquisition process	2.47	3.85
51	Support reluctant with travel	3.21	3.16
52	COs have too little authority	2.56	3.74
56*	I follow my counterpart's guidance	5.37	4.94
59*	Too many civilians in contracting	3.04	2.47
60	Courses don't teach PMs to work w/CMs	4.64	4.84
64	Counterparts have more authority	4.35	4.23
68*	PMs have too little authority	3.48	2.33
71*	Counterparts short-term-goal oriented	3.80	4.71
74	Too many military in contracting	2.83	3.15
76*	Combined training help reduce	5.22	5.67
84*	Counterparts give conflicting info	3.35	3.75
85	Military turnover causes conflict	4.15	4.45
97*	Counterparts long-term-goal oriented	4.32	3.70
98	Socializing would improve	4.35	4.21
99*	Work delayed due to wait on	4.08	4.93
100*	Too many military in PM	2.96	3.64

* Indicates difference in means were statistically significant at alpha of < .05.

Table 17 shows that there are 22 statements with significant differences between the PM and CM survey respondents. Of those 22 statements, 11 had an interval difference larger than 1 on the seven-point scale. Some of the highlights from the results are addressed below.

In statement #7, "My counterparts are concerned with following the Federal Acquisition Regulation," PMs strongly agree that CMs are concerned with following the FAR. However, just the opposite is true for how the CMs feel toward the PMs. This could be a source of contention between the two groups. Compliance with the requirements under the FAR is mandatory, and both groups should ideally be equally concerned with following these procedures. In contrast to the above, statement #28, "My counterpart is concerned with meeting program schedules." Both groups answered positively, but the CMs agreed more strongly than the PMs. 92.08% of the CMs and 65.95% of the PMs agreed with the statement. With constant congressional oversight in today's acquisition environment, both groups should ideally be equally concerned with meeting program schedules. Looking at the responses to both statements, we surmise that the CMs are more concerned with following the FAR, while PMs are concerned with meeting program schedules. Expressed another way, PMs are schedule-driven while CMs are regulation-driven.

The issue of authority could be another source of conflict between the two groups. In dealing with authority,

several survey items had mean responses with statistically significant differences between the PMs and CMs. In Item #10, "Contracting officers have too much authority," both groups responded negatively to the statement; however, CMs disagreed more strongly than the PMs. 87.13% of the CMs and 41.14% of the PMs disagreed with the statement. In addition, 28.37% of the PMs had no opinion. As a counter balance, we included item #52, "Contracting officers have too little authority." 75.18% of the PMs and 49.5% of the CMs responded negatively. In considering the PMs authority, statement #31, "Program managers have too much authority," was given. The opinions were split between the two groups. 71.14% of the PMs responded negatively while 42.6% of the CMs answered positively. In addition 22.77% of the CMs were neutral about the PMs. Statement #68, "Program managers have too little authority," was included as the counter. 55.32% of the PMs and 77% of the CM responded negatively. To help clarify the issue on authority, we also included item #64, "My counterparts have more authority than me in the acquisition process." The means from Table 17 show that both groups slightly agreed with the statement. However, only 45.75% of the PMs and 48% of the CMs were on the positive side of the scale. From the above responses, we deduce that the PMs and CMs don't believe they have too much authority, but a large proportion believe their counterparts do.

In statement #47, "Program managers impede progress in the acquisition process," both groups disagreed. The PMs disagreed with the statement more than the CMs. 78.64% of the PMs responded negatively while only 42% of the CMs responded likewise and 18% had no opinion. Juxtaposed to this item was statement #26, "Contract managers impede progress in the acquisition process. For the CMs, 73.26% disagreed, while only 49.9% of the PMs disagreed with the statement. These responses imply that neither PMs or CMs view their own group as an impediment to the acquisition process. On the other hand, both groups were undecided if their counterparts were an impediment as indicated by the almost even split of the responses.

A common belief held by the acquisition community is the ratio of military to civilians in the program and contracting management communities can be a source of conflict (Pursch and Garrett, 1991:15). In items #18, #59, #74, and #100, we addressed whether there were too many civilian or military in program or contract management (see Table 17 above). All of the responses to these items were negative, indicating that the mix of military and civilians is not a source of friction.

Another belief which could cause contention between the groups is their short- and long-term-goal orientation (Pursch and Garrett, 1991:16). In item #97, "My counterparts are long-term-goal oriented," the group's opinions were split with 45.72% of the PMs agreeing while

48.45% of the CMs disagreeing. In addition, 26.07% of the PMs and 14.43% of the CMs had no opinion. Opposite to this statement, item #71, "My counterparts are short-term-goal oriented," both group's responses were split again (see Table 17). 41.58% of the PMs disagreed while 57% of the CMs responded agreed. The responses indicate that both groups were relatively undecided if their counterparts were long-term-goal oriented. In addition, while the majority of CMs thought that PMs were short-term-goal oriented, the PMs were undecided if the CMs were short-term-goal oriented.

Statements #20, "Conflict exists between PM and CM personnel because contracting personnel are business oriented," and #41, "Conflict exists between PM and CM personnel because program managers are technically oriented," try to identify possible background sources of contention between the two groups. For item #20, 53.22% of the PMs responded negatively. For item #41, 52.52% of the CMs agreed with the statement. The results indicate that the PMs don't seem to believe business orientation of the CMs causes conflict, but CMs tend to believe that the technical orientation of the PMs causes conflict.

Role overlap is another possible source of conflict between PMs and CMs. We addressed this issue through item #8, "There is overlap between the roles of program and contract management personnel in the acquisition process." Both groups slightly agreed with the statement which

indicates there probably is some overlap between their roles.

In some systems acquisition organizations, the CMs are in matrixed groups and only deal with program management personnel when they are working on the same project, as a result, this can be a source of conflict (Pursch and Garrett, 1991:15). We addressed this issue with item #22, "Conflict exists because contracting personnel don't work directly for the program manager (i.e., matrix organization)." The opinions were split, 47.66% of the PMs agreed and 71.28% of the CMs disagreed with the statement. The responses indicate that matrix organizations may be a source of conflict.

The last frequency statements we address here are items #23, "For program managers, the ends justify the means," and its' counter item, #44, "For contract managers, the ends justify the means." For statement #23, the results of the responses indicate that the groups were split in their opinions about program managers, but for #44, both groups disagreed approximately the same concerning contract managers. For item #23, 53.19% of the PMs responded negatively and 65.65% of the CMs responded positively. Therefore, the results indicate that the PMs and CMs have different opinions on whether the ends justifies the means for program managers.

Analysis of the Survey's Open-Ended Statements

Four open-ended statements in Part III of the survey were analyzed to determine if there were general trends from the responses. We grouped similar responses into broad categories for each statement.

The total number of respondents answering the open-ended section to the survey was 258. However, not all of the 258 respondents completed each of the four statements. Below are the top response categories for each statement in descending order of frequency.

The first open-ended statement was, "If I could change one thing about my counterparts, it would be...." The most frequent answer to this statement was that individuals wanted their counterparts to understand their role in the acquisition process. Next, individuals wanted their counterparts to be better trained or at least receive the same training they had. Third, individuals wanted their counterparts to become involved earlier in the acquisition process and maintain a team member attitude throughout the process. Fourth, individuals wanted their counterparts to develop a "can-do" attitude rather than "it can't be done." Finally, many program managers stated the need for additional contracting personnel to meet mission requirements.

The second open-ended statement was, "The thing that frustrates me the most when working with my counterparts is...." Their lack of understanding my role in the

acquisition process was the most numerous response. Second, the length of time it took to do contractual actions. Next, many program managers stated that contracting personnel focus too much on regulations (i.e., the FAR) instead of accomplishing the mission. Fourth, individuals said their counterparts don't share information needed to do their own job. Finally, many contract managers asserted that program managers are results oriented and schedule driven.

The third statement was, "Describe a typical problem you have experienced when working with your counterpart." The most recurrent reaction was from program managers who declared that contracting personnel do not respond as quickly as they would like. Next, several program and contract managers expressed that there is a lack of communication between the two groups. Third, many program managers said that contracting personnel constantly quote the FAR when confronted with a problem instead of finding out other ways to accomplish program requirements. Fourth, both groups stated that the length of the contracting process was too long. Finally, another problem mentioned was trying to determine who is responsible for what throughout the acquisition process.

The fourth statement was, "What do you feel would improve the program/contract management relationship?" Joint training, cross training, and better education on each other's responsibilities were the most numerous responses. Second, having both the PMs and CMs working for the same

supervisor (Integrated Product Teams). Third, facilitating better communication between the program and contract management personnel. Fourth, working more closely together through team building exercises. Finally, knowing and understanding the goals of my counterpart.

Comparison of Items Between Survey Instruments

A frequency comparison between some of the similar survey items in our instrument and ASD's was accomplished. This was done in order to see if the distribution of responses was similar. The major shortcoming in trying to compare between the data derived from these two instruments was that the data from ASD's survey was limited to six responses. Even though the ASD survey contained a seven-point Likert scale, it appears the respondents were restricted to six options excluding the mid-point or "no opinion" response. As a result of this shortcoming, we compared only frequency distributions between items in the data sets. Although our comparisons were limited to these distributions, inferences were derived about the similarity between the two groups of survey respondents. A summary of these results are shown in Figures 3 through 9.

Statement #25, "There are conflicts between program and contract management personnel," and in ASD's survey statement #1, "A conflict exists between program and contracting personnel," were compared. As can be see in Figure 3, the majority of respondents from both surveys agreed that there is conflict between the PMs and CMs.

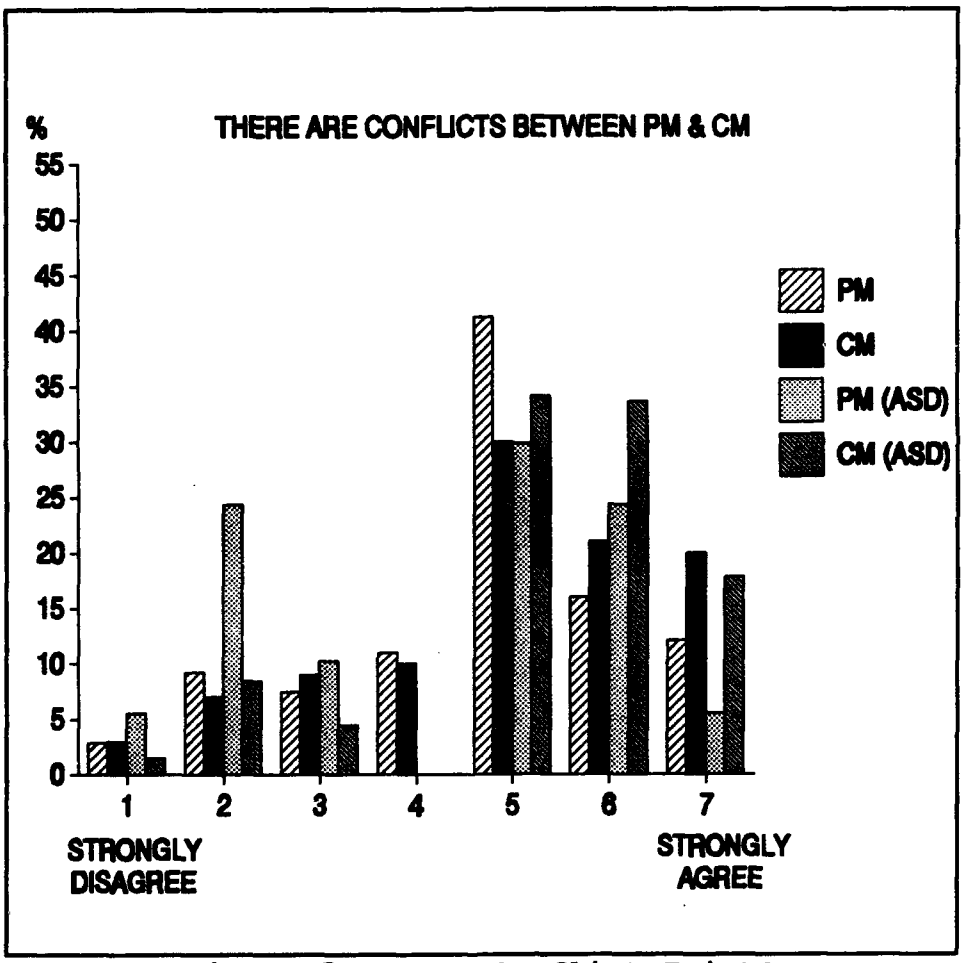

Figure 3. Does Conflict Exist?

In Figure 4, we compared statements #46, "Conflict between contracting and program management personnel interferes with the performance of duties," and on ASD's survey item #2, "This conflict inhibits or interferes with

performance of duties and mission accomplishment." Although these statements were not identical, they both try to measure whether conflict inhibits job performance. The majority of respondents from both surveys agreed positively to the statements.

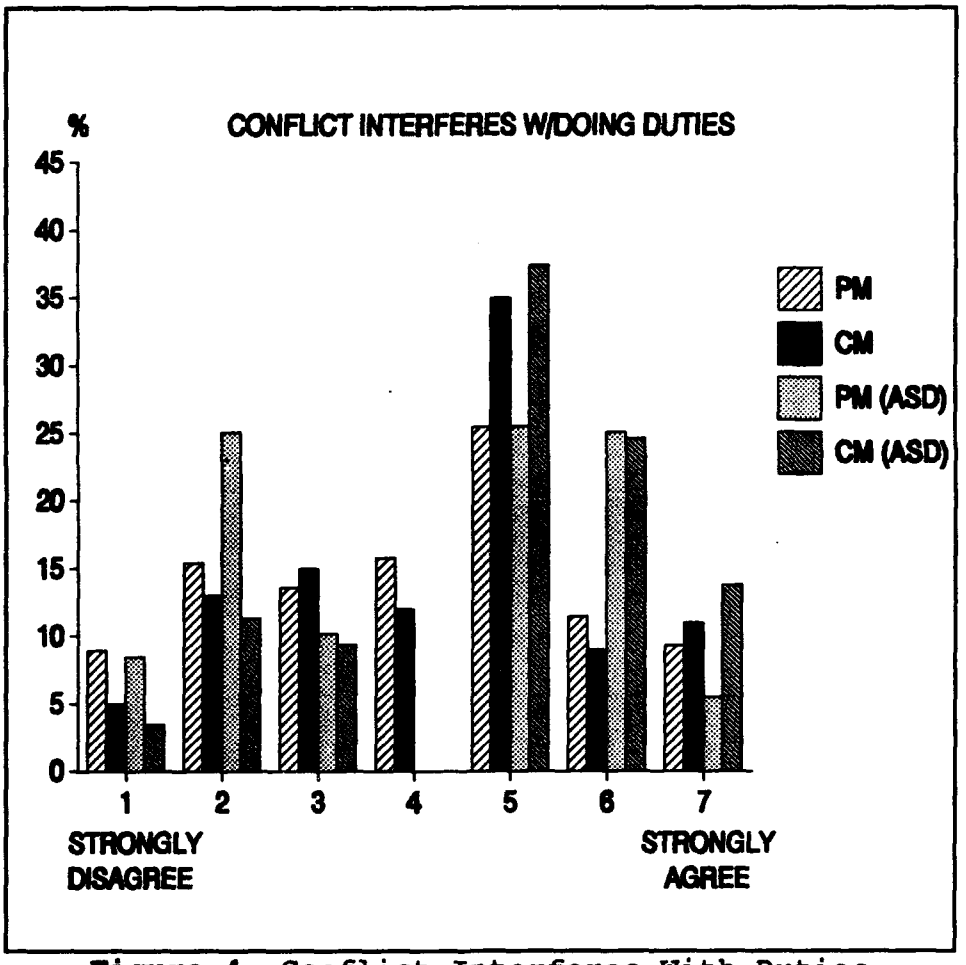

Figure 4. Conflict Interferes With Duties

In Figure 5, we compared statements #60, "Program management courses do not teach PMs how to work with contracting personnel," with ASD's item #10, "Program management courses teach the authority and responsibility of

program managers, but not how to work with contracting personnel." From Figure 5, it can be seen that the distribution is weighted on the right side, indicating that the PM courses may not teach how to work with CM personnel.

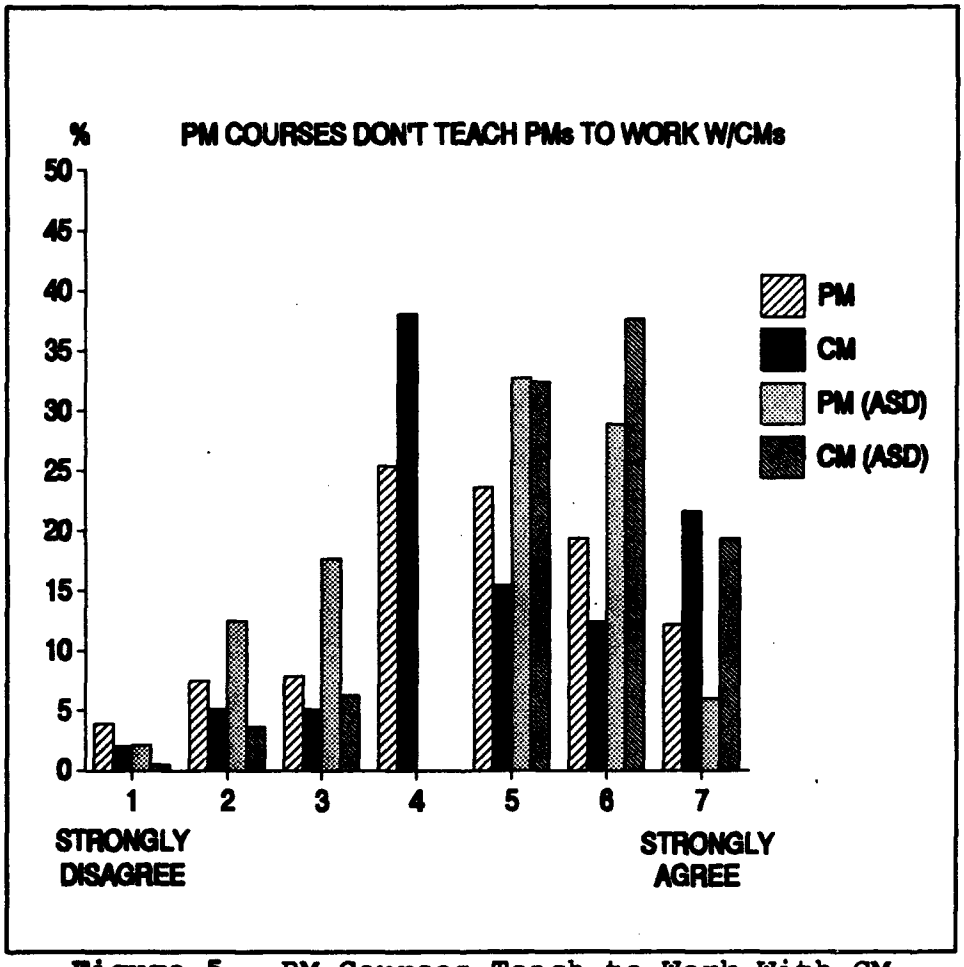

Figure 5. PM Courses Teach to Work With CM

We compared statement #51, "My counterparts are reluctant to support me when travel is involved," and in ASD's item #14, "Contracting personnel are reluctant to support the program manager when travel is involved," as portrayed in Figure 6. In this comparison, we only analyzed

how the PMs responded given the limitations of ASD's item #14. The responses show the majority of PM respondents in both surveys disagreed with the statements. This implies that travel is not an issue in controversy for the PMs.

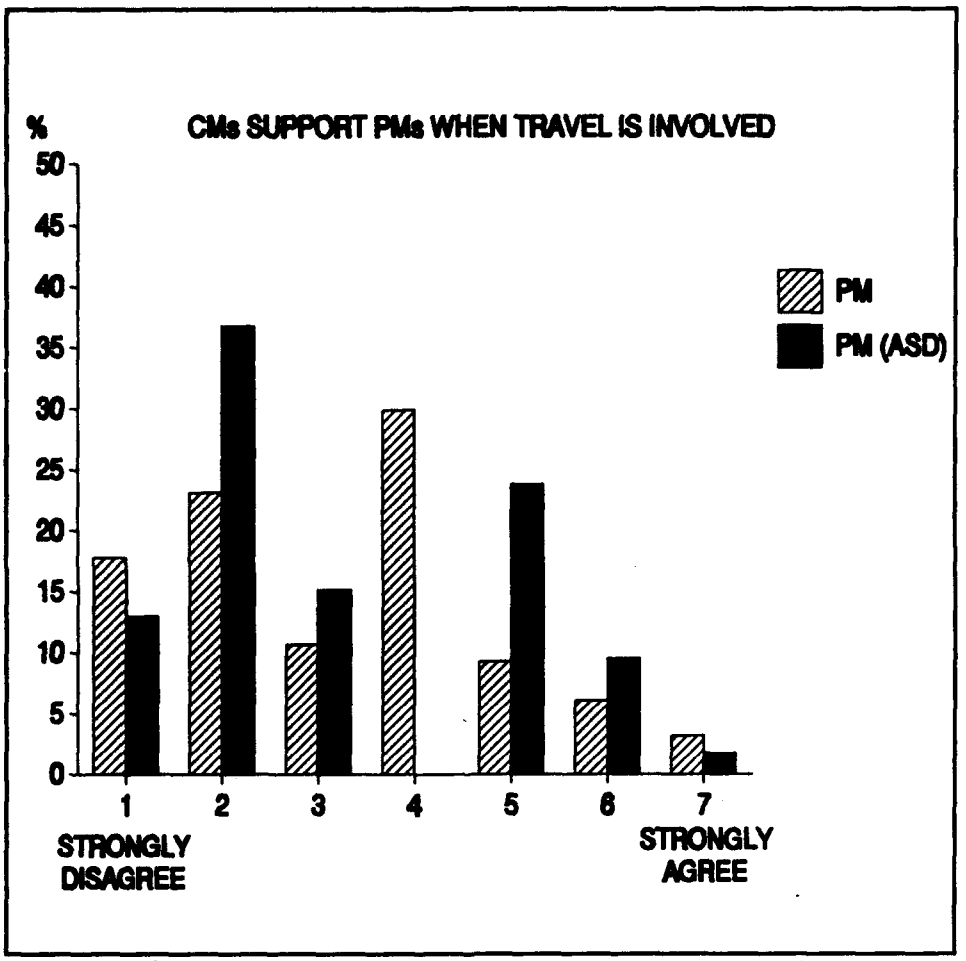

Figure 6. CM Support When PM Travels

In Figure 7, we compared statements #38, "My counterpart travels too much," and ASD's #15, "Program managers travel too much." As can be seen in the figure, we only examined the CM's perspective on this issue. CM respondents from both surveys agreed with the statement--the distribution is heavily skewed to the right. Thus the

majority of CM respondents from both surveys do indeed believe that PMs travel too much.

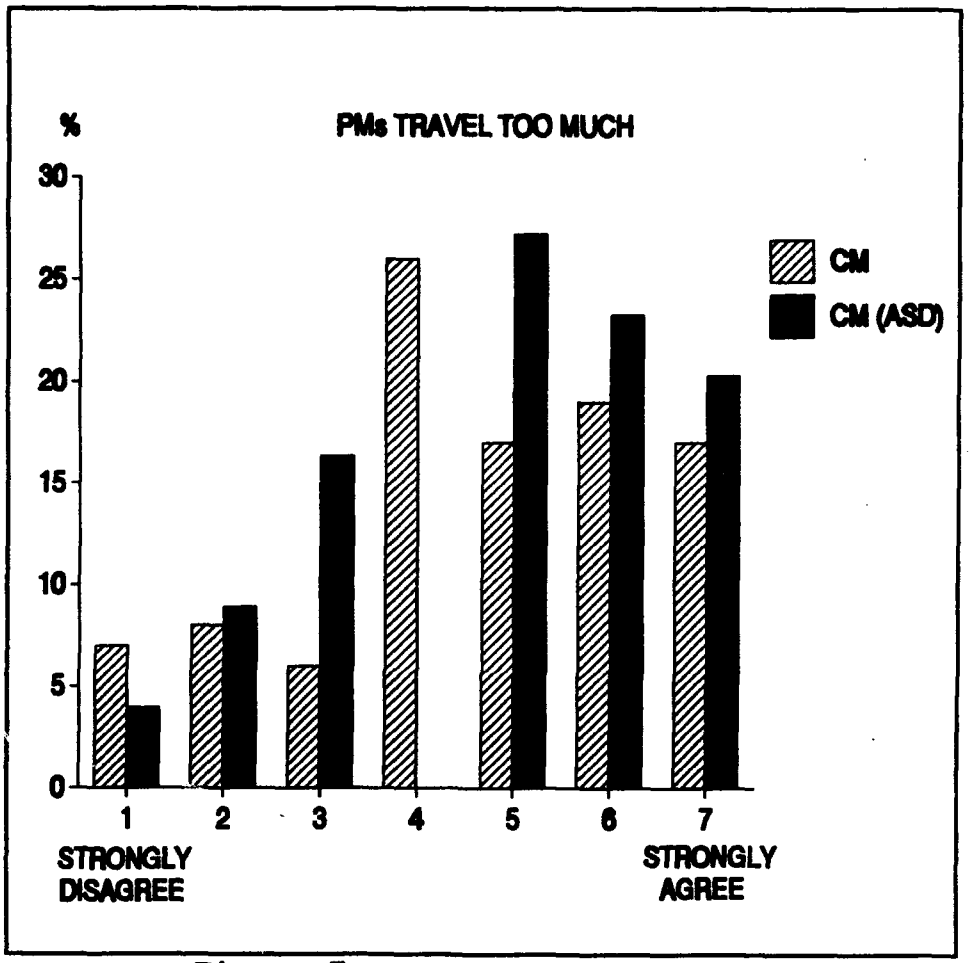

Figure 7. PMs Travel Too Much

In statement #76, "Combined training of PM and CM personnel would help reduce conflict," and in ASD's #16, "The problems between PMs and CMs could be solved through better training," we compared the two to see if the response distributions were similar. Even though the statements are not worded the same, they focus in on a central issue--improvement in training. The results of the comparison can

be seen in Figure 8, which show strong positive opinions in both surveys and their respondents.

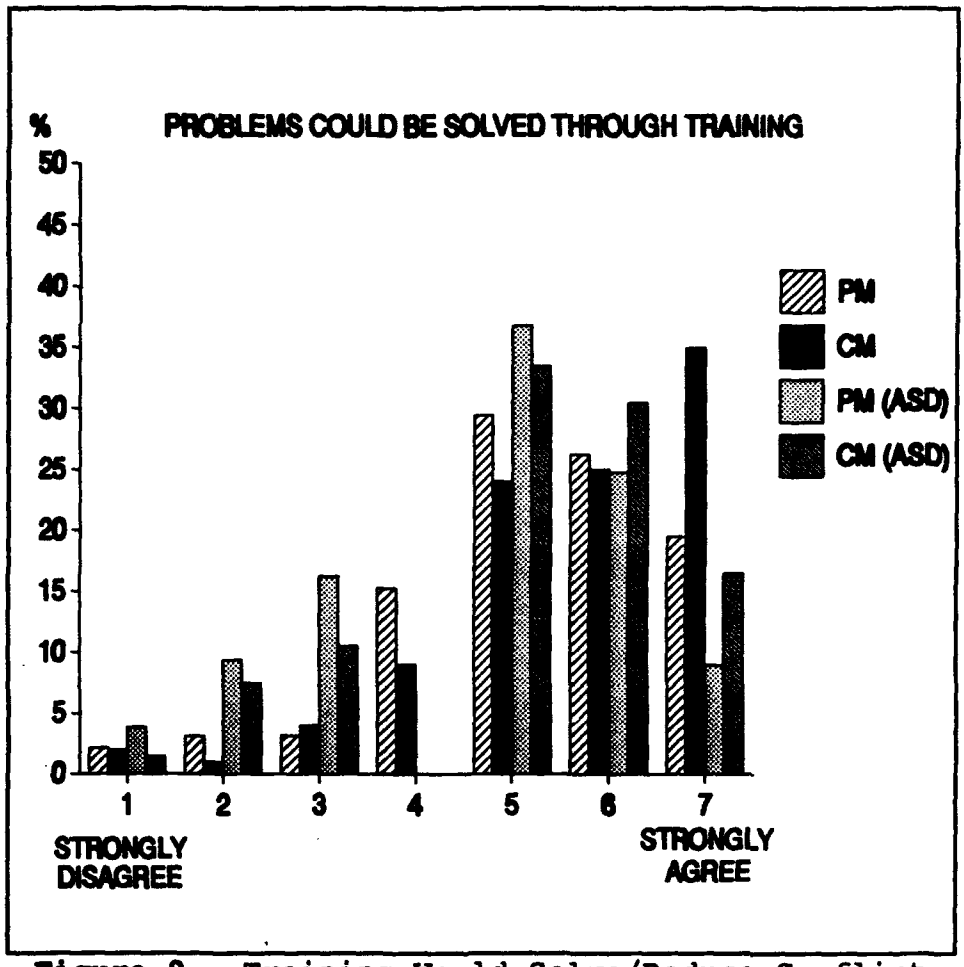

Figure 8. Training Would Solve/Reduce Conflict

Figure 9 on the following page, shows the comparison of statement #45, "Acquisition strategy isn't coordinated early enough between program managers and the contract managers," with ASD's #18, "Program managers don't plan or coordinate acquisition strategy with all the functionals early enough." As it can be seen, the CM respondents in both surveys clearly agreed with the statements while the PM respondent opinions were split between the two statements. The

majority of PMs from ASD disagreed with the statement, while most of the other PMs agreed with the statement to some extent.

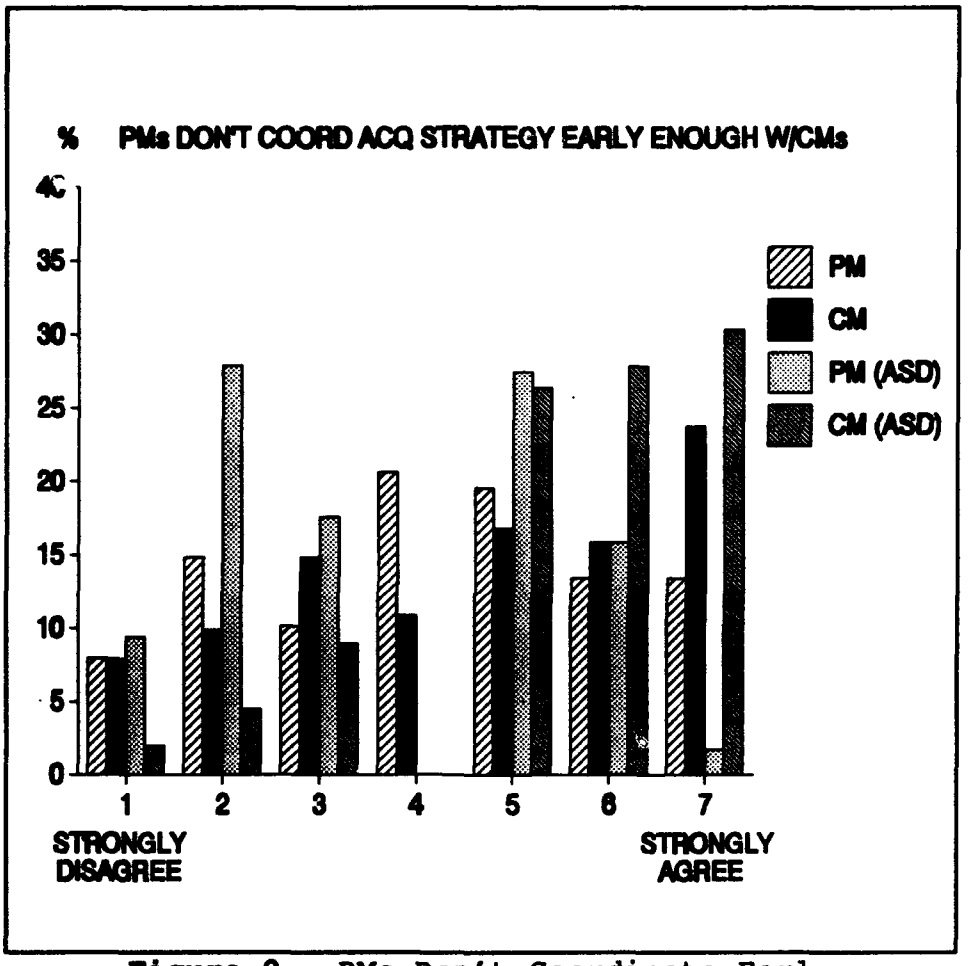

Figure 9. PMs Don't Coordinate Early

Summary of Analysis

In this chapter, we analyzed the responses to the survey instrument of the group under study: program and contracting management personnel in systems acquisition. The response rate for the survey was almost 52 percent. The characterization of the respondents did not differ

significantly from the studied population. The typical program manager was a Captain or a GS/GM 13-14 with a Master's Degree. The average acquisition experience level for program managers was between five and eight years. For contracting, the typical respondent was a Major/Lieutenant Colonel or a GS 11-12 with Master's Degree. Their average acquisition experience was between eight and twelve years.

Analysis of the investigative questions was performed primarily through the use of mean responses and t-tests. Additional analysis was performed by correlation analysis and stepwise regression procedures. The variable mean responses for both groups were consistently on the same side of the scale, except for the variable "travel." T-test analysis revealed that the means between the two groups were statistically significant for 7 of the 13 variables of interest.

To gain additional insight, Pearson's product-moment correlation was performed to determine the linear strength between the variables. The correlations between the dependent variable (conflict) and the independent variables were all in the expected direction, except for mutual task dependency. The results of the data shows a strong linear relationship exists between most of the pairs of independent variables. Furthermore, all but two of the independent variables (role ambiguity and mutual task dependency) have a significant relationship with the dependent variable.

From the stepwise regression procedures, only six of the 12 independent variables used in the procedure were identified as significantly contributing to the regression model, contributing to 31% of the variance in the conflict model(see Appendix F). The three largest contributors explaining the variance in the model were confidence in counterparts, goal compatibility, and counterparts adding value to the acquisition process.

We also analyzed 33 survey statements not directly contributing to the measurement of any particular variable scale, but which were alluded to in the literature and were of interest to the researchers. We analyzed these statements through frequency responses and t-tests. Some key highlights of the results are as follows: PMs are schedule driven and CMs regulation driven; PMs believe they don't have enough authority; neither group thinks their counterparts hinder the acquisition process; the mix of military and civilians in both groups is not a source of contention; PMs are short-term-goal oriented while CMs are long-term; there may be some overlap between the PM and CM roles; and, matrixed organizations may be a source of conflict.

At the end of the survey instrument, we included four open-ended statements where individuals could give their opinions. The number of responses indicate that biggest problem was that there was a lack of understanding of each person's role in the acquisition process. Additionally,

there was a strong indication that the contracting process was too long. To overcome these problems both PMs and CMs expressed the need for joint-training, cross-training, and more/better training. In addition, several respondents stated that having both groups working for the same supervisor (i.e., program manager) would help imporove the PM/CM relationship.

The last data analysis we conducted was a frequency comparison between some of the items in our survey and ASD's to see if the distribution of the responses were similar. Even though the statements from both surveys were not the exactly the same, we found that most distributions on the items were alike. The results show that survey respondents from this research and ASD's have similar opinions on the statements: PM/CM conflict exists; conflict interferes with job performance; PM courses provide little instruction for working with CMs; PM travel is not a problem; appropriate training could reduce/solve conflict; and, PMs don't coordinate acquisition strategy early enough.

Chapter V will continue the discussion of the findings alluded to in this chapter by further addressing the issues concerning the investigative questions and the answer to the management question. In addition, we will give recommendations for future research and action based on these findings. Finally, we will end this research with a general conclusion.

V. Findings, Recommendations, and Conclusion

Overview

In this chapter we provide a summary of our findings, addressing whether conflict exists between PM and CM personnel, and then provide recommendations to AFMC management on how to help resolve any possible conflicts and improve the professional relationship. In addition, we will provide other related areas for future research on the issue. Finally, this is followed by the conclusion.

Findings

Our research findings are based on the conclusions drawn from the literature review in chapter II and the analysis of data which was discussed in Chapter IV.

First, to address the management question, "Do relationship difficulties exist between program and contract management personnel?" we conducted a thorough literature review on the program and contract management relationship. Through this review, we conclude that conflict does appear to exist. In Pursch and Garrett's article, they noted that 60% of the PMs and 85% of the CMs surveyed, agreed that conflict exists between PMs and CMs in the 1991 ASD study. Statistical analysis of data from our survey instrument corroborated this finding with 69% of the PMs and 71% of the CMs respondents believing conflict exists. In addition a majority of respondents from both surveys believe that this conflict interferes with the performance of duties.

Stepwise regression analysis revealed that 6 of the 12 tested factors significantly contributed to identifying the variance in conflict. In order of significance, these factors were confidence in counterparts, goal compatibility, value in counterparts, communication, travel, and role ambiguity. 31% of the variance in the conflict model was explained by these factors. Hence, this regression model can help management decide how much attention and time should be spent on these 6 factors to help reduce the PM/CM conflict.

T-test analysis on the response means was also performed on all 12 independent variables. Of these 12 variables, 7 were found to have statistically significant differences in the means between the PMs and CMs. These variables were role ambiguity, communication, goal compatibility, cooperation, travel, acceptance, and mutual task dependence. While both the t-tests and the regression are linear models, there were differences in the results of these two tests. One possible explanation for these differences is that the t-tests results are a sampling artifact resulting from multiple t-tests. The other possible explanation is that the variables which do not show up in the regression model maybe overlapping because they are too closely related to the other 6 variables. For example, the cooperation and working atmosphere variables had a 0.83 correlation, which indicates they may be measuring the same concept.

In addition, frequency response analysis and a comparison of like items between our survey and the ASD survey were performed. The following summarize the findings from these analyses.

Role Ambiguity. There are many distinct roles program and contract management personnel must perform throughout the acquisition process. Even though PMs and CMs have different roles, both groups believe some role overlap exists. This role ambiguity can lead to a breakdown in the flow of the work because both groups are trying to figure out who is responsible for doing a particular function. This was further emphasized in the responses to the open-ended statements. The number one response to the statements, "If I could change one thing about my counterparts..." and, "The thing that frustrates me the most when working with my counterparts..." was the issue of role ambiguity. Role ambiguity was a major contributor to the conflict model.

Communication. While the results from the scaled survey responses do not indicate a communication problem, one of the top responses in 3 of the 4 open-ended statements seems to show otherwise. This discrepancy could be due to the fact that the responses for this variable were almost evenly split on the Likert scale. This near neutral response, coupled with the open-ended responses, signifies that improvements in communication can be made. As was pointed out in the literature review, communication is the

very essence of an organization (Katz and Kahn, 1978:428). In addition, communication was a significant contributor to the conflict model.

Goal Compatibility. The survey respondents did not think the goals for PMs and CMs were compatible. This, according to past research, should lead to conflict between the groups. The responses on the opinion section in the survey also brought out this point. Contract managers appear to be regulation driven, while program managers seem to be schedule driven. While these differences were not unexpected, they show that PMs and CMs do not focus on the same issues. Furthermore, the goal compatibility variable was another important factor contributing to conflict in the regression model.

Cooperation. Both groups believed that cooperation exists. Although cooperation appears to be adequate, the mean responses for both groups were close to "neutral," indicating improvements in this area can be made.

Working Atmosphere. Both PMs and CMs thought the working atmosphere between them was good. We believe this working atmosphere provides a cornerstone for making improvements in other areas of concern.

Value in Counterparts. Program and contract management personnel consider each other valuable to the acquisition process. Closely related to this, neither group believed the other to be an impediment to the acquisition process. Here again, we believe these to be very important building

blocks for improvements to the PM/CM relationship. Although PMs and CMs considered each other valuable, this variable was another significant contributor to the conflict regression model. One possible explanation for this seeming contradiction may be due to the mix and grade structure of the program and contract management groups. The demographic data revealed that most program managers were junior officers with less than 8 years of experience. On the other hand, the contract managers were mostly civil service employees or senior-ranking military and had more experience than their PM counterparts. These differences may cause a "wash out" in the data and do not appear in the results.

Confidence in Counterparts. While both groups appear to have confidence in the other's abilities, the CM respondents were not quite as confident about the PMs abilities as the PM's confidence in the CM's abilities. From the responses in the open-ended statements, this could be due to the large number of new and inexperienced program management personnel. Likewise, confidence in counterparts was another major contributor to the conflict model.

Travel. Although CMs believe PMs travel too much, it does not appear to adversely affect their ability to get their job done. Moreover, travel was another weighted factor to the conflict regression model, indicating that it seems to cause resentment.

Acceptance. Overall, PMs and CMs both feel accepted by each other. However, CMs believe they are slightly less

accepted as professionals than PMs do. Although both groups were generally positive in their feelings of acceptance, the significant difference between the means of the two groups could indicate a possible source of conflict between them.

Group Accomplishments. When PMs and CMs work together, they both believe that positive things happen. Therefore, we believe positive results take place in spite of the possible PM/CM relationship difficulties.

Group Commitment. Both program and contract management personnel are committed to each other when they work together. We believe this commitment is another foundation for resolving other differences that may exist.

Mutual Task Dependence. PMs and CMs are dependent on each other to perform their daily tasks. In other words, in order for the PM to do his/her work, he or she must wait upon the CM to do his or her job first. The same is true for the CMs, they must wait for the PM to do his or her job before they can complete their own work. Since both groups are dependent on each other, this area may be a definite source of conflict between the two groups. This is especially true if one group doesn't think the other is doing their job correctly or fast enough as indicated in some of the responses to the open-ended statements.

In addition to the analyses of the 12 independent variables above, the following are the findings from the remainder of the data. We believe these may identify

additional variables and explain additional variance in the conflict between PMs and CMs.

Authority. Most PMs or CMs do not believe they have too much authority. However, a portion of both groups believe their counterparts have more authority than them in the acquisition process. Since the contracting officer is the only person able to legally bind the government, it would be easy for the program managers to think that contracting officers have too much authority. However, only 30% of PMs thought that CMs had too much authority.

Number of Military/Civilian Personnel. We hypothisized that a major contributor to the PM/CM conflict was the ratio of military to civilian personnel within system acquisition. However, survey results indicate this area doesn't appear to be a source of contention at all.

Technical vs. Management Orientation. A majority of the CMs believe that conflict exists because the PMs are technically oriented. On the other hand, most of the PMs don't think the CM's business orientation causes problems between the two groups.

Matrixed Organizations. Most PMs believe that another source of relationship difficulties is because CMs and PMs don't work for the same boss. This was reiterated in the responses to the open-ended statements of the survey. In contrast, 71% of the CMs did not think that matrixed organizations facilitated conflict between the groups. These mixed results indicate a possible source of friction.

Program Management Courses. Most respondents agreed that program management courses do not teach program managers how to work with contract managers. These responses indicate there could be possible shortcomings in the present PM continuing education courses on working with the contract management community.

PM Coordination on Acquisition Strategy. Most PMs and CMs believe that program managers do not coordinate acquisition strategy early enough in the process with other disciplines. Our results were different from the 1991 ASD survey, which indicated that PMs disagreed that they did not coordinate early enough. A lack of coordination on the acquisition strategy in the early stages of the acquisition cycle can cause problems throughout the entire procurement process.

Acquisition Process. In addition to the statistical results mentioned above, many survey respondents indicated in Part III of the survey there may be another source of conflict between PMs and CMs. That is, problems exist between program and contract management personnel not because of people or personality problems, but because of a problem in the acquisition process itself. Numerous respondents said that because of the numerous levels of checking and rechecking, it takes too long to place or change a contract. Also, because of the length of time it takes to procure a weapon system, respondents stated the

entire acquisition process should be improved and streamlined to be more efficient and effective.

Recommendations

Based upon the literature review and our data analysis, we recommend the following to strengthen the PM/CM relationship.

1. System acquisition centers should concentrate their efforts in building up the confidence level each group has of the other. This could be accomplished through combined training and providing a better understanding of their counterpart's role in the acquisition process.

2. To the greatest extent possible, product centers should make the program and contract management goals congruent. However, because of the nature of each group's role in the acquisition process, this may be difficult. By the very nature of the acquisition environment, program managers tend to be more schedule/results driven, while contract managers tend to be regulation driven. These motivation differences can cause conflicts. Program managers want to get the product delivered on schedule, and contract managers want to make sure everything is done according to regulations and procedures. Since both groups want the best systems for the least amount of money, they should focus more on this aspect and not their differences.

3. Closely related to confidence in counterparts is value in counterparts. Efforts should be made to stress the

importance and value each group contributes to the acquisition process. This may be done with a combined training curriculum. It takes both groups working together to procure a system effectively and efficiently.

4. Improving the communication between the two groups will enhance the PM/CM relationship. One recommendation to improve communication is implementing some form of integrated product teams or program management teams where possible. When both groups work for the same program manager communication should improve. In addition, each group member, whether the PM or CM, should be included in and invited to as many of their counterpart's meetings as possible.

5. Although the travel performed by the program managers did not appear to detrimentally affect the PM/CM relationship or the ability of people getting their jobs done, it was a major factor in the conflict regression model. In addition, many open-ended statements indicated that they did not receive information from other functionals in a timely fashion. A possible contributor could be the fact that most CMs believe PMs travel too much. Therefore, PM travel should not necessarily be reduced, but, the flow of communication and information should continue even when the PMs are traveling. With increased technology in communication, this is an easy area for improvement.

6. Provide more opportunities for combined PM/CM training. Since both groups must work together, they should

therefore train together. In addition, the training that currently exists should be revised to include team-building concepts. Through these efforts, PMs and CMs would learn more about each other's roles and how to better interact. Furthermore, this could also help reduce the role ambiguity that exists.

7. In addition to combined training, product centers involved in system acquisition should consider providing for a temporary exchange of roles. Serving in each other's role would give each group an understanding and appreciation for their counterpart's role.

8. Make sure that the acquisition strategy is coordinated at the beginning of the program with all functionals. Early coordination could help reduce role ambiguity and could help increase communication, goal compatibility, and the "team" environment crucial to the successful procurement of systems. This could also be done through the use of integrated product teams or program management teams.

9. Although it may be out of the purview of individual product centers, improving and streamlining the acquisition process wherever possible could greatly contribute to the enhancement of the PM/CM relationship.

Areas for Future Research

Research often raises additional issues and questions which need to be investigated and answered. Based on the

results of our research, the following recommendations are made for future exploration: First, since this research only accounted for 31% of the variance in the conflict model, further research should be conducted to explore other contributors to the conflict. We believe the differences in the grade/rank structure and in the experience levels between program and contract management personnel are two possible contributors. Other possible contributors that should be investigated are matrixed organizations versus integrated product teams and/or program management teams, lack of early CM involvement in the acquisition process, PM/CM training and curriculum differences, and differences in the program and contract management personnel's authority. Furthermore, conducting this same type of research in the commercial defense industry may prove very beneficial for finding ways to improve their efficiency and effectiveness in performance of defense related contracts. In addition, conducting similar research in other branches of the military may help in finding improvements for the entire DoD acquisition community.

Studies should be performed further invesigating the six variables (confidence in counterparts, goal compatibility, value in counterparts, communication, travel, and role ambiguity) which significantly contributed to the conflict model. Results from other research may

substantiate our findings and provide more specific recommendations for improvements. Finally, we recommend further research be directed in the area of the actual acquisition process to see if improvements in the process could facilitate better relations between the PM and CM groups.

Summary and Conclusion

This research investigated several possible factors influencing the relationship between two acquisition disciplines--program and contracting management personnel involved with Air Force system acquisition. Twelve factors believed to cause contention between groups were investigated to see whether they contributed to friction between PM and CM personnel. Suggestions were offered to the acquisition community which, if followed, may positively impact the PM and CM relationship.

We hope that AFMC can use the information in this thesis as a basis for examining the professional relationship between these critically important members of the systems acquisition community.

Appendix A: 1991 ASC Survey Instrument

Please use the following rating system to indicate your support for each statement.

1. Strongly Agree
2. Agree
3. Slightly Agree
4. Slightly Disagree
5. Disagree
6. Strongly Disagree
7. No Opinion

_____ 1. A conflict exists between program managers and contracting personnel.

_____ 2. This conflict inhibits or interferes with performance of duties and mission accomplishment.

_____ 3. A significant contributor to this conflict is that the majority of program managers are military and the majority of contracting personnel are civilians.

_____ 4. Another significant contributor is due to the broad program prospectus of program managers vs the more narrow contractual prospectus of contracting personnel.

_____ 5. Program managers need to be educated on what their roles are relative to contracting personnel.

_____ 6. Contracting personnel need to be educated on what their roles are relative to contracting personnel.

_____ 7. Program managers set short-term goals while contracting personnel are more concerned with long-term implication.

_____ 8. Program managers are short-term oriented because of their 3 to 5 year job assignments.

_____ 9. Contracting courses teach the authority and responsibility of the PC), but not how to work with program managers.

____ 10. Program management courses teach the authority and responsibility of program managers, but not how to work with contracting personnel.

____ 11. Most problems between program managers and contracting personnel are personality conflicts.

____ 12. Contracting personnel are more price conscious than program managers.

____ 13. Program managers are more budget conscious than contracting personnel.

____ 14. Contracting personnel are reluctant to support the program manager when travel is involved.

____ 15. Program managers travel too much.

____ 16. The problems between program managers and contracting personnel could be solved through better training.

____ 17. Contracting personnel have adversarial relationships with their contractors, thereby making program managers arbitrators.

____ 18. Program managers don't plan or coordinate acquisition strategy with all the functionals early enough.

____ 19. Contracting personnel assume the role of the program manager.

____ 20. Program managers assume the role of contracting personnel.

____ 21. Varying degrees of experience and job knowledge among contracting personnel result in inconsistent advice for resolution of contracting issues.

____ 22. Contracting personnel are guided by the FAR and program managers are guided by program milestones.

Appendix B: Program and Contract Management Survey

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

18 FEB 1993

FROM: AFMC/CS
4375 Chidlaw Road Suite 1
Wright-Patterson AFB OH 45433-5001

SUBJ: Survey of Program and Contract Management Personnel

TO: Survey Respondent

1. Please take the time to complete the attached survey and return it in the enclosed self-addressed envelope by 30 March 1993.

2. This survey is part of a study designed by graduate students at the Air Force Institute of Technology to learn more about the interaction and relationship between program management and contract management personnel. By your participation in this survey, you will not only contribute to the knowledge base of the program/contract management relationship, but also, your responses and opinions could affect future acquisition training for these two critically important professional disciplines.

3. If this study is to be helpful, it is important that you respond to each statement as thoughtfully and frankly as possible. This is not a test, and there are no right or wrong answers. There is room at the end of the survey for your written opinions.

4. The completed surveys are processed by automated equipment which summarizes the answers in statistical form so that individuals cannot be identified. To ensure COMPLETE CONFIDENTIALITY, please do not write your name anywhere on the survey or AFIT form. The demographic information requested at the beginning of this survey will be used for analysis only and will not identify you.

5. We would certainly appreciate your help in completing the survey. For further information, contact Dr. William C. Pursch at DSN 785-7777 ext. 3149.

FOR THE COMMANDER

Kenneth E. Eickmann

KENNETH E. EICKMANN
Major General, USAF
Staff Director

3 Atch
1. Survey
2. AFIT Response Form 11E
3. Return Envelope

SURVEY OF PROGRAM AND CONTRACT MANAGEMENT PERSONNEL

Instructions

1. This survey contains 100 items ("individual statements"). It is broken down into three parts. Part I contains general background information. Part II contains opinion statements, and Part III includes a section for personal opinions concerning the program and contract management relationship. All items in Parts I and II are answered by filling in the appropriate spaces on the machine-scored response sheet provided. If for any item you do not find a response that fits your opinion exactly, use the one that is closest to the way you feel. Part III responses should be written in the space provided in the survey booklet.

2. Please use a "soft-lead" (No. 2) pencil and observe the following:

   a. Do not write your name anywhere on the survey.

   b. Do not fold, bend, staple or otherwise mutilate the AFIT Form 11E.

   c. Mark only one answer when responding to each question.

   d. Erase cleanly any responses you wish to change.

3. Completely fill in the numbered circle on the AFIT data collection form corresponding to your opinion on each statement. Note, you are limited to seven possibilities in responding to the statements; circle (1) corresponds to "strongly disagree" through circle (7) which corresponds to "strongly agree."

4. Definitions: Throughout the survey, the term program manager/management is defined as project officers/engineers/managers, logistics engineers, and program directors. Contracting personnel are defined as buyers, purchasing agents, material managers, contracting officers, price analysts, procurement specialists, and directors of contracting. In addition, the term counterpart depends on your current job description. If you are in program management, your counterparts are contract management personnel. And, if you are in contract management, your counterparts are program management personnel.

5. After completing the survey, please put the AFIT data collection form and Part III of the survey in the enclosed self-addressed envelope, seal the envelope, and mail it no later than 30 Mar 1993.

Part I. Background Information. This part of the survey is designed to collect general information about your background. Please read each item carefully, then answer by filling in the response circle on the AFIT data collection form that most accurately describes your present situation.

1. Your highest level of education achieved?

1. High school graduate or GED
2. Some college work
3. Associate degree
4. Bachelor's degree
5. Graduate work, but no Master's
6. Master's degree
7. Doctoral degree

2. If you're military what is your rank? (civilians skip this question and continue with question #3)

1. Enlisted
2. Lieutenant (O-1 through O-2)
3. Captain (O-3)
4. Major through Lt Colonel (O-4 through O-5)
5. Colonel (O-6)
6. General Officer (O-7 and above)

3. If you're civilian what is your grade? (military personnel skip this question and continue with question #4)

1. GS-5-9
2. GS-11-12
3. GS/GM-13/14
4. GM-15 or above
5. SES
6. Other (please specify) _____

4. Which of the following acquisition titles most closely describes your present job function?

1. Program Management (includes: program managers, program engineers, project engineers, project officers, logistics engineer, acquisition managers, test engineers, and program directors)

2. Contract Management (includes: contracting officers, buyers/negotiators, purchasing agents, material managers, procurement specialists, price analysts, and directors of contracting)

5. Years of acquisition experience.

1. Less than 2 years
2. More than 2 but less than 5 years
3. More than 5 but less than 8 years
4. More than 8 but less than 12 years
5. More than 12 but less than 16 years
6. More than 16 but less than 20 years
7. More than 20 years

Part II. The following part of the survey contains opinion statements. When responding, think of your work in systems level acquisition. Remember, your counterpart refers to either program or contract management personnel, depending on your job description. Please completely fill in the response circle on the AFIT data collection form that best describes your opinion on each statement.

THE RESPONSE CHOICES FOR OPINION STATEMENTS 6 TO 100 ARE AS FOLLOWS:

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
[1]	[2]	[3]	[4]	[5]	[6]	[7]

6. The goals for program and contract management personnel are cooperative.

7. My counterparts are concerned with following the Federal Acquisition Regulation.

8. There is overlap between the roles of program and contract management personnel in the acquisition process.

9. Program and contract management personnel work together well.

10. Contracting officers have too much authority.

11. I am free to express my opinions with my counterparts.

12. When a decision has been reached with my counterparts, I feel positive about the decision.

13. I know what is expected of me when working with my counterpart.

14. My job requires that I work with my counterparts.

15. I feel a responsibility towards my counterparts.

16. My counterparts are made aware of important program events.

17. My counterparts travel too much.

18. There are too many civilians in program management.

19. The training differences between the program and contract management personnel cause problems in getting tasks accomplished.

20. Conflicts exist between program and contract management personnel because contracting personnel are business-oriented.

21. My counterparts trust my judgement.

22. Conflict exists because contracting personnel don't work directly for the program manager (i.e., matrix organization).

23. For program managers, the ends justify the means.

24. Program managers and contracting personnel plan their work activities together.

25. There are conflicts between program and contract management personnel.

26. Contracting personnel impede progress in the acquisition process.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
[1]	[2]	[3]	[4]	[5]	[6]	[7]

27. The goals for program and contract management personnel are competitive.

28. My counterparts are concerned with meeting program schedules.

29. My counterparts don't understand my role in the acquisition process.

30. There is cooperation between program and contract management personnel.

31. Program managers have too much authority.

32. My counterparts accept my opinions.

33. I am satisfied with the opportunities I have to develop my job skills when working with my counterparts.

34. The goals of program and contract management are in conflict.

35. I depend on my counterparts for information that I need to do my job.

36. When I work in a group with my counterpart, I am committed to the group.

37. My counterparts know what is needed to get the job done.

38. I can't get my work done because my counterparts are TDY too often.

39. My counterparts follow my guidance.

40. I'm sure of my responsibilities when working with my counterparts.

41. Conflicts exist between program and contract management personnel because program management personnel are technically oriented.

42. My counterparts are effective in doing their work.

43. I can't get my work done because my counterparts work too far away from me.

44. For contract managers, the ends justify the means.

45. Acquisition strategy isn't coordinated early enough between program managers and contracting personnel.

46. Conflict between contracting and program management personnel interferes with the performance of duties.

47. Program management personnel impede progress in the acquisition process.

48. The goals for program and contract management personnel are independent.

49. When I work with my counterparts, value is added to the acquisition process.

50. I'm sure of my role in the acquisition process.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
[1]	[2]	[3]	[4]	[5]	[6]	[7]

51. My counterparts are reluctant to support me when travel is involved.

52. Contracting officers have too little authority.

53. My counterparts understand my concerns.

54. I feel I accomplish something worthwhile when working with my counterparts.

55. There is insufficient communication between program and contract management personnel.

56. I follow my counterpart's guidance.

57. There is a spirit of teamwork between program management and contract management personnel.

58. My counterparts withhold information necessary for me to do my job.

59. There are too many civilians in contracting.

60. Program management courses don't teach program managers how to work with contracting personnel.

61. I trust my counterparts' judgement.

62. Communication between program and contract management is poor.

63. My counterparts are valuable to the acquisition process.

64. My counterparts have more authority than me in the acquisition process.

65. Program and contract management personnel are committed to each other in group projects.

66. I know my counterpart's role in the acquisition process.

67. Issues are mutually solved between program and contract management personnel.

68. Program managers have too little authority.

69. My counterparts accept me as a professional.

70. When working with my counterparts, I feel I accomplish something valuable for the program.

71. My counterparts are short-term-goal oriented.

72. Most of my job activities aren't affected by my counterparts.

73. Program and contract management personnel present a united front when dealing with the contractor.

74. There are too many military personnel in contracting.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
[1]	[2]	[3]	[4]	[5]	[6]	[7]

75. There is good communcation between program and contracting management personnel.

76. Combined training of program and contracting management personnel would help reduce conflict.

77. I have confidence in the skills of my counterpart.

78. My counterparts add no value to the acquisition process.

79. When working with my counterpart, the atmosphere is friendly.

80. When my counterpart and I work together on a team, I support the team.

81. My counterpart's job activities affect my job activities.

82. My counterpart helps me find ways to do a better job.

83. My counterparts are unwilling to spend the necessary time it takes to get the job done.

84. My counterparts give me conflicting information.

85. The military turnover rate causes conflict within the organization.

86. I can rely on my counterparts not to make my job more difficult.

87. There is a cooperative atmosphere when working with my counterpart.

88. My counterparts help me reach my goals in the acquisition process.

89. I need my counterpart's help to get my work done.

90. My counterparts follow my guidance.

91. The atmosphere is productive when working with my counterpart.

92. Program and contracting personnel are suspicious of each other.

93. There is distrust between program and contract management personnel.

94. My counterpart encourages me to give my best effort.

95. My counterparts need my help to get their work done.

96. I look forward to working with my counterparts.

97. My counterparts are long-term-goal oriented.

98. More social contact with my counterparts would improve the program/contract management relationship.

99. I have to wait for my counterparts to finish their job before I can do my job.

100. There are too many military personnel in program management.

Part III. The following section of the survey contains open-ended statements and questions. Please finish the statements in the space provided with your opinion. If you need more room for your response, please continue on the back of this sheet. After completing the survey and this section, detach this sheet (Part III) and mail it along with the AFIT data collection form in the return envelope provided.

If I could change one thing about my counterparts, it would be _____

_____

_____

_____

The thing that frustrates me the most when working with my counterparts is

_____

_____

_____

_____

Describe a typical problem you have experienced when working with your counterpart.

_____

_____

_____

What do you feel would improve the program/contract management relationship?

_____

_____

_____

Please provide any comments or suggestions you may have concerning the program/contract management relationship.

Thank You for Your Participation

Appendix C: Response Means of PM and CM Personnel

GROUP	Var	N	Mean	SD	Range	GROUP	Var	N	Mean	SD	Range
PM	Q6	284	5.26	1.56	1-7	CM	Q6	98	4.71	1.67	1-7
	Q7	284	6.32	0.97	1-7		Q7	100	3.86	1.85	1-7
	Q8	283	4.80	1.64	1-7		Q8	101	4.71	1.62	1-7
	Q9	281	4.75	1.55	1-7		Q9	101	4.55	1.55	1-7
	Q10	282	3.78	1.70	1-7		Q10	101	1.88	1.41	1-7
	Q11	283	5.99	1.29	1-7		Q11	101	5.70	1.49	1-7
	Q12	282	5.25	1.28	1-7		Q12	101	5.03	1.21	1-7
	Q13	284	5.23	1.44	1-7		Q13	101	5.46	1.29	1-7
	Q14	282	6.09	1.25	1-7		Q14	100	6.18	1.18	1-7
	Q15	283	5.94	1.12	1-7		Q15	100	6.17	1.08	3-7
	Q16	281	5.87	1.12	1-7		Q16	100	6.08	1.09	2-7
	Q17	282	3.24	1.52	1-7		Q17	100	4.63	1.76	1-7
	Q18	281	3.11	1.79	1-7		Q18	101	2.62	1.70	1-7
	Q19	279	4.06	1.64	1-7		Q19	100	4.82	1.63	1-7
	Q20	280	3.33	1.56	1-7		Q20	100	3.92	1.62	1-7
	Q21	282	5.24	1.32	1-7		Q21	101	5.30	1.47	1-7
	Q22	279	4.18	1.77	1-7		Q22	101	2.66	1.99	1-7
	Q23	282	3.37	1.84	1-7		Q23	99	4.99	1.68	1-7
	Q24	283	3.87	1.55	1-7		Q24	98	3.76	1.62	1-7
	Q25	281	4.75	1.51	1-7		Q25	100	5.00	1.61	1-7
	Q26	284	3.94	1.72	1-7		Q26	101	2.49	1.66	1-7
	Q27	282	3.49	1.49	1-7		Q27	99	3.60	1.58	1-7
	Q28	282	4.66	1.73	1-7		Q28	101	6.12	1.34	1-7
	Q29	281	3.31	1.62	1-7		Q29	100	4.34	1.69	1-7
	Q30	283	5.06	1.36	1-7		Q30	101	4.79	1.42	1-7
	Q31	284	2.73	1.54	1-7		Q31	101	4.22	1.86	1-7
	Q32	282	5.19	1.23	1-7		Q32	100	5.14	1.28	1-7
	Q33	284	4.76	1.50	1-7		Q33	99	4.73	1.58	1-7
	Q34	281	3.41	1.71	1-7		Q34	101	4.29	1.73	1-7
	Q35	284	5.68	1.15	1-7		Q35	101	6.01	1.20	2-7
	Q36	284	5.99	1.03	1-7		Q36	100	6.03	1.11	1-7
	Q37	283	5.03	1.53	1-7		Q37	100	4.25	1.82	1-7
	Q38	281	2.61	1.47	1-7		Q38	98	3.99	1.63	1-7
	Q39	282	4.64	1.39	1-7		Q39	101	4.92	1.33	1-7
	Q40	282	5.23	1.49	1-7		Q40	100	5.77	1.25	1-7
	Q41	281	3.44	1.57	1-7		Q41	99	4.50	1.66	1-7
	Q42	281	5.08	1.48	1-7		Q42	100	4.98	1.48	1-7
	Q43	281	3.03	1.85	1-7		Q43	101	2.62	1.65	1-7
	Q44	279	2.72	1.66	1-7		Q44	100	2.56	1.78	1-7
	Q45	276	4.23	1.82	1-7		Q45	101	4.61	1.96	1-7
	Q46	279	4.05	1.77	1-7		Q46	100	4.30	1.66	1-7
	Q47	281	2.47	1.44	1-7		Q47	100	3.85	1.73	1-7
	Q48	280	3.04	1.73	1-7		Q48	99	3.46	1.86	1-7
	Q49	283	5.61	1.25	1-7		Q49	99	5.91	1.20	1-7
	Q50	283	5.88	1.22	1-7		Q50	100	6.31	1.03	1-7
	Q51	281	3.21	1.62	1-7		Q51	101	3.16	1.62	1-7
	Q52	282	2.56	1.21	1-7		Q52	101	3.74	2.09	1-7
	Q53	280	4.94	1.40	1-7		Q53	101	4.42	1.65	1-7
	Q54	283	5.31	1.24	1-7		Q54	101	5.51	1.14	2-7
	Q55	282	4.03	1.72	1-7		Q55	101	4.49	1.74	1-7
	Q56	282	5.37	1.06	1-7		Q56	99	4.94	1.11	2-7
	Q57	284	4.62	1.64	1-7		Q57	101	4.50	1.48	1-7
	Q58	283	2.74	1.63	1-7		Q58	99	3.32	1.78	1-7
	Q59	280	3.04	1.77	1-7		Q59	100	2.47	1.97	1-7
	Q60	279	4.64	1.56	1-7		Q60	97	4.83	1.54	1-7

GROUP	Var	N	Mean	SD	Range	GROUP	Var	N	Mean	SD	Range
PM	Q61	279	5.37	1.26	1-7	CM	Q61	99	5.15	1.15	2-7
	Q62	284	3.74	1.72	1-7		Q62	99	3.86	1.85	1-7
	Q63	281	5.96	1.11	1-7		Q63	100	6.08	0.96	1-7
	Q64	282	4.35	1.74	1-7		Q64	100	4.23	1.95	1-7
	Q65	283	4.79	1.35	1-7		Q65	99	4.70	1.23	2-7
	Q66	284	5.34	1.32	1-7		Q66	99	5.76	1.10	1-7
	Q67	281	4.90	1.29	1-7		Q67	101	4.87	1.40	1-7
	Q68	282	3.48	1.69	1-7		Q68	100	2.33	1.32	1-6
	Q69	281	5.70	1.21	1-7		Q69	100	5.52	1.47	1-7
	Q70	279	5.53	1.21	1-7		Q70	100	5.65	1.07	1-7
	Q71	279	3.80	1.70	1-7		Q71	100	4.71	1.89	1-7
	Q72	279	3.71	1.85	1-7		Q72	99	2.94	1.71	1-7
	Q73	280	5.15	1.60	1-7		Q73	100	4.48	1.76	1-7
	Q74	280	2.83	1.49	1-7		Q74	100	3.15	1.97	1-7
	Q75	281	4.50	1.60	1-7		Q75	98	4.26	1.69	1-7
	Q76	282	5.22	1.42	1-7		Q76	100	5.67	1.37	1-7
	Q77	280	5.44	1.24	1-7		Q77	100	5.19	1.54	1-7
	Q78	282	1.86	1.18	1-7		Q78	100	1.98	1.34	1-7
	Q79	277	5.45	1.20	2-7		Q79	101	5.23	1.24	1-7
	Q80	280	6.10	0.86	3-7		Q80	100	6.09	0.95	2-7
	Q81	279	5.52	1.20	1-7		Q81	99	5.62	1.37	1-7
	Q82	280	4.33	1.60	1-7		Q82	100	3.52	1.65	1-7
	Q83	281	2.89	1.72	1-7		Q83	100	3.32	1.81	1-7
	Q84	278	3.35	1.73	1-7		Q84	99	3.75	1.63	1-7
	Q85	279	4.15	1.68	1-7		Q85	100	4.45	1.89	1-7
	Q86	281	4.17	1.60	1-7		Q86	100	3.79	1.56	1-7
	Q87	279	5.18	1.33	1-7		Q87	100	5.02	1.24	1-7
	Q88	279	5.16	1.26	1-7		Q88	100	4.75	1.40	1-7
	Q89	277	5.67	1.30	1-7		Q89	99	5.70	1.32	1-7
	Q90	277	4.86	1.29	1-7		Q90	98	5.09	1.07	2-7
	Q91	278	5.26	1.23	1-7		Q91	99	5.08	1.19	2-7
	Q92	278	3.52	1.73	1-7		Q92	100	4.30	1.95	1-7
	Q93	280	3.28	1.67	1-7		Q93	97	4.02	1.87	1-7
	Q94	282	4.70	1.40	1-7		Q94	99	4.86	1.38	1-7
	Q95	281	5.46	1.23	1-7		Q95	99	6.02	1.22	1-7
	Q96	278	4.78	1.45	1-7		Q96	100	4.91	1.40	1-7
	Q97	280	4.32	1.48	1-7		Q97	97	3.70	1.82	1-7
	Q98	278	4.35	1.52	1-7		Q98	101	4.21	1.81	1-7
	Q99	278	4.08	1.71	1-7		Q99	99	4.93	1.77	1-7
	Q100	280	2.96	1.71	1-7		Q100	98	3.64	1.95	1-7

Appendix D: Variable Statistics, Cronbach's Alpha, Item Correlation, and T-tests

CONFLICT

TTEST PROCEDURE

Variable: Conflict

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	281	4.7509	1.5125	0.0902	1.000	7.000
CM	100	5.0000	1.6143	0.1614	1.000	7.000

Variances	T	DF	Prob>|T|
Unequal	-1.3470	164.8	0.1798
Equal	-1.3894	379.0	0.1655

For H0: Variances are equal, F' = 1.14
DF = (280,99) Prob>F' = 0.4116

ROLE AMBIGUITY

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q13	379	5.301	1.401	2009	1.00	7.00
Q40	379	5.375	1.454	2037	1.00	7.00
Q50	379	5.995	1.191	2272	1.00	7.00
Q66	379	5.449	1.274	2065	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.765381
for STANDARDIZED variables: 0.766390

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q13	0.542199	0.723163	0.533322	0.728317
Q40	0.644571	0.664106	0.641606	0.669711
Q50	0.568494	0.710929	0.570285	0.708746
Q66	0.516353	0.734664	0.522105	0.734169

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 379

	Q13	Q40	Q50	Q66
Q13	1.00000 0.0	0.55902 0.0001	0.36891 0.0001	0.35996 0.0001
Q40	0.55902 0.0001	1.00000 0.0	0.51006 0.0001	0.42461 0.0001
Q50	0.36891 0.0001	0.51006 0.0001	1.00000 0.0	0.48103 0.0001
Q66	0.35996 0.0001	0.42461 0.0001	0.48103 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: Role Ambiguity

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	281	5.4217	1.0371	0.0619	2.250	7.000
CM	98	5.8393	0.9133	0.0923	1.000	7.000

Variances	T	DF	Prob>|T|
Unequal	-3.7593	190.5	0.0002
Equal	-3.5358	377.0	0.0005

For H0: Variances are equal, F' = 1.29
DF = (280,97) Prob>F' = 0.1431

COMMUNICATION

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q24	361	3.837	1.581	1385	1.00	7.00
Q45	361	3.684	1.875	1330	1.00	7.00
Q58	361	5.130	1.677	1852	1.00	7.00
Q67	361	4.911	1.311	1773	1.00	7.00
Q55	361	3.867	1.741	1396	1.00	7.00
Q62	361	4.208	1.754	1519	1.00	7.00
Q73	361	4.986	1.674	1800	1.00	7.00
Q75	361	4.421	1.633	1596	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.841696
for STANDARDIZED variables: 0.845262

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q24	0.504516	0.831332	0.506529	0.835883
Q45	0.421269	0.844880	0.418609	0.846344
Q58	0.523146	0.829406	0.524456	0.833710
Q67	0.596525	0.822766	0.599396	0.824479
Q55	0.578486	0.822497	0.572349	0.827838
Q62	0.756876	0.797949	0.757642	0.804188
Q73	0.499797	0.832293	0.508974	0.835587
Q75	0.763837	0.798728	0.766495	0.803020

Correlation Analysis

Pearson Correlation Coeff/Prob > |R| under Ho: Rho=0 / N = 361

VARIABLE: COMMUNICATION

	Q24	Q45	Q55	Q58
Q24	1.00000 0.0	0.28524 0.0001	0.27467 0.0001	0.28989 0.0001
Q45	0.28524 0.0001	1.00000 0.0	0.38095 0.0001	0.28598 0.0001
Q55	0.27467 0.0001	0.38095 0.0001	1.0000 0.0001	0.36543 0.0001
Q58	0.28989 0.0001	0.28598 0.0001	0.36543 0.0	1.00000 0.0001
Q62	0.46319 0.0001	0.38316 0.0001	0.60753 0.0001	0.46949 0.0001
Q67	0.38430 0.0001	0.26305 0.0001	0.35365 0.0001	0.39924 0.0001
Q73	0.36447 0.0001	0.19326 0.0002	0.40873 0.0001	0.30038 0.0001
Q75	0.45507 0.0001	0.32201 0.0001	0.74041 0.0001	0.48699 0.0001

Correlation Analysis

Pearson Correlation Coeff/Prob > |R| under Ho: Rho=0 / N = 361

VARIABLE: COMMUNICATION (cont'd)

	Q62	Q67	Q73	Q75
Q24	0.27467 0.0001	0.46319 0.0001	0.36447 0.0001	0.45507 0.0001
Q45	0.38095 0.0001	0.38316 0.0001	0.19326 0.0002	0.32201 0.0001
Q55	1.00000 0.0	0.60753 0.0001	0.28142 0.0001	0.54627 0.0001
Q58	0.36543 0.0001	0.46949 0.0001	0.30038 0.0001	0.48699 0.0001
Q62	0.60753 0.0001	1.00000 0.0	0.40873 0.0001	0.74041 0.0001
Q67	0.35365 0.0001	0.52370 0.0001	0.45112 0.0001	0.55316 0.0001
Q73	0.28142 0.0001	0.40873 0.0001	1.00000 0.0	0.52848 0.0001
Q75	0.54627 0.0001	0.74041 0.0001	0.52848 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: COMMUNICATION

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	268	4.474	1.1108	0.0678	1.625	7.000
CM	93	4.111	1.2058	0.1258	1.750	6.750

Variances	T	DF	Prob>|T|
Unequal	2.5469	149.7	0.0119
Equal	2.6503	359.0	0.0084

For H0: Variances are equal, F' = 1.18
DF = (92,267) Prob>F' = 0.3181

GOAL COMPATIBILITY

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q6	373	2.898	1.616	1081	1.00	7.00
Q27	373	3.493	1.507	1303	1.00	7.00
Q34	373	3.630	1.754	1354	1.00	7.00
Q48	373	3.153	1.777	1176	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.730266
for STANDARDIZED variables: 0.730191

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q6	0.478514	0.693363	0.474387	0.696115
Q27	0.493129	0.686251	0.490521	0.686935
Q34	0.635111	0.597182	0.638324	0.598304
Q48	0.484826	0.692954	0.483467	0.690960

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 373

	Q6	Q27	Q34	Q48
Q6	1.00000	0.29758	0.48430	0.34050
	0.0	0.0001	0.0001	0.0001
Q27	0.29758	1.00000	0.49919	0.35722
	0.0001	0.0	0.0001	0.0001
Q34	0.48430	0.49919	1.00000	0.44250
	0.0001	0.0001	0.0	0.0001
Q48	0.34050	0.35722	0.44250	1.00000
	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: GOAL COMPATIBILITY

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	277	3.170	1.207	0.073	1.000	6.750
CM	96	3.651	1.270	0.130	1.000	6.250

Variances	T	DF	Prob>|T|
Unequal	-3.2414	158.4	0.0014
Equal	-3.3228	371.0	0.0010

For H0: Variances are equal, F' = 1.11
DF = (95,276) Prob>F' = 0.5238

COOPERATION

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q9	371	4.695	1.560	1742	1.00	7.00
Q37	371	4.817	1.650	1787	1.00	7.00
Q30	371	5.000	1.375	1855	1.00	7.00
Q82	371	4.116	1.652	1527	1.00	7.00
Q83	371	5.022	1.744	1863	1.00	7.00
Q94	371	4.774	1.382	1771	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.827807
for STANDARDIZED variables: 0.829935

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q9	0.658251	0.787321	0.660767	0.789938
Q30	0.651255	0.791505	0.651866	0.791819
Q37	0.577840	0.804610	0.573780	0.808014
Q82	0.638718	0.791187	0.641688	0.793960
Q83	0.570810	0.807403	0.570188	0.808746
Q94	0.505597	0.817739	0.506325	0.821573

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 371

COOPERATION

	Q9	Q30	Q37	Q82	Q83	Q94
Q9	1.00000 0.0	0.60077 0.0001	0.47901 0.0001	0.46459 0.0001	0.49203 0.0001	0.39905 0.0001
Q30	0.60077 0.0001	1.00000 0.0	0.43939 0.0001	0.51734 0.0001	0.44495 0.0001	0.40513 0.0001
Q37	0.47901 0.0001	0.43939 0.0001	1.00000 0.0	0.50445 0.0001	0.42483 0.0001	0.30996 0.0001
Q82	0.46459 0.0001	0.51734 0.0001	0.50445 0.0001	1.00000 0.0	0.42676 0.0001	0.46240 0.0001
Q83	0.49203 0.0001	0.44495 0.0001	0.42483 0.0001	0.42676 0.0001	1.00000 0.0	0.35735 0.0001
Q94	0.39905 0.0001	0.40513 0.0001	0.30996 0.0001	0.46240 0.0001	0.35735 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: COOPERATION

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	274	4.841	1.129	0.068	1.506	7.000
CM	97	4.443	1.158	0.118	1.167	6.833

Variances	T	DF	Prob>|T|
Unequal	2.9272	164.9	0.0039
Equal	2.9629	369.0	0.0032

For H0: Variances are equal, F' = 1.05
DF = (96,273) Prob>F' = 0.7413

ATMOSPHERE

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q57	372	4.586	1.602	1706	1.00	7.00
Q79	372	5.382	1.222	2002	1.00	7.00
Q87	372	5.137	1.305	1911	1.00	7.00
Q91	372	5.220	1.217	1942	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.882500
for STANDARDIZED variables: 0.891021

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q57	0.668553	0.893626	0.667096	0.893763
Q79	0.709567	0.863288	0.718802	0.875024
Q87	0.844433	0.811130	0.849028	0.825519
Q91	0.804405	0.830312	0.811183	0.840250

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 372

	Q57	Q79	Q87	Q91
Q57	1.00000	0.52436	0.67689	0.61625
	0.0	0.0001	0.0001	0.0001
Q79	0.52436	1.00000	0.70914	0.69529
	0.0001	0.0	0.0001	0.0001
Q87	0.67689	0.70914	1.00000	0.80700
	0.0001	0.0001	0.0	0.0001
Q91	0.61625	0.69529	0.80700	1.00000
	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: ATMOSPHERE

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	273	5.129	1.1775	0.0713	1.250	7.000
CM	99	4.949	1.0944	0.1100	2.500	7.000

Variances	T	DF	Prob>|T|
Unequal	1.3706	185.8	0.1722
Equal	1.3244	370.0	0.1862

For H0: Variances are equal, F' = 1.16
DF = (272,98) Prob>F' = 0.4003

VALUE

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q49	374	5.701	1.226	2132	1.00	7.00
Q63	374	6.013	1.047	2249	1.00	7.00
Q78	374	6.110	1.221	2285	1.00	7.00
Q88	374	5.062	1.312	1893	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.766455
for STANDARDIZED variables: 0.770790

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q49	0.543329	0.723477	0.545249	0.730039
Q63	0.605294	0.697214	0.607444	0.697090
Q78	0.580512	0.703310	0.585999	0.708593
Q88	0.551920	0.721574	0.549836	0.727651

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 374

	Q49	Q63	Q78	Q88
Q49	1.00000	0.47520	0.39622	0.44674
	0.0	0.0001	0.0001	0.0001
Q63	0.47520	0.00000	0.54177	0.42110
	0.0001	0.0	0.0001	0.0001
Q78	0.39622	0.54177	1.00000	0.45935
	0.0001	0.0001	0.0	0.0001
Q88	0.44674	0.42110	0.45935	1.00000
	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: VALUE

GROUP	N	Mean	Std Dev	Std Error	Min	Max
PM	276	5.734	0.922	0.0555	1.50	7.00
CM	98	5.686	0.934	0.0944	2.50	7.00

Variances	T	DF	Prob>|T|
Unequal	0.4336	168.6	0.6651
Equal	0.4363	372.0	0.6629

For H0: Variances are equal, F' = 1.03
DF = (97,275) Prob>F' = 0.8539

CONFIDENCE IN COUNTERPARTS

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q21	365	5.260	1.361	1920	1.00	7.00
Q42	365	5.049	1.493	1843	1.00	7.00
Q61	365	5.329	1.232	1945	1.00	7.00
Q77	365	5.378	1.330	1963	1.00	7.00
Q86	365	4.082	1.612	1490	1.00	7.00
Q90	365	4.926	1.241	1798	1.00	7.00
Q92	365	4.282	1.828	1563	1.00	7.00
Q93	365	4.542	1.750	1658	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.856478
for STANDARDIZED variables: 0.859231

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q21	0.493426	0.850643	0.501336	0.853911
Q42	0.592042	0.840060	0.601278	0.842579
Q61	0.637949	0.836858	0.652318	0.836643
Q77	0.608660	0.838794	0.626299	0.839682
Q86	0.629774	0.835619	0.621118	0.840284
Q90	0.545426	0.845642	0.558798	0.847443
Q92	0.663828	0.832279	0.640096	0.838074
Q93	0.661530	0.831968	0.632199	0.838395

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 365

CONFIDENCE IN COUNTERPARTS

	Q21	Q42	Q61	Q77
Q21	1.00000 0.0	0.27087 0.0001	0.35186 0.0001	0.30974 0.0001
Q42	0.27087 0.0001	1.00000 0.0	0.55430 0.0001	0.56348 0.0001
Q61	0.35186 0.0001	0.55430 0.0001	1.00000 0.0	0.69685 0.0001
Q77	0.30974 0.0001	0.56348 0.0001	0.69685 0.0001	1.00000 0.0
Q86	0.36093 0.0001	0.47105 0.0001	0.41662 0.0001	0.40970 0.0001
Q90	0.54961 0.0001	0.36962 0.0001	0.43803 0.0001	0.41633 0.0001
Q92	0.35031 0.0001	0.40068 0.0001	0.40643 0.0001	0.38547 0.0001
Q93	0.36851 0.0001	0.38833 0.0001	0.38088 0.0001	0.34841 0.0001

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 365

CONFIDENCE IN COUNTERPARTS (cont'd)

	Q86	Q90	Q92	Q93
Q21	0.36093 0.0001	0.54961 0.0001	0.35031 0.0001	0.36851 0.0001
Q42	0.47105 0.0001	0.36962 0.0001	0.40068 0.0001	0.38833 0.0001
Q61	0.41662 0.0001	0.43803 0.0001	0.40643 0.0001	0.38088 0.0001
Q77	0.40970 0.0001	0.41633 0.0001	0.38547 0.0001	0.34841 0.0001
Q86	1.00000 0.0	0.39573 0.0001	0.51158 0.0001	0.54133 0.0001
Q90	0.39573 0.0001	1.00000 0.0	0.33250 0.0001	0.32456 0.0001
Q92	0.51158 0.0001	0.33250 0.0001	1.00000 0.0	0.80412 0.0001
Q93	0.54133 0.0001	0.32456 0.0001	0.80412 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: CONFIDENCE IN COUNTERPARTS

GROUP	N	Mean	Std Dev	Std Err	Min	Max
PM	270	4.929	1.050	0.0639	1.375	7.000
CM	95	4.650	1.053	0.1080	2.375	7.000

Variances	T	DF	Prob>|T|
Unequal	2.2206	164.4	0.0277
Equal	2.2228	363.0	0.0268

For H0: Variances are equal, F' = 1.00
DF = (94,269) Prob>F' = 0.9582

TRAVEL

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q17	377	3.592	1.707	1354	1.00	7.00
Q38	377	2.963	1.629	1117	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.810746
for STANDARDIZED variables: 0.811271

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q17	0.682469	.	0.682469	.
Q38	0.682469	.	0.682469	.

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 377

	Q17	Q38
Q17	1.00000 0.0	0.68247 0.0001
Q38	0.68247 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: TRAVEL

GROUP	N	Mean	Std Dev	Std Error	Min	Max
PM	280	2.921	1.364	0.082	1.00	7.00
CM	97	4.304	1.525	0.155	1.00	7.00

Variances	T	DF	Prob>|T|
Unequal	-7.9020	152.5	0.0001
Equal	-8.3430	375.0	0.0000

For H0: Variances are equal, F' = 1.25
DF = (96,279) Prob>F' = 0.1656

ACCEPTANCE

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q11	374	5.933	1.342	2219	1.00	7.00
Q29	374	4.430	1.692	1657	1.00	7.00
Q32	374	5.163	1.250	1931	1.00	7.00
Q39	374	4.714	1.374	1763	1.00	7.00
Q53	374	4.805	1.478	1797	1.00	7.00
Q69	374	5.647	1.291	2112	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables: 0.857021
for STANDARDIZED variables: 0.861740

(ACCEPTANCE)	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q11	0.577566	0.845097	0.581095	0.851477
Q29	0.582539	0.850496	0.580459	0.851589
Q32	0.714210	0.822929	0.720013	0.826388
Q39	0.656604	0.831221	0.661705	0.837092
Q53	0.730917	0.816526	0.730819	0.824377
Q69	0.653563	0.832413	0.652739	0.838716

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 374

ACCEPTANCE

	Q11	Q29	Q32	Q39	Q53	Q69
Q11	1.00000	0.40249	0.54038	0.41423	0.48558	0.45856
	0.0	0.0001	0.0001	0.0001	0.0001	0.0001
Q29	0.40249	1.00000	0.43567	0.43595	0.54512	0.47981
	0.0001	0.0	0.0001	0.0001	0.0001	0.0001
Q32	0.54038	0.43567	1.00000	0.64828	0.61214	0.52918
	0.0001	0.0001	0.0	0.0001	0.0001	0.0001
Q39	0.41423	0.43595	0.64828	1.00000	0.57832	0.49763
	0.0001	0.0001	0.0001	0.0	0.0001	0.0001
Q53	0.48558	0.54512	0.61214	0.57832	1.00000	0.57935
	0.0001	0.0001	0.0001	0.0001	0.0	0.0001
Q69	0.45856	0.47981	0.52918	0.49763	0.57935	1.00000
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: ACCEPTANCE

Group	N	Mean	Std Dev	Std Err	Min	Max
PM	275	5.195	1.044	0.063	1.667	7.000
CM	99	4.896	1.146	0.115	1.167	6.833

Variances	T	DF	Prob>|T|
Unequal	2.2772	160.1	0.0241
Equal	2.3799	372.0	0.0178

For H0: Variances are equal, F' = 1.21
DF = (98,274) Prob>F' = 0.2432

ACCOMPLISHMENTS

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q12	377	5.196	1.258	1959	1.00	7.00
Q33	377	4.761	1.513	1795	1.00	7.00
Q54	377	5.361	1.219	2021	1.00	7.00
Q70	377	5.554	1.175	2094	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.786069
for STANDARDIZED variables: 0.797137

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q12	0.633370	0.713771	0.635245	0.733229
Q33	0.469518	0.812112	0.467679	0.813220
Q54	0.702047	0.681170	0.717282	0.691088
Q70	0.609826	0.728155	0.624782	0.738461

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 377

	Q12	Q33	Q54	Q70
Q12	1.00000	0.45076	0.58640	0.50176
	0.0	0.0001	0.0001	0.0001
Q33	0.45076	1.00000	0.41739	0.32900
	0.0001	0.0	0.0001	0.0001
Q54	0.58640	0.41739	1.00000	0.68800
	0.0001	0.0001	0.0	0.0001
Q70	0.50176	0.32900	0.68800	1.00000
	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: ACCOMPLISH

GROUP	N	Mean	Std Dev	Std Error	Min	Max
PM	278	5.218	1.012	0.061	1.750	7.000
CM	99	5.220	1.020	0.102	1.250	7.000

Variances	T	DF	Prob>|T|
Unequal	-0.0174	171.3	0.9862
Equal	-0.0174	375.0	0.9861

For H0: Variances are equal, F' = 1.02
DF = (98,277) Prob>F' = 0.9025

GROUP COMMITMENT

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q15	371	5.989	1.117	2222	1.00	7.00
Q36	371	5.997	1.062	2225	1.00	7.00
Q65	371	4.768	1.328	1769	1.00	7.00
Q80	371	6.094	0.891	2261	2.00	7.00
Q96	371	4.806	1.441	1783	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.732927
for STANDARDIZED variables: 0.745339

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q15	0.469402	0.696120	0.476654	0.712489
Q36	0.492421	0.688886	0.526189	0.694194
Q65	0.485709	0.692725	0.462496	0.717628
Q80	0.541566	0.681314	0.561393	0.680890
Q96	0.535479	0.674985	0.518527	0.697056

Pearson Correlation Coefficients / Prob > |R|
under Ho: Rho=0 / N = 371

GROUP COMMITMENT

	Q15	Q36	Q65	Q80	Q96
Q15	1.00000	0.36224	0.28255	0.38925	0.36301
	0.0	0.0001	0.0001	0.0001	0.0001
Q36	0.36224	1.00000	0.27763	0.58891	0.29122
	0.0001	0.0	0.0001	0.0001	0.0001
Q65	0.28255	0.27763	1.00000	0.29047	0.51056
	0.0001	0.0001	0.0	0.0001	0.0001
Q80	0.38925	0.58891	0.29047	1.00000	0.33645
	0.0001	0.0001	0.0001	0.0	0.0001
Q96	0.36301	0.29122	0.51056	0.33645	1.00000
	0.0001	0.0001	0.0001	0.0001	0.0

TTEST PROCEDURE

Variable: GROUP COMMITMENT

GROUP	N	Mean	Std Dev	Std Error	Min	Max
PM	275	5.514	0.809	0.049	2.800	7.000
CM	96	5.579	0.864	0.088	2.800	7.000

Variances	T	DF	Prob>|T|
Unequal	-0.6448	157.0	0.5200
Equal	-0.6654	369.0	0.5062

For H0: Variances are equal, F' = 1.14
DF = (95,274) Prob>F' = 0.4180

MUTUAL TASK DEPENDENCE

Simple Statistics

Var	N	Mean	Std Dev	Sum	Min	Max
Q14	361	6.139	1.180	2216	1.00	7.00
Q35	361	5.800	1.135	2094	1.00	7.00
Q72	361	4.490	1.843	1622	1.00	7.00
Q81	361	5.609	1.162	2025	1.00	7.00
Q89	361	5.690	1.277	2054	1.00	7.00
Q95	361	5.609	1.249	2025	1.00	7.00

Cronbach's Coefficient Alpha

for RAW variables : 0.715024
for STANDARDIZED variables: 0.732005

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
Q14	0.494935	0.664515	0.501113	0.684532
Q35	0.415334	0.686482	0.422939	0.707204
Q72	0.392948	0.716429	0.394336	0.715283
Q81	0.479183	0.669274	0.470155	0.693615
Q89	0.525976	0.652910	0.539051	0.673212
Q95	0.458716	0.673349	0.473377	0.692676

Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 361

MUTUAL TASK DEPENDENCE

	Q14	Q35	Q72	Q81	Q89	Q95
Q14	1.00000 0.0	0.31530 0.0001	0.27901 0.0001	0.29493 0.0001	0.41204 0.0001	0.36472 0.0001
Q35	0.31530 0.0001	1.00000 0.0	0.21985 0.0001	0.25256 0.0001	0.35773 0.0001	0.28972 0.0001
Q72	0.27901 0.0001	0.21985 0.0001	1.00000 0.0	0.35622 0.0001	0.27647 0.0001	0.21662 0.0001
Q81	0.29493 0.0001	0.25256 0.0001	0.35622 0.0001	1.00000 0.0	0.34305 0.0001	0.32902 0.0001
Q89	0.41204 0.0001	0.35773 0.0001	0.27647 0.0001	0.34305 0.0001	1.00000 0.0	0.38516 0.0001
Q95	0.36472 0.0001	0.28972 0.0001	0.21662 0.0001	0.32902 0.0001	0.38516 0.0001	1.00000 0.0

TTEST PROCEDURE

Variable: MUTUAL TASK DEPENDENCE

GROUP	N	Mean	Std Dev	Std Error	Min	Max
PM	268	5.469	0.843	0.051	2.667	7.000
CM	93	5.810	0.840	0.087	3.333	7.000

Variances	T	DF	Prob>|T|
Unequal	-3.3712	160.8	0.0009
Equal	-3.3654	359.0	0.0008

For H0: Variances are equal, F' = 1.01
DF = (267,92) Prob>F' = 0.9895

Appendix E: Cronbach's Coefficient Alpha of Variables

Correlation Analysis

Cronbach's Coefficient Alpha

for RAW variables : 0.91165
for STANDARDIZED variables: 0.911699

	Raw Variables		Std. Variables	
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha
ACCEPT	0.781450	0.898738	0.783494	0.898738
ACCMPLSH	0.770995	0.899611	0.783666	0.898731
ATMOS	0.842528	0.895674	0.835562	0.896512
COMM	0.739965	0.900215	0.722442	0.901318
COOP	0.845561	0.895387	0.834391	0.896562
COMMIT	0.765188	0.901755	0.775812	0.899065
CONFID	0.861144	0.895669	0.849365	0.895917
ROLES	0.434753	0.912688	0.454886	0.912235
TASKDEP	0.284027	0.916696	0.304683	0.918094
TRAVEL	0.112890	0.919348	0.106665	0.925529
VALUE	0.775676	0.900121	0.786924	0.898592
GOALCOM	0.674481	0.903359	0.657679	0.904018
CONFLICT	0.423723	0.920132	0.413133	0.913883

Appendix F: Multiple Regression Analysis

Stepwise Procedure for Dependent Variable (CONFLICT)

Step 1 Variable GOALCON Entered
R-square = 0.21693059 C(p) = 37.08305390

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	1	171.15232043	171.15232043	90.86	0.0001
Error	328	617.82040684	1.88359880		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	7.6010	0.3025	1189.5491	631.53	0.0001
GOALCOM	-0.5860	0.0615	171.1523	90.86	0.0001

Bounds on condition number: 1, 1

Step 2 Variable COMM Entered
R-square = 0.26003424 C(p) = 19.09733662

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	2	205.15992242	102.57996121	57.46	0.0001
Error	327	583.81280486	1.78536026		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	8.1016	0.3160	1173.3134	657.19	0.0001
COMM	-0.3350	0.0768	34.0076	19.05	0.0001
GOALCOM	-0.3887	0.0750	47.9738	26.87	0.0001

Bounds on condition number: 1.570168, 6.280674

Step 3 Variable CONFID Entered
R-square = 0.27263206 C(p) = 15.25614987

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	3	215.09925816	71.69975272	40.73	0.0001
Error	326	573.87346911	1.76034806		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	8.5222	0.3603	984.8495	559.46	0.0001
COMM	-0.2221	0.0898	10.7601	6.11	0.0139
CONFID	-0.2545	0.1071	9.9393	5.65	0.0181
GOALCOM	-0.3187	0.0801	27.8859	15.84	0.0001

Bounds on condition number: 2.323148, 18.95934

Step 4 Variable VALUE Entered
R-square = 0.29533196 C(p) = 6.73096520

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	4	233.00886259	58.25221565	34.05	0.0001
Error	325	555.96386468	1.71065805		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	7.6195	0.4517	486.8324	284.59	0.0001
COMM	-0.2195	0.0886	10.5100	6.14	0.0137
CONFID	-0.4425	0.1205	23.0635	13.48	0.0003
VALUE	0.3728	0.1152	17.9096	10.47	0.0013
GOALCOM	-0.3875	0.0818	38.4353	22.47	0.0001

Bounds on condition number: 3.026746, 37.42108

Step 5 Variable TRAVEL Entered
R-square = 0.30454892 C(p) = 4.45736768

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	5	240.28079593	48.05615919	28.38	0.0001
Error	324	548.69193135	1.69349362		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	8.5869	0.6480	297.3620	175.59	0.0001
COMM	-0.2120	0.0882	9.7845	5.78	0.0168
CONFID	-0.4449	0.1199	23.3123	13.77	0.0002
TRAVEL	-0.2401	0.1158	7.2719	4.29	0.0390
VALUE	0.3786	0.1147	18.4606	10.90	0.0011
GOALCOM	-0.3829	0.0814	37.4920	22.14	0.0001

Bounds on condition number: 3.027029, 51.86279

Step 6 Variable ROLES Entered
R-square = 0.31186249 C(p) = 3.06631223

	DF	Sum of Squares	Mean Square	F	Prob>F
Regress	6	246.05099982	41.00849997	24.40	0.0001
Error	323	542.92172745	1.68087222		
Total	329	788.97272727			

Var	Parameter Estimate	Std Err	Type II Sum of Squares	F	Prob>F
INTERCEP	8.1724	0.6833	240.4740	143.07	0.0001
COMM	-0.2436	0.0895	12.4508	7.41	0.0068
CONFID	-0.4480	0.1195	23.6343	14.06	0.0002
ROLES	0.1446	0.0781	5.7702	3.43	0.0648
TRAVEL	-0.2411	0.1154	7.3327	4.36	0.0375
VALUE	0.3250	0.1178	12.7895	7.61	0.0061
GOALCOM	-0.3670	0.0815	34.0613	20.26	0.0001

Bounds on condition number: 3.027625, 71.28941

All variables left in the model are significant at the 0.1000 level. No other variable met the 0.1000 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable Q25

Step	Var Entered	In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	GOALCOM	1	0.2169	0.2169	37.0831	90.8645	0.0001
2	COMM	2	0.0431	0.2600	19.0973	19.0480	0.0001
3	CONFID	3	0.0126	0.2726	15.2561	5.6462	0.0181
4	VALUE	4	0.0227	0.2953	6.7310	10.4694	0.0013
5	TRAVEL	5	0.0092	0.3045	4.4574	4.2940	0.0390
6	ROLES	6	0.0073	0.3119	3.0663	3.4329	0.0648

Model: MODEL1
Dependent Variable: CONFLICT

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	246.05100	41.00850	24.397	0.0001
Error	323	542.92173	1.68087		
C Total	329	788.97273			

Root MSE	1.29648	R-square	0.3119
Dep Mean	4.80909	Adj R-sq	0.2991
C.V.	26.95904		

Parameter Estimates

Var	DF	Parameter Est	Std Error	T for H0: Parameter=0	Prob >|T|
INTERCEP	1	8.1724	0.6833	11.961	0.0001
COMM	1	-0.2436	0.0895	-2.722	0.0068
CONFID	1	-0.4480	0.1195	-3.750	0.0002
ROLES	1	0.1446	0.0781	1.853	0.0648
TRAVEL	1	-0.2411	0.1154	-2.089	0.0375
VALUE	1	0.3250	0.1178	2.758	0.0061
GOALCOM	1	-0.3700	0.0815	-4.502	0.0001

Variable	DF	Standardized Estimate
INTERCEP	1	0.00000000
COMM	1	-0.18914171
CONFID	1	-0.30115626
ROLES	1	0.09612120
TRAVEL	1	-0.09691175
VALUE	1	0.19485188
GOALCOM	1	-0.29170448

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13. ABSTRACT (Maximum 200 words)

The purpose of this study was to test if relationship problems exist between program and contract management personnel working in system-level acquisition throughout Air Force Materiel Command (AFMC). We used a survey instrument to examine a representative sample of program and contract management personnel assigned to various product centers. A similar study was conducted at Aeronautical Systems Division in 1991. However, the survey instrument was inadequate for deriving certain results. Consequently, we improved upon the prior survey and obtained more definite findings. Survey results showed that most program and contract managers believe conflict exists Also, six of the twelve independent variables studied,(confidence in counterparts, goal compatibility, value in counterparts, communication, travel, and role ambiguity) significantly contributed to the conflict model. Furthermore, matrixed organizations program management courses not teaching how to deal with contract managers, and the acquisition process itself, were identified as possible conflict contributors, but were not included in the model. Recommendations for improving the program/contract management relationships were subsequently offered to AFMC and suggestions for future research were given.

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