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**DEVELOPMENT OF MEASURES OF SUCCESS FOR CORPORATE
LEVEL AIR FORCE ACQUISITION INITIATIVES**

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by

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Development of Measures of Success for Corporate Level Air Force Acquisition Initiatives

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Abstract

The goal of this research is to suggest a framework for developing measures of success for corporate level Air Force acquisition initiatives. Because this research is exploratory, it focuses on only one initiative: the 2002 initiative “Focus on results, not process.” A qualitative method approach was used to suggest a four part framework. Through the review of literature, common steps for creating metrics were established and recurrent characteristics of good metrics were identified. Then interviews were conducted with acquisition practitioners who have experience with the initiative. Finally, those three parts were applied to the initiative as a case study and metrics suggested as a result.

This study gives Air Force leaders clear, implementable metrics that can be used as measures of success for the initiative, and provides recommendations to improve this initiative’s performance and that of future corporate Air Force acquisition initiatives. This study also gives leaders insight into whether or not this initiative and others like it are an appropriate and effective way to drive the changes they are meant to bring about. Finally, from a broader perspective, the framework used in this study can be used to develop metrics for other corporate level initiatives.

Introduction

Almost since its inception in 1947, the Air Force has sought to reform the way it procures weapon systems. Many factors involved in the weapon system acquisition process are external to the Air Force and out of its direct control (i.e., Congressional constraints, the pace of technology development, constantly changing world situations). However, self-imposed administrative hurdles are an internal factor that the Air Force can change in order to help improve its procurement practices.

To target the elements of the acquisition process within its control, the Air Force began implementing a series of acquisition reform initiatives in 1995. These initiatives, referred to as “Lightning Bolts,” were created in direct response to Air Force leadership’s growing concerns that it takes too long to put weapon systems in the hands of the warfighters (Department of the Air Force, 2003). Collectively, their purpose was to serve as the catalyst by which administrative changes are made in Air Force business practices (Senate Armed Services Committee, 2002). However, little is known about how to gauge the success of these initiatives. Many metrics have been suggested for gauging the success of acquisition reform attempts



within the Department of Defense (DoD), but most of the metrics remain slated for use only in individual acquisition program offices (Pope, 1997). No list of standard metrics exists, and there are no generally applicable and logical methods to measure the performance of acquisition reform initiatives today (Beamon, 1999; Pope, 1997). Accordingly, this project is designed to help better understand these initiatives and how to establish acquisition based measures of success.

Literature Review

This section provides the foundation for the study by addressing several relevant literature streams. First, the background and purpose of the acquisition reform initiatives are reviewed. Next, metrics are discussed, including general steps involved in developing metrics, attributes of good metrics, and how metrics can be applied to acquisition reform initiatives. This review identifies commonalities among theories of metric development that highlight common attributes of good metrics. Finally, a list of metrics, generated through a series of interviews, will be assessed against the characteristics of good metrics to construct a set of useable metrics for the 2002 initiative entitled “Focus on results, not process.”

Acquisition Reform Initiatives

On 27 February 2002, in an update to the Senate Armed Services Committee (2002) on the Air Force’s on-going acquisition reform efforts and progress, the Assistant Secretary of the Air Force for Acquisition, Dr. Marvin Sambur, reaffirmed the goal set for the Air Force by the President and the Secretary of Defense to transform the military and improve how it does business; specifically, the Air Force must reduce cycle times, improve its ability to estimate both costs and schedules, increase delivery speeds, and generally work to regain credibility with the war fighter.

In an effort to address senior leaders’ desire to improve speed and credibility, acquisition leaders released six acquisition reform initiatives in 2002; similar sets of initiatives had been released in groups of six to ten, approximately every two years since 1995. Two of the six initiatives released in 2002 were process oriented. One initiative, entitled “Focus on results, not process” encouraged streamlining existing acquisition processes, challenging those that do not add value, and getting rid of the processes that do not make sense. The second process initiative was designed to strengthen continuing process improvements and communication between the government and contractors by creating a knowledge pipeline. (Druyun, 2001; Senate Armed Services Committee, 2002)

The other four 2002 initiatives are people-oriented. These four initiatives sought to encourage cooperation between warfighters and acquisition practitioners during the development and incremental delivery of warfighting capabilities; to give managers a single point of contact, the Acquisition Center of Excellence (ACE) office to help them remove administrative and bureaucratic stumbling blocks, thus freeing them to be innovative; to change the ingrained culture of the acquisition workforce toward a bias for innovation; and to encourage leveraging the Air Force’s buying power in services through the creation of a Program Executive Officer (PEO) for service contracts.

This research will focus on the initiative arguably most closely linked with the corporate goal set for the Air Force to improve speed and credibility: “Focus on results, not process”. This initiative was designed to drive a “clean-sheet” approach to acquisitions by streamlining



processes in order to remove non value-added steps (Senate Armed Services Committee, 2002). In other words, the initiative sought to free up the administrative hands of acquisition practitioners to allow them to be as innovative as possible within the confines of the law. How well this and other initiatives are achieving their desired goal is an open question, and without valid metrics, it will remain so.

Metrics

The Metrics Handbook developed by the then Air Force Systems Command (1991) defines metrics as meaningful measures that allow action to be taken. Similarly, Antanitus (2003) calls metrics items you would like to measure. Metrics emphasize the customer, support organizational objectives and goals, facilitate process understanding, and encourage continual improvement of how business is done (AFSC, 1991).

Metrics improve performance (Antanitus, 2003; Buchheim, 2000; Rummier and Brache, 1995) by indicating how well an organization is performing (Goett, 2003; Klapper, Hamblin, Hutchison, Novak, and Vivar, 1999; Lambert and Pohlen, 2001; Milliken, 2001). Metrics not only examine how an organization is performing (Milliken 2001), but more importantly, should help it perform better (Hammer, 2001).

Metrics are used to improve performance and properly structured metrics can drive superior performance. Keebler et al. (1999) discovered a great disparity in levels of organizational performance and found the most important factor driving superior performance among the organizations in their study was the presence of well-utilized and properly structured measurement programs. Inadequately structured metrics, on the other hand, can drive the wrong behaviors and even result in dysfunctional behaviors (Neely, Richards, Mills, Platts, and Bourne, 1997).

Additional evidence of how the use of metrics has been shown to improve performance is seen in the literature on goal setting (see, for example, Latham and Yukl, 1975; Latham and Locke 1979; Locke 1968; Locke, Shaw, Saari, and Latham, 1981; Locke 1982). a significant amount of data attests to the presence of increased performance when goals are set, and, therefore, when metrics are used. Within the context of goal-setting, metrics are the feedback mechanism by which progress toward organizational goals is measured (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 1999). For example, the Commander's Initial Guidance on improving speed and credibility states that the overall goal is to shorten the time it takes for decisions and getting more capable weapon systems out to the warfighter by a factor of four (Department of the Air Force, 2003). Correspondingly, the metric to determine if that goal is met will be cycle time.

In addition to metrics' importance because of improved performance, Keebler et al. (1999) point out that measures aid companies in determining how to remain competitive and confirm the value customers place on their services. And the underlying truth within the axiom that what gets measured gets attention is yet another reason to use metrics (Eccles, 1991; Osborne and Gaebler, 1992).

If metrics are important, what makes a good metric? According to Clark and Wheelwright (1994:262), there are two types of measures: results measures, which tell a team where it currently stands in its attempt to reach a goal, rather than how it got there or what it could do differently; and process measures which look at activities and tasks within an



organization that produce given results. Also, metrics can be expressed both qualitatively and quantitatively (Beamon, 1999). Quantitative metrics are frequently preferred because qualitative metrics, like “poor,” “fair,” and “good,” are vague and hard to use in a meaningful way (Beamon, 1999). However, quantitative metrics may not adequately discuss a system’s performance and, as a result, may be just as vague (Beamon, 1999). It should not be assumed that specific quantitative goals, and, in turn, metrics, are inevitably beneficial; some areas where results are more difficult to measure may require qualitative goals, and, in turn, qualitative metrics (Locke, 1978). The decision between qualitative and quantitative metrics depends upon the nature of the system for which the metrics, or goals, are being established.

Steps to Create Metrics.

By comparing the numerous methods for systematically developing metrics that exist within the literature, this research found that nearly all of the methods share three common steps which will later be discussed. Of the literature reviewed, twelve authors presented thirteen general frameworks for creating metrics (AFSC, 1991; Antanitus, 2003; Brown, 1996; Buckheim, 2000; Clark and Wheelwright, 1994; Eccles and Pyburn, 1992; Evans and Lindsay 2002; INCOSE, 1998; Keebler et al., 1999; Mentzer and Konrad1991; Pinker, Smith, and Booher, 1997; Rummler and Brache, 1995). The number of steps involved in each framework ranged from three steps up to eleven steps. For example, Clark and Wheelwright (1994) suggest a four step method: a) define factors critical to customer satisfaction; b) map cross-functional process through which results are obtained; c) identify capabilities and tasks necessary to complete process successfully; and d) design measures to track those capabilities and tasks. Rummler and Brache (1995) recommend a similar four step sequence: a) clearly establish the most important outputs of the process, job, or organization; b) for each output, establish the “critical dimensions” of performance; c) create measures for every critical dimension; and d) create standards, or goals, for each measure. In contrast, Eccles and Pyburn (1992) suggest a five step process that does not share the three steps found to be common among the other authors: a) choose non-financial measures that will compliment financial measures, determine relationships between them, and create firm’s business performance model; b) establish methodology to be used to take the measures; c) select the frequency and layout of performance measurement reports; d) adjust how personnel are compensated and evaluated to encourage desired behavioral changes that will improve activity performance; and e) realize a key element of performance measurement system is that it will evolve with time as managers grow and increase their knowledge of measures’ relationships to one another and as conditions change.

No empirical evidence was found within the literature to suggest that any one particular method was better to use than any other. Many differences exist among the authors’ approaches, but three basic steps remained common among eleven of the thirteen frameworks examined (INCOSE, 1998). First, establish a starting point upon which to base the metrics; determine what you want to measure. Second, identify the most important elements of what you want to measure. Third, create specific metrics for those critical elements so as to improve the performance of the item being measured. If metrics are created by systematically following these three general steps and they possess the attributes of good metrics they will be properly-structured metrics and will have the potential to drive superior performance (Keebler and others, 1999).



Attributes of Good Metrics.

Certain characteristics distinguish good metrics from bad ones and well-designed metrics possess those good characteristics. Fourteen authors in the literature describe forty-three distinct attributes that good metrics possess (AFSC, 1991; Antanitus, 2003; Beamon, 1999; Brown, 1996; Buckheim, 2000; Cohen 2003; Evans and Lindsay 2002; INCOSE, 1998; Kaplan 1991; Keebler et al., 1999; Mentzer and Konrad 1991; Milliken, 2001; Pinker, Smith, and Booher, 1997; Rummier and Brache, 1995). Beamon (1999), for example, says that good metrics have six characteristics: consistency with organizational goals, inclusiveness of pertinent aspects, measurability, meeting of customer goals and values, relate to strategic goals and mission of organization, and universality. In comparison, Buchheim (2000) describes good metrics as having eight characteristics, only one of which is common with those cited by Beamon (i.e., relating to strategic goals and mission). According to Buchheim (2000), good metrics: have a defined sensor that gathers and records data, like an automated test station data file or a clerk; have a defined unit of measurement (e.g., hours per widget produced); are meaningful to the customer; measure results versus process (e.g., measure the level of skill demonstrated using a widget versus the number of days spent attending training sessions); have a regular frequency with which reports and measurements are done (e.g., monthly average failure rate); are simple to use; and are understandable. Evans and Lindsay (2002) agree with both Beamon and Buchheim that good metrics relate to the strategic goals and mission of the organization involved, but also state that good metrics are actionable and useful.

Summarizing the commonalities among the various lists of attributes, six authors claim metrics should relate to the organizational mission and strategic goals, five suggest simplicity is an important quality of metrics, and five state good metrics are meaningful to customers. Four authors point out metrics should be understandable and derivable from economically collectible data (i.e., cost effective). All other attributes are common among three authors or less.

Application of Metrics to Acquisition Reform Initiatives.

The military acquisition community manages and oversees the activities involved in the procurement of weapon systems, from initial development and procurement, through delivery to the war fighters and to the end of a weapon system's life cycle when it is retired. This comprehensive system suggests a supply chain perspective is appropriate for analyzing the weapon system acquisition and management process (Klapper et al., 1999; Monczka et al., 2004).

Metrics appropriate for acquisition reform enable an organization to assess reform initiatives' effectiveness and implementation on both acquisition programs and the acquisition reform process itself (Pope, 1997). Groups within the DoD have proposed various metrics to measure acquisition reform, but most metrics have been specific to individual acquisition programs (Pope, 1997) and no systematic approach to performance measurement or standardized set of metrics for acquisition reform initiatives exists (Beamon, 1999; Pope, 1997).

In an effort to address the lack of standardized metrics for acquisition initiatives, the Acquisition Reform Benchmarking Group (ARBG) was established by the DoD in 1996 to help measure progress within the arena of acquisition reform (Pope, 1997). Pope (1997) determined that the findings of the ARBG divide metrics into three levels: program, subordinate, and enterprise. Metrics at their most basic level measure elements within individual acquisition programs (DiCicco, 2003). Subordinate metrics measure factors that feed into the highest level of metrics, which are enterprise metrics. Enterprise metrics measure the efficiency of



overarching or generalizable processes that should be measured across the whole Air Force (DiCicco, 2003; Pope, 1997). Enterprise metrics include cost, schedule, performance, and training metrics. The acquisition initiative this research focuses on pertains to enterprise-level acquisition and the metrics this research will recommend be used to assess that initiative are enterprise level metrics.

Pope (1997) found that metrics can also be categorized by the three types of activities that they measure, as defined by the 1995 Process Action Team (PAT) for contract administration reform: go/no-go, activities, and behavioral changes. Go/no-go metrics show whether or not an activity has taken place. Activity metrics illustrate how extensively an action is occurring. And behavioral change metrics assess whether actions are creating the desired change in behavior or results. This research seeks in large part to determine whether or not the use of the acquisition initiative of interest is an effective way to bring about the desired changes in the acquisition practitioners' behavior.

Methodology

Based on the nature of the research question, a qualitative approach was used to guide the research project based on the procedures outlined by Creswell (2003). Data was collected through a series of semi-structured interviews. After the interviews were transcribed, the transcriptions were broken down into statements and analyzed for common themes. Specifically, the interviews were designed to generate a list of metrics that can be used to measure the reform initiative of interest and to determine the extent to which this initiative was facilitating desired changes.

Interview Sample.

In 2001, Acquisition Centers of Excellence (ACE) were established for the Air Force, Air Force Materiel Command, Air Force Product Centers, and Air Logistic Centers to lead acquisition reform efforts (New Acquisition Center Provides Warfighting Capabilities, 2001; Lightning Bolts, 2004). Part of their duties is to oversee the implementation of the major acquisition reform initiatives. As a result, the ACE offices have helped system program office (SPO)¹ leadership understand and implement the initiatives. Therefore, in this research, members at the ACE offices and various system program offices (SPOs) within the Air Force's Product Centers and Air Logistics Centers were interviewed. To further broaden the research sample, individuals holding various acquisition related positions within Air Combat Command, Air Force Space Command, and Air Staff were also interviewed. Modeling Carter and Jennings (2002), the sample interviewed was chosen with the intent of getting a high degree of variation among managerial levels in order to get a higher range or scope of data.

The ACE personnel were asked to identify interview participants, within the SPOs, who have experience with the initiative of interest. Of the fourteen Center ACEs queried for assistance, two provided contact information for interview participants. The two respondent Center ACEs were from separate locations; participants from Acquisition Category (ACAT) one and two programs were identified at one location and from ACAT three programs at the other

¹ The Air Force recently renamed its acquisition organizations to reflect better the more standard military terminology of wings, groups, and squadrons. This paper retains the previous terminology of program offices and the like, because readers are likely to be more familiar with these names.



location. ACAT describes program size and dollar amount and ranges from one, being the largest and most expensive programs, to three, being the smallest and least expensive. Six Center ACEs gave negative replies (three of which were initially non-respondent, but gave negative replies when asked again) and cited several reasons why: individuals at their location had no experience with the initiative of interest; they sent a message out to SPOs asking for participants and got no replies back; due to the nature of the mission at their location (e.g., a test and evaluation organization) they did not use the initiative of interest; they never received the initial request from the SAF/ACE asking for assistance with the research; and since their location was neither a Product nor Logistics Center (e.g., a Test Center), they thought the request for research assistance did not apply to them. Some Center ACEs cited more than one reason for their negative replies. The six remaining Center ACEs were completely non-responsive even after being queried a second time.

The low Center ACE response rate indicated a broader interview sample was needed and that individuals with acquisition experience from Air Combat Command, Air Force Space Command, and Air Staff should be included among interview participants. Additional participants were identified with the assistance of the SAF/ACE, through interview participants recommending that other specific individuals be contacted for interviews, and through personal contacts of the researcher. A total of twenty five participants were identified and interviewed, but only twenty three interviews were usable; nineteen oral interviews were successfully transcribed, two oral interview recordings were inaudible and subsequently unusable, two interviews were recorded using only notes taken during the interviews, and two interviews were conducted via email.

Interview Correspondence.

Potential interview participants were identified and then contacted to determine their willingness to participate. The interview questions were provided prior to conducting the interviews so that participants could prepare, in hopes of making the interviews more efficient and effective. After interview candidates were identified and invited to participate, each was contacted via email or telephone to schedule an interview time. Prior to the scheduled interviews, each participant was contacted to confirm his or her availability for the interview. Then, the interviews were conducted face-to-face and over the telephone at scheduled times, and using email. Notes were taken during each verbal interview, and interviews were recorded and transcribed (with the interviewee's permission) whenever possible. All interviewees were promised anonymity.

Interview Method.

The interviews included open-ended items, allowing participants to go in different directions. However, in this research, a semi-structured interview approach was used in order to address the topics of interest about participants' use of the focal reform initiative, within the interview time constraints. A semi-structured interview enabled the research to follow standard questions while allowing the latitude to include a few tailored questions to probe or clarify a participant's reasoning. (Leedy and Ormrod, 2001)

Analysis Technique

The qualitative data collected was analyzed using Creswell's (1997) data analysis spiral. Using this spiral, data was reviewed multiple times while going through the following steps. First, the data was organized using a computer database, and broken into smaller text units



(i.e., sentence and individual words). Second the data was perused for potential themes and categories. Third, each individual datum was classified using the major themes. Finally, the data was integrated and summarized.

Two major strategies were employed to ensure validity. First, peer debriefing of experienced acquisition practitioners familiar with this area of research helped ensure the accuracy of the findings and to make the explanation of this research clearer for an outside audience (Creswell, 2003). Secondly, following Isabella (1990) and Creswell (2003), external auditors were used to review the entire research project. As part of the qualitative data analysis, recurrent themes were identified and interview data categorized accordingly. Non-acquisition and acquisition professionals who were new to the research project categorized interview statements under the themes they thought were appropriate matches. The independent categorization provided by the auditors validated the primary classification and synthesis of the data by the research team.

Data Analysis

This section discusses the analysis of the data, which revealed many patterns and themes that address the overall research problem.

Interview Participants

Interviews were conducted with officers and civilians from Air Combat Command, Air Force Materiel Command, Air Force Space Command, and the Air Staff. Individuals ranged in rank from GS-12s to Senior Executive Service (SES) members and General Officers and held a variety of acquisition positions from System Program Office (SPO) level program workers, to Program Executive Officers (PEOs) and Center Commanders, to staff positions with the Assistant Secretary of the Air Force. Their time in federal service ranged from five years up to thirty one years. The high degree of variety in participants' managerial levels and areas of expertise provided a high range or scope of data (Carter and Jennings, 2002).

For purposes of maintaining participant confidentiality, GM-15s, GS-15s, and Senior Executive Service members (excluding those within the Air Staff), and System Program Directors, Program Executive Officers (PEOs), and Center Commanders who participated in this research will be categorized as "middle management." Interview participants referred to this grouping of people as middle management, to Assistant Secretary of the Air Force equivalent positions and above as "senior leadership," and to Deputy System Program Director equivalent positions and below as "SPO level workers." Most so-called middle managers, and some so-called workers, are actually relatively senior, experienced personnel; the categories represent a self-classification by the participants of their positions relative to other participants' positions.

Analysis Overview

Modeling Isabella (1990), interview participants' responses to each interview question were systematically and carefully examined to identify both recurrent themes and unique. Every interview transcript was reviewed and sections of the interviews were excerpted verbatim and typed on separate pieces of paper to illustrate the nucleus of each individual's statements (Isabella, 1990). After excerpts were perused, they were classified into recurrent themes and categories (Creswell, 2003; Isabella, 1990). Roughly seven hundred excerpts were recorded. Category coding accuracy was ensured using external auditors (Creswell, 2003; Isabella, 1990).



Reviewers' results provided reasonable verification of coding procedure accuracy (Creswell, 2003; Isabella, 1990). The patterns and themes revealed through this coding are described below in greater detail for each interview question.

Suggested Metrics for "Focus on results, not process" Initiative Implementation.

Two interview questions directly addressed metrics for the initiative of interest. Interview participants were asked what metrics they would use to measure the results the initiative was meant to bring about, and then later in the interview participants were asked how they would know if they were succeeding at implementing the initiative. Out of participants' responses, five main categories of metrics were recurrent: schedule, customer satisfaction, cost, performance, and credibility. The remaining interview excerpts for these questions that did not seem to fit into a particular category were placed in a miscellaneous category.

The theme most identified by participants was schedule, or acquisition program baseline, which refers to the lengths of time a program has set to accomplish various tasks. This category, which relates directly to Sambur's (Senate Armed Services Committee, 2002) call for improved speed, also included a sub-category of cycle time, meaning the length of time from identifying a need for something until it is delivered. Cycle time, in turn, included two subcategories. Capability based cycle time refers to the amount of time between the warfighter stating his need for a new capability and that capability being delivered. Documentation based cycle time refers to acquisition lead-time or the time it takes to complete a document related activity, e.g., contract negotiation and award. Seventy four percent of participants identified schedule as a metric category for the initiative of interest.

Customer satisfaction with the product, process, or service being provided was the second most frequently named metric category. In the participants' view, customer satisfaction also encompasses a sub-category of expectation management. A large part of how satisfied the customer is depends on whether they received what they were expecting. Sixty one percent of participants named customer satisfaction as a metric category.

Cost and performance were the third and forth most identified themes. Cost is self explanatory; it deals with activities related to money. This theme occurred among thirty nine percent of participants. Performance, how well a program performs to specifications and expectations, was the fourth most recurring theme for these interview questions. Both customer satisfaction and performance address expectations; of the two, performance is the more direct comparison against expected capability, and customer satisfaction addresses a more comprehensive assessment of all customer expectations. Twenty six percent of participants suggested metrics that fit into this category.

Credibility was the fifth category of participant interview responses. Credibility for the acquisition workforce would mean that their customers, mainly the warfighters, would believe what they tell them and find them trustworthy. This also ties in with Sambur's (Senate Armed Services Committee, 2002) call to improve credibility; the acquisition community has to deliver what they say they are going to deliver. However, the occurrence of this theme among only seventeen percent of participants does not seem to support Sambur's push for improved credibility; this indicates that not many people see measuring credibility as a way of telling if this initiative is succeeding. In contrast, the frequent recurrence of schedule among seventy four percent of participants does offer support for Sambur's call for speed.

Meaning of 2002 Lighting Bolt "Focus on results, not process" Initiative.



Interview participants were asked what they thought the initiative of interest meant. Interview participants included individuals who helped to draft the initiative, one of whom stated the following about what the initiative was intended to mean:

Too many people within the acquisition community focus on completing processes (reports, assessments, checklists, etc). The Lighting Bolt aimed to cause people to look at the result intended by the process and to make a judgement of whether the activity planned actually furthers the opportunity for success. Success isn't getting through the process – its delivering a needed capability to the warfighter!

A variety of other responses were provided by participants and then grouped by the themes that emerged. The top five responses were:

- Focus on the end customer not the acquisition process itself; support the customer
- Does what we are doing make sense and does it add value? If not, get rid of it or waive it; remove the unnecessary steps
- Freeing people up
- Focus on getting the product out; effects based or outcome based acquisitions
- Want results not just process

Desired Results or Outcomes of Initiative.

Next, participants were asked what they thought were the desired outcomes or results that the initiative was trying to accomplish. Multiple themes were identified from the interview data, the first of which occurred within eleven excerpts among nine respondents, the second from ten excerpts between eight respondents, and the remainder from five excerpts among four respondents or less. The top five responses were:

- Support the Agile Acquisition strategy; provide capability in a timely way without getting bogged down in the processes
- Change people's way of thinking; be creative, innovative, and use common sense
- Get people to think about the outcome not the how
- Promises made, promises kept
- Roadblocks exist to accomplishing initiative outcomes from 1) middle management, 2) SAF/AQ staff and other services, and 3) contracting

Appropriateness of Initiative Goals.

Participants were also asked if they thought the goals of the initiative were appropriate. Based on their understanding of what they thought the goals or outcomes of the initiative to be, twenty of the twenty three participants agreed the goals were appropriate. However, when asked if they felt using this initiative was the most appropriate way to accomplish the goals that it was meant to accomplish, several participants offered various criticisms of the initiative, including inadequate education about its motive, a perception that the initiative was successful only while its champion ran Air Force acquisition, and a general lack of top management support beyond the champion.

Most Important Aspects of the Initiative.

The interview participants were then asked what they considered to be the most important aspects of the "Focus on results, not process" initiative. Four main themes were



identified within the data and were close in frequency of occurrence among participants. Organizational culture was the most recurring theme; nine excerpts from six participants reflected this theme. Participants stated that an entrepreneurial mindset was the next most important aspect which includes, but is not limited to, becoming creative, not being risk averse, taking bold steps to challenge the status quo, and thinking differently. Seven interview excerpts among seven participants noted this aspect. Responsiveness to the customer was the next most frequently seen theme with six excerpts among five participants. Lastly, five excerpts from four participants shared the theme of communication.

How Participants Heard about the Initiative.

Next participants were asked how they had actually heard of the initiative. Four participants said that they had not heard of the “Focus on results, not process” concept as a formal initiative until they were contacted about this research project; but, based on their interview responses they had actually already been carrying out the intent of the initiative within their jobs. Those participants included two SPO program managers, a Deputy SPO Director, and an Air Staff member. Among those participants who had heard of the initiative, the sources from which they learned of the initiative were varied. The most frequent source of introduction to the initiative was through participants’ chains of command and normal information distribution channels; seven excerpts from seven participants shared this theme. The next most recurring theme was direct involvement with Darleen Druyun, the originator of the initiative. Six excerpts from five participants shared this theme. Three excerpts from three participants noted direct contributions to writing the initiative. And the three remaining themes observed from single excerpts among individual participants were acquisition reform training, Sambur’s (Department of the Air Force, 4 February 2003) letter to the acquisition community introducing the initiative as part of the new push for improved speed and credibility, and working in an Acquisition Center of Excellence (ACE) office.

Next Step in “Focusing on Results”.

In addition to being asked to explain how they had heard about the initiative, participants were asked what the next step should be in order to get the acquisition community to actually implement the objectives of the initiative and really focus on the results. There were as many responses to this question as there were interview participants. The most frequent theme within the interview responses for this question was seen within six excerpts shared among four participants. The second most frequent theme came from six excerpts among three participants. The next two most frequent themes were seen in three excerpts from three participants. All of the other themes were shared by only two participants or less. The top four responses were:

- Change the acquisition workforce culture
 - Apply the initiative to the processes that support Evolutionary Acquisition
 - Training and education
 - Expectation management with the warfighters and Air Staff, and in turn Congress
- Organization Implementation of the Initiative.

After stating what they thought would be the next steps to take in order to get people to accomplish the goals of the initiative, participants were asked how their organizations were implementing the initiative. The themes from the data describing organizational use of the initiative are listed below. The most frequent theme incorporates seven excerpts from five participants who are members of various Acquisition Center of Excellence (ACE) offices; the



second most frequent theme was from seven excerpts among three participants; and the third most frequently occurring theme was shared by four excerpts from four participants. These top three themes were

- ACE offices assist programs to challenge burdensome processes and try to influence people to use the philosophy of the initiative
- Stress full participation of Integrated Product Teams (IPTs) and ensure IPTs include the warfighters, contractors, and contracting officers
- Rewrote Air Force Instructions and Air Force Federal Acquisition Regulation Supplements and other guiding documents to free up people

Most participants indicated they were implementing the initiative in some way, but several said they were not. Most notably, several middle management participants said they were not actively implementing the initiative because from their perspectives Air Force acquisition and sustainment were process oriented than product oriented. They referred to required participation in lecture series and workshops by renowned process re-engineering advocate Michael Hammer (Hammer, 2001:i). Another participant stated that they would not remove non-value added acquisition processes because they would not challenge the Federal Acquisition Regulation without a lawyer. And one other participant said they were having difficulty implementing the initiative.

Participants' Roles in the Development or Implementation of the Initiative.

Not only were participants asked how their organizations were implementing the initiative, each participant was asked what his or her specific role was in either the development or implementation of the initiative. The most recurring theme, from fourteen excerpts among eight participants, was that participants acted as enablers for their teams by challenging their teams to use the initiative; running interference for their teams when their attempts to implement the initiative met resistance; and developing and maintaining good relationships with people involved with the acquisition. All other themes came from three excerpts from three participants or less. The top five themes were:

- Being an enabler for your team
- Developer or author of the initiative
- Endorser and advocate of the initiative
- Had no role in the development of the initiative
- Provide advice to senior leadership on ways to implement the initiative

Support for Organizational Implementation of Initiative.

After participants were asked about their roles in the development and implementation of the initiative, they were asked several questions about the level of support they are receiving in their attempts to implement the initiative. The first of these questions asked what kind of support participants' organizations were getting as they try to use the initiative. The most recurring theme that was seen in responses to this question came from eighteen excerpts given by thirteen participants. The other themes were expressed in three excerpts among three participants or less. The top five themes were:

- Top down support
- ACE help in planning for program events
- Contractor support



- Initiative training; risk management training and Discovery Map training
- Being left alone and trusted to go implement the initiative is the best support

However, several negative themes about the level of support organizations were receiving arose from the responses of seven participants.

- No support is being given
- The bureaucracy is fighting implementation of the initiative
- Senior leaders empowered the workforce to go out and implement the initiative, but they are not preaching it enough themselves; need strong, consistent advocacy
- Headquarters puts the initiatives out but does not have to live with them

Support for Individual Implementation of Initiative.

The next support related question dealt with whether or not they felt they were getting the support they needed to implement the initiative. Over sixty five percent of the participants said they were receiving the support they needed to implement the initiative from those within their chain of command and from those areas within their control. However, thirty percent of participants said they were not getting the support they needed from those who are outside of their chain of command but can still influence their ability to implement the initiative. Five percent of participants were undecided. Participants noted that they were not getting support from Headquarters Air Force (HQ USAF), Air Staff, or the Office of the Secretary of Defense. The need for consistent, repeated, vocal support from senior Air Force leaders and the need for buy-in from people and processes outside of the immediate Air Force chain of command were recurring themes among the participants.

Organizational Support for Individual Implementation of Initiative.

Participants were also asked how their organizations were supporting them in their attempts to put the initiative into action. The theme of support and encouragement being provided by leadership within participants' direct chains of command was noted among twelve excerpts from eleven out of twenty three participants. Three other participants, including two middle management members, said they received support from their organizations by being trusted to do the job and being left alone to do it. Three excerpts from one participant called out strong support from the ACE offices as an avenue of organizational support. Another participant said they were getting support from their organization by virtue of having no kick-back from SPO members which indicated that the SPO members have accepted the challenge for their organization to implement the initiative. The final theme that arose out of excerpts for this question was from a participant who twice stated that they were not seeing leaders at the Senior Executive Service (SES) and General Officer level engage enough in the drive to use this initiative; the participant considers leaders' involvement to be one of the most important tools they need to do their job.

Initiative Implementation Success Stories.



After participants were asked about the level of support they were receiving in their attempts to utilize the initiative, they were asked if they had heard of any success stories or failures at using the initiative. Eleven of the twenty three participants said they could cite no specific examples of success stories, but eleven other participants did provide examples of what they considered to be successes. The success stories were grouped into two categories: process level successes and program level successes.

Process level successes are ways the initiative of interest has been used to remove non value-added processes and which can be repeated within program offices across the entire Air Force. Participants cited several examples, such as including a source selection plan in a System Acquisition Management Plan in order to get approval for both at the same time; incorporating a Price Competition Memo (PCM) in a Proposal Analysis Report (PAR) which reduced time because now the same pricing structure can be used for both the PAR and PCM; successfully challenging the need for Mission Need Statement (MNS) and Operational Requirements Document (ORD) on a common computer purchase and saving an estimated six months of work to do the MNS and ORD; delegation of contract approval authority down to various base level personnel, so that people now rarely have to go to higher headquarters for approvals.

In addition to process level success stories, several weapon system programs were recognized by participants as examples of how the initiative can be utilized successfully. One such program is the Crystal Modification Program. The organization running that program was able to go and influence the Army and Navy to combine functionalities of boxes where it made sense to do so and reduce the footprint, and, in turn, reduce the development costs and infrastructure costs. Several other programs were also identified as success stories because of how they kept their focus on the results being delivered to the warfighters and how they did not get bogged down in the acquisition process itself. Programs like Global Hawk, Micro Impulse Radar, Patient Support Pallet, and the weaponization of Predator are additional examples that participants considered success stories of how the initiative of interest can be used.

Initiative Implementation Failures.

Forty three percent of interview participants indicated that they had not heard of any specific examples of failure at using the initiative, though several others did identify process-level failures. One participant discussed how the Air Force's process for reprogramming funds, which allows money to be used for programs other than what it was originally slated for, does not enact the initiative. The impression among the Air Force workforce is that Congress is why it takes too long to approve reprogramming. The participant's office checked and found out that Congress only takes thirty of the hundred and fifty-eight day cycle to reprogram funding; the rest is taken up by the Air Force. So if money has to be reprogrammed above certain approval thresholds, it takes an average of a hundred and thirty days just to process the request through the Pentagon.

Another process level failure example involved an attempt to do a zero baseline of all work in a SPO at Electronic Systems Center. This exercise was originally designed to challenge the value-added contribution of every activity that the program office was doing by forcing each activity and report to justify its contribution. SPO personnel were not interested in doing it. This was clearly a failure at implementing the initiative. After participants were asked about successes and failures at using the initiative of interest, they were asked questions about acquisition reform initiatives in general.



Being Successful at Implementing Any Acquisition Reform Initiative.

The last two interview questions were applicable to acquisition reform initiatives on a broader scale. The first of these two questions asked participants what they think it takes to be successful at utilizing any acquisition reform initiative. A range of themes emerged from their responses. The most frequently occurring theme was seen among eleven interview excerpts from seven participants. The second most frequent theme came from seven excerpts among seven participants. The third most frequent theme was common among five excerpts from five participants. And the fourth most common theme was from six excerpts among four participants. The top four themes were:

- Consistent message from the top
- Senior leadership buy-in; support and advocacy for initiative from senior leaders
- Be very specific in what the initiative says and in what is expected of those who use it
- Behavior of leaders has to reinforce philosophy behind the initiative

Important Elements of an Acquisition Reform Initiative.

Lastly, after interview participants were asked about what they considered to be the keys to successful initiative implementation, they were asked what was important to them in any acquisition reform initiative. Many of the themes that emerged from the data mirrored the characteristics of good metrics found within literature. The most recurring theme was from six interview excerpts among five participants. The next three most recurring themes were each common among four excerpts from four participants. The other themes produced came from five excerpts from three participants or less. The top four themes were:

- Focus on the mission of the Air Force and getting something to the warfighters
- Be beneficial to the acquisition grunts and the end users
- Makes sense
- Follow through; see it through to the end

Summary

After the interview data were carefully examined using methods modeled after Creswell (2003) and Isabella (1990), excerpts from participants' responses that represented the core of their answers to each question were grouped by the themes that emerged. Those themes



revealed participants' opinions about the kinds of metrics they would use to measure the "Focus on results, not process" initiative's success, the meaning and goals of the initiative, the next step in achieving the initiative's goals, how they heard about it, the kind of support initiative implementation is receiving, successes and failures at initiative utilization, and how to make generic initiatives successful. This analysis will serve as the basis for several conclusions and recommendations discussed in the final section of the paper.

Conclusions & Recommendations

This research has attempted to help senior Air Force leaders build a framework for developing measures of success for corporate level Air Force acquisition initiatives. This section discusses the conclusions and recommendations based on the analysis.

Conclusions

Five conclusions were drawn from the interview data. First, a breakdown in communication about what the initiative meant occurred throughout the acquisition workforce; no consistent definition for the initiative was found among participants except among the participants who helped author the initiative and those who work in ACE offices. Many people took the initiative to mean "if the acquisition process in question was not a law, then break it". The authors of the initiative, however, stated the intent was for people to challenge non-value added processes with well-supported waiver requests.

Secondly, disconnects exist between the middle management level and the other management levels on several fronts. Middle management shared a unanimous view on what the initiative was intended to accomplish, but that view differed from the view that senior leaders and SPO level workers shared. Senior leaders provided guidance on how to apply the initiative and on what the initiative means in the form of policy letters, directives, and briefings (Department of the Air Force, 4 February 2003; Department of the Air Force, 10 July 2003; Senate Armed Services Committee, 2002). In addition, SPO level workers provided numerous examples of success stories at implementing the initiative within their program offices, showing a clear understanding of the initiative and active use of it. However, middle management thinks the initiative is a "dead horse," and cited a countervailing emphasis on process reform ("Hammer training") as confusing the focus. Finally, a possible confound is that middle management's disconnects with the other management levels may be due in part to some bias towards the initiative originator.

The third conclusion is that participants perceive that administrative hurdles to implementing the initiative are being put up by organizations and agencies outside of participants' chains of command. Participants clearly stated that they are getting the support they need from their immediate bosses, but that there are obstacles from outside organizations and agencies; for example, added oversight from Congress, having to work with the Department of Defense and other services, and having to get approvals from people outside of their decision chain of command. Thirty percent of participants stated that those outside their chain of command, who can still influence their level of success at implementing the initiative, are not providing the support participants need. Numerous participants also included the Office of the Secretary Of Defense (OSD) among their biggest perceived roadblocks.

A fourth conclusion was that differing perceptions exist about to whom the initiative applies. According to some participants, the dubbing of the initiative as an acquisition reform



initiative led people within the requirements arena (e.g., Air Combat Command), people in the testing community, and those in the logistics and weapon system sustainment community to think the initiative was only geared towards weapon system acquisition offices. The negative responses from many of the people approached to participate in this research cited the point that they did not think the initiative applied to them as the reason they could not help with this research; Test and Evaluation Centers, Air Logistics Centers, and an Air Force Space Command System Program Office (SPO) did not participate in this research for that reason.

The final conclusion drawn is that using an initiative like this may not be the most effective way to accomplish the desired behavioral change. Just sending out an initiative and leaving it up to the workers in the acquisition trenches to figure out how to apply it will not cut it. The need for leadership and people's fears of change and failure need to be addressed. Participants, including the middle management personnel, consistently said that senior leaders need to be more engaged and regularly vocal about the importance of things like the initiative for it to be successful. After conclusions were reached, recommendations were developed using both the data analysis and literature review findings.

Recommendations

These five conclusions suggest several recommendations. The first recommendation of this research will only address the metric category of customer satisfaction because the categories of schedule, cost, credibility, and performance have been previously addressed by other Air Force agencies and because cost, schedule, and performance metrics are already broadly used across the Air Force (Air Force Inspection Agency, 2003:84).

This research recommends the use of customer satisfaction metrics to measure the success of the "Focus on results, not process" initiative. Customer satisfaction is described as the extent to which a process or product meets a customer's expectations (Kotler and Armstrong, 2001; Naumann and Jackson, 1999; Zeithaml and Bitner, 2006). Customer satisfaction is the key to organizational success (Gibson et al., 2003). No matter how precisely a schedule is maintained, how much cost savings are realized, how credible the end customer thinks the acquisition community is, or what exceptional performance a weapon system or process has, if the customer is not satisfied with the result, the acquisition community has failed. While multiple customer satisfaction metrics could apply and one size does not fit all (INCOSE, 1998:9), the following suggested metrics could prove very useful.

A suggested metric for schedule is timeliness (Ellis and Curtis, 1995; Hayes, 1992). Suggested metrics for performance are reliability and perceived quality (Ellis and Curtis, 1995; Naumann and Jackson, 1999). And a suggested metric for the area of credibility is responsiveness (Ellis and Curtis, 1995; Hayes, 1992; Naumann and Jackson, 1999). A customer satisfaction metric for cost is not suggested because, according to Hammer (2001), it tells very little if anything about the business. The list of metrics is general since the attributes of each dimension are very product specific, meaning the metrics should be tailored for a better fit depending upon what product or process they are applied to (Naumann and Jackson, 1999).

Expand Innovation Education for the Acquisition Workforce.

The acquisition workforce has traditionally been trained in how to use the Federal Acquisition Regulation (FAR) and other guides and instructions; but, if members of the acquisition community are now expected to be innovative, they have to be trained in how to do that. One middle management participant related this anecdote from a member of an audience



to which he had spoken, “I used to be able to sit down at my desk and open my cookbook and follow the recipe, and I'd get done with the product. You took my recipe book away from me, and I don't know what to do.” One avenue to train the acquisition community is to expand educational efforts in areas such as strategic purchasing, the entrepreneurial mindset, and organizational management and transformation.

Continually Challenge Waiver Processes to Reduce Approval Effort.

A pervasive opinion among respondents was that requesting waivers to existing processes, however broken they might be perceived to be, is too time intensive. Waiver processes should be subject to continual review to ensure they support change and not discourage it. This view is supported by one senior respondent, who said:

“So what's important for me in an initiative is that it be something I can do and it would be value added and it would actually cut my work. In other words, don't tell me... I can have an exception to somethin' if I have to go ask for -- you know, I have to go sell this exception to every layer of bureaucracy I've gotta work with. It just doesn't-- it's-- it's just here, let me do it the regular way.”

Clarify Future Initiatives.

One middle management participant noted that when the term acquisition reform initiative is used “the rest of the Air Force thinks it only applies to the acquisition world.” Future initiatives should not use buzzwords like acquisition or acquisition reform, but instead appeal to the Air Force as a whole. The new Air Force initiative “Smart Ops 21”, which focuses on process improvement across the Air Force, is an encouraging step in this direction. Future initiatives should be very specific, and metrics and a commander's intent statement should be released along with the initiatives. The initial metrics can be adjusted if they prove to be driving undesirable behaviors, but this study suggests starting with some metrics is better than starting with none.

Consistent Statement of Initiative Support from Senior Air Force Leaders.

Lastly, it is recommended that both the Secretary of the Air Force and the Chief of Staff of the Air Force be asked to include periodic statements of support for continued acquisition reform, stressing the importance of compliance with acquisition initiatives in their monthly newsletters (Vectors and Sight Pictures, respectively). Such statements would address the prevailing and pervasive request from interview participants and others for consistent, continual, vocal support for the initiative of interest from the Chief and other senior Air Force leaders. The Chief and the Secretary's continued and open support would enable those expected to implement the initiatives to really challenge the party-line way of doing acquisitions, become innovative, and change the acquisition process.

Future Research

The future research should focus first on validating the findings of the qualitative research. A questionnaire can be constructed using the data gathered from the interviews. The questionnaire can be used to evaluate the generated metrics along the dimensions of “good” metrics; specific metrics that apply to the categories of metrics this research will suggest can then be identified during future research.



Summary

This study gives Air Force leaders clear, implementable metrics that can be used as measures of success for the “Focus on results, not process” initiative, and provides recommendations that can be used to improve this initiative’s performance and that of future corporate Air Force acquisition initiatives. This study also gives Air Force leaders insight into whether or not this initiative and others like it are an appropriate and effective way to drive the changes they are meant to bring about. Finally, from a broader perspective, the framework used in this study can be used to develop measures of success for other corporate level Air Force acquisition initiatives.

Bibliography

- Air Force Inspection Agency. *Acquisition Transformation*. Eagle Look PN 03-503. Kirtland AFB NM: HQ AFIA/IL, August 2003.
- Air Force Systems Command (AFSC). *The Metrics Handbook*. Andrews AFB MD: HQ AFSC, August 1991.
- Antanitus, D., REAR ADM, USN. “The Business of Metrics -- Measuring the Product of the Plan,” *PM Magazine*, 10-14 (March-April 2003).
<http://www.dau.mil/pubs/pm/pmpdf03/march>. 12 May 03.
- Beamon, B. “Measuring Supply Chain Performance,” *International Journal of Operations & Production Management*, 19(3) (1999).
- Brown, M. *Keeping Score: Using the Right Metrics to Drive World-Class Performance*. New York: Quality Resources, 1996.
- Buchheim, R. “Developing Performance Metrics for a Design Engineering Department,” *IEEE Transactions on Engineering Management*, 47: 309-320 (August 2000).
- Camp, R. *Benchmarking: the Search for Industry Best Practices that Lead to Superior Performance*. Milwaukee WI: Quality Press, 1989.
- Carter, C. and M. Jennings. “Logistics Social Responsibility: An Integrative Framework,” *Journal of Business Logistics*, 23: 145-180 (2002).
- Clark, K. and S. Wheelwright. *The Product Development Challenge: Competing through Speed, Quality, and Creativity*. United States of America: Harvard Business Review, 1994.
- Cohen, D. “HR Metrics: A Must,” *HR Magazine*, 48(2): 136, (February 2003).
- Cox, E. “The Optimal Number of Response Alternatives for a Scale: A Review,” *Journal of Marketing Research*, 17: 407-422 (November 1980).
- Creswell, J. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. Thousand Oaks CA: SAGE Publications, 1997.



- Creswell, J. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (2nd Edition). Thousand Oaks CA: SAGE Publications, 2003.
- Dawes, R. and T. Smith. "Attitude and Opinion Measurement," *The Handbook of Social Psychology* (3rd Edition). Ed. G. Lindzey and E. Aronson. New York: Random House, 1985.
- Defense Acquisition University. Department of Defense (DoD) Business Transformation presentation. <http://dod5000.dau.mil/DOCS/36>. 13 January 2004.
- Department of Defense (DoD). *Interim Defense Acquisition Guidebook*. Formerly DoD Directive 5000.2-R. Washington: GPO, 30 October 2002.
- <http://dod5000.dau.mil/InterimGuidebook.doc>. 13 January 2004.
- Department of the Air Force. *Agile Acquisition Implementation*. Air Force Policy Memorandum: 03A-002. Washington: HQ USAF, 4 February 2003.
- Department of the Air Force. *Air Force Federal Acquisition Regulation Supplement Part 5301*. Revised 1 May 2003.
http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/af_afmc/affars/5301.htm. 12 February 2004.
- Department of the Air Force. *Capability-Based Acquisition System*. Air Force Policy Directive 63-1. Washington: HQ USAF, 10 July 2003.
- DiCicco, R., Col, USAF. Deputy Director, AF Acquisition Center of Excellence, Washington DC. Telephone Interview. 15 April 2003.
- Dooley, D. *Social Research Methods* (4th Edition). Upper Saddle NJ: Prentice-Hall, Inc., 2001.
- Druyun, D., Principal Deputy Assistant Secretary of the Air Force for Acquisition. "Agile Acquisition: 'Results, Not Process'," *Briefing at CORONA (Fall)*. 2 November 2001.
- Eccles, R. "The Performance Measurement Manifesto," *Harvard Business Review*, 131-137 (January-February 1991).
- Eccles, R. and P. Pyburn. "Creating a Comprehensive System to Measure Performance," *Management Accounting*, 74(41) (October 1992).
- Ellis, L. and C. Curtis. "Measuring Customer Satisfaction," *Research Technology Management*, 38(5): 45-48 (September/October 1995).
- Evans, J. and W. Lindsay. *The Management and Control of Quality* (5th Edition). United States of America: South-Western, 2002.
- Gibson, J. and others. *Organizations: Behavior, Structure, Processes* (11th Edition). Boston MA: McGraw-Hill Irwin, 2003.
- Goett, P. "Jeffersonian ideals," *The Journal of Business Strategy*, 24(2) (March/April 2003).



- Hammer, M. *The Agenda: What Every Business Must Do to Dominate the Decade*. New York: Crown Business, 2001.
- Hayes, B. *Measuring Customer Satisfaction*. Milwaukee WI: Quality Press, 1992.
- International Council on Systems Engineering (INCOSE) Measurement Working Group (MWG). *Systems Engineering Measurement Primer, Version 1.0*, March 1998.
- Isabella, L. "Evolving Interpretations as a Change Unfolds: How Managers Construe Key Organizational Events," *Academy of Management Journal*, 33(1): 7-41 (1990).
- Kachigan, S. *Multivariate Statistical Analysis*. New York: Radius Press, 1991.
- Kaplan, R. "New Systems for Measurement and Control," *The Engineering Economist*, 36(3): 201-218 (Spring 1991).
- Kaplan, R. and D. Norton. "Leading Change with the Balanced Scorecard," *Financial Executive*, 17(6): 64-66 (September 2001).
- Kaplan, R. and D. Norton. "Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I," *Accounting Horizons*, 15(1):87-104 (March 2001).
- Keebler, J., K. Manrodt, D. Durtsche, and D. Ledyard. *Keeping Score: Measuring the Business Value of Logistics in the Supply Chain*, United States of America: Council of Logistics Management, 1999.
- Klapper, L., N. Hamblin, L. Hutchison, L. Novak, and J. Vivar. *Supply Chain Management: A Recommended Performance Measurement Scorecard, Final Report, June 1999*. Contract DASW01-95-C-0019. McLean VA: Logistics Management Institute, 25 August 1999 (ADA366787).
- Kotler, P. and G. Armstrong. *Principles of Marketing* (9th Edition). Upper Saddle River NJ: Prentice Hall, 2001.
- Lambert, D. and T. Pohlen. "Supply Chain Metrics," *The International Journal of Logistics Management*, 12(1):1-19 (2001).
- Latham, G. and E. Locke. "Goal Setting - A Motivational Technique That Works," *Organizational Dynamics*, 8(2): 68-80 (1979).
- Latham, G. and G. Yukl. "A Review of Research on the Application of Goal Setting in Organizations," *Academy of Management Journal*, 18: 824-845 (December 1975).
- Leedy, P. and J. Ormrod. *Practical Research* (7th Edition). Upper Saddle River NJ: Merrill Prentice Hall, 2001.
- "Lightning Bolts." Excerpt from SAF/AQX Deputy Assistant Secretary of the Air Force (Management Policy & Program Integration) website. http://www.safaq.hq.af.mil/acq_ref/bolts.html. 13 Jan 04.



- Locke, E. "The Ideas of Frederick W. Taylor: An Evaluation," *The Academy of Management Review*, 7: 14-24 (January 1982).
- Locke, E. "Toward a Theory of Task Motivation and Incentives," *Organizational Behavior and Human Performance*, 3: 157-189 (1968).
- Locke, E. "The Ubiquity of the Technique of Goal Setting in Theories of and Approaches to Employee Motivation," *The Academy of Management Review*, 3: 594-601 (July 1978).
- Locke, E., Shaw, K., Saari, L., and G. Latham. "Goal Setting and Task Performance: 1969-1980," *Psychological Bulletin*, 90(1): 125-152 (1981).
- Mentzer, J. and B. Konrad. "An Efficiency/Effectiveness Approach to Logistics Performance Analysis," *Journal of Business Logistics*, 12(1): 33-62 (1991).
- Milliken, A. "Key Ingredients of Successful Performance Metrics in the Supply Chain," *The Journal of Business Forecasting Methods & Systems*, 20(2): 23-28 (Summer 2001).
- Monczka, R., R. Trent, and R. Handfield. *Purchasing and Supply Chain Management* (3rd Edition). United States of America: South-Western, 2004.
- Naumann, E. and D. Jackson, Jr. "One More Time: How Do You Satisfy Customers?," *Business Horizons*, 42(3): 71-76 (May-June 1999).
- Neely, A., Richards, H., Mills, J., Platts, K., and M. Bourne. "Designing Performance Measures: a Structured Approach," *International Journal of Operations & Production Management*, 17(11) (1997).
- "New Acquisition Center Provides Warfighting Capabilities, The," *Air Force News*, 10 December 2001. http://www.af.mil/news/Dec2001/n20011210_1762.shtml. 13 January 2004.
- "New DoD System Acquisition Process (DOD 5000)," DoD 5000 Multimedia Brief. <http://dod5000.dau.mil>. 13 January 2004.
- Nunnally, J. *Tests and Measurements: Assessment and Prediction*. New York: McGraw-Hill Book Company, Inc., 1959.
- Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. *Report of the Price-based Acquisition Study Group*, 15 November 1999. http://www.acq.osd.mil/cgi-bin/web_evaluate. 1 May 03.
- Osborne, D. and T. Gaebler. *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*. Reading MA: Addison-Wesley Publishing Company, Inc., 1992.
- Pinker, A., C. Smith, and J. Booher. "Selecting Effective Acquisition Process Metrics," *Acquisition Review Quarterly*, 189-208 (Spring 1997).
- Pope, K. *Measuring the Effect of the Defense Acquisition Workforce Improvement Act*. MS thesis, Naval Post Graduate School, Monterey CA, June 1997 (AD-A331749).



Rummler, G. and A. Brache. *Improving Performance: How to Manage the White Space of the Organization Chart*. San Francisco: Jossey-Bass Publishers, 1995.

Schwarz, N. and others. "Rating Scales: Numeric Values May Change the Meaning of Scale Labels," *Public Opinion Quarterly*, 55:570-582 (1991).

Senate Armed Services Committee. *Defense Department Acquisition Policy*. Presentation to the Committee on Armed Services Subcommittee on Readiness and Management Support, United States Senate, FDCH Congressional Testimony, 27 Feb 02. Washington DC, 2002.

Taylor, F. "The Principles of Scientific Management, from *Bulletin of the Taylor Society*," *Classics of Organization Theory* (5th Edition). Eds. J. Shafritz and J. Ott. Fort Worth TX: Harcourt College, 2001.

Wolfowitz, Paul. Deputy Secretary of Defense. Memorandum on Defense Acquisition. Washington DC 30 October 2002.

Zeithaml, V. and M. Bitner. *Services Marketing: Integrating Customer Focus Across the Firm* (2nd Edition). Boston MA: Irwin McGraw-Hill, 2000.



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- Special Termination Liability in MDAPs

Logistics Management

- R-TOC Aegis Microwave Power Tubes



- Privatization-NOSL/NAWCI
- Army LOG MOD
- PBL (4)
- Contractors Supporting Military Operations
- RFID (4)
- Strategic Sourcing
- ASDS Product Support Analysis
- Analysis of LAV Depot Maintenance
- Diffusion/Variability on Vendor Performance Evaluation
- Optimizing CIWS Life Cycle Support (LCS)

Program Management

- Building Collaborative Capacity
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to Aegis and SSDS
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Terminating Your Own Program
- Collaborative IT Tools Leveraging Competence

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