



**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**IMPROVING THE SIGNAL FOR U.S. NAVY OFFICER
PRODUCTIVITY**

by

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December 2014

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE December 2014	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE IMPROVING THE SIGNAL FOR U.S. NAVY OFFICER PRODUCTIVITY			5. FUNDING NUMBERS	
6. AUTHOR(S) Joshua C. Ellison				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number <u> N/A </u> .				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) The U.S. Navy's answer for many future manpower and financial policy questions rests on the ability of the individual performance appraisal system to optimally signal officer productivity. This paper utilizes the economics literature on individual performance appraisals and promotion systems as the lens through which to conduct a comparative analysis between the Navy and Marine performance appraisal systems. Rating accuracy, differentiation of talent, and performance comparison methods comprise the bulk of the analysis. The results show a Marine system that exceeds the Navy's in signal officer productivity. The Navy's system provides limited assurance for rating accuracy and the differentiation of talent. Once insight is gained through analysis, a metric is developed to further improve the measurement of individual productivity. This paper recommends the Navy improve rating accuracy through leadership messaging, policy change, and rater training. Second, relative comparison methods should be required to force differentiation of talent and align with the Navy's tournament theory incentive structure. Third, to reduce costs and improve human capital management an individual productivity metric should be developed that is based on the output of the performance appraisal.				
14. SUBJECT TERMS manpower, performance appraisal, performance measurement, comparison method, absolute comparison, relative comparison, subjective comparison, performance management, objective, rating accuracy, fitrep, fitness report, performance evaluation, navy, marines, marine corps, performance evaluation system, us navy, us marine corps, military, evaluation, measurement, metric, cumulative productivity metric, CPM, fitness report, analytic, manpower analytic			15. NUMBER OF PAGES 81	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

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IMPROVING THE SIGNAL FOR U.S. NAVY OFFICER PRODUCTIVITY

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

**NAVAL POSTGRADUATE SCHOOL
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ABSTRACT

The U.S. Navy's answer for many future manpower and financial policy questions rests on the ability of the individual performance appraisal system to optimally signal officer productivity. This paper utilizes the economics literature on individual performance appraisals and promotion systems as the lens through which to conduct a comparative analysis between the Navy and Marine performance appraisal systems. Rating accuracy, differentiation of talent, and performance comparison methods comprise the bulk of the analysis. The results show a Marine system that exceeds the Navy's in signal officer productivity. The Navy's system provides limited assurance for rating accuracy and the differentiation of talent. Once insight is gained through analysis, a metric is developed to further improve the measurement of individual productivity. This paper recommends the Navy improve rating accuracy through leadership messaging, policy change, and rater training. Second, relative comparison methods should be required to force differentiation of talent and align with the Navy's tournament theory incentive structure. Third, to reduce costs and improve human capital management an individual productivity metric should be developed that is based on the output of the performance appraisal.

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I. INTRODUCTION

The Navy spends tens of billions of dollars every year to acquire, train, motivate, and retain highly talented officers (Department of the Navy Financial Management and Comptroller, 2014). The innate talent and acquired skills of these officers produce the leadership and management solutions that directly affect the future productivity of the Navy. The challenge to incentivize and retain the most productive officers is complicated by competition for top talent external to the Navy. Questions are raised about the proper allocation of Navy manpower resources. Is the Navy identifying and retaining the most productive officers? What is the current level of Navy officer human capital and how is it trending? Could the Navy improve officer incentives at a lower cost? Can bonus policies be better developed that would save money while retaining more highly productive officers? What is the proper way to conduct force alignment with budgetary constraints? These and other financial management and manpower questions rely on the answer to the question, “How should the Navy’s performance appraisal system be used to optimally signal officer productivity?”

Financial management and budget formation policy have mutual interests in manpower policies and programs. During fiscally constrained periods risk and human capital management is a challenge for the Navy’s Office of Financial Operations (Strather, personal communication, September 4, 2014).¹ The ability to optimally signal officer productivity can affect force structure realignment, retention, and incentive policies all funded through the Office of Financial Management. Determining how to optimally signal productivity affects manpower policy but also allows the Office of Financial Management a mechanism to more effectively manage limited financial resources while motivating and retaining highly talented personnel.

The performance appraisal is, “the interpretation of a performance measurement in terms of relative or absolute levels of effectiveness and/or the standards of

¹ This information was communicated via PowerPoint presentation during a class lecture for the Conrad Seminar, Fall term, Naval Postgraduate School, 2014.

performance met” (Bernardin & Beatty, 1984). By observing on-the-job behavior or produced outcomes a determination is made reflecting the individual’s ability to meet the organization’s objectives (Cascio, 1998). Individual productivity in some jobs can be assessed objectively but most require a rater to make a subjective comparison or judgments on an individual’s observed behaviors or produced outcome (Pendergast, 1999).

I look at the existing literature on performance appraisals and then evaluate and compare the U.S. Navy and U.S. Marine Corps’ officer performance appraisal systems. I compare the elements of each system focusing on issues that help ensure optimal use of the performance appraisal to include rating accuracy and differentiation of performance.

This research shows that the Marine performance appraisal system is more likely to produce accurate ratings that are based on merit. Both systems primarily use an absolute comparison method to determine individual performance using a scale anchored by behavioral descriptions. Additionally, the research shows that the Navy and Marine performance appraisal systems have drawbacks that do not optimize differentiation of talent despite an attempt by the Marines to counter potential raters’ leniency bias.

Analysis in this thesis results in three major recommendations for the Navy performance appraisal system. 1) The importance of rating accuracy and the purpose of the performance appraisal should be addressed in the instruction to ensure the rater’s behavior is aligned with Navy manpower and budgetary strategy. 2) The comparison method for the appraisal of performance should be weighted toward relative comparisons. Relative comparisons are easier to conduct and provide the greatest differentiation of talent (Bernardin & Beatty, 1984; Grote, 2005). Also, relative comparisons are more aligned with the Navy’s tournament theory incentive structure. 3) An individual productivity metric based on output from the performance appraisal should be established to reduce costs and facilitate more efficient financial management and manpower strategy implementation.

II. LITERATURE REVIEW

The literature review contains five sections that provide a foundation for the research: 1) I review incentive structures and labor market concepts needed for context and research support, 2) I review the purpose of performance appraisals and why organizations conduct them, 3) The foundational structural elements of performance appraisals are reviewed, 4) I review selective issues associated with rating inaccuracies, and 5) Lastly, I review the management of financial resources with the use of an individual productivity metric.

A. LABOR MARKETS AND INCENTIVE STRUCTURES

1. Internal Labor Market

Labor markets are described as having either an internal or external structure (Doeringer & Piore, 1971). Internal labor markets are typically defined as having a limited number of entry points where most positions are filled from within the organization (Doeringer & Piore, 1971). Under an internal structure, workers have promotion advantages since there is no external competition for the position. There are also other incentives such as internal rules and customs that typically provide guarantees like job security or preferences based on tenure (Doeringer & Piore, 1971).

Human capital theory focuses on two primary types of training, specific and general (Becker, 1993). Becker (1993) describes “specific training” as an increase in productivity that provides value only to a specific firm. “General training” is an increase in productivity that is of equal value to multiple organizations (Becker, 1993). Most training is a combination of general and specific characteristics (Borjas, 2010). The distinction is useful for the analysis.

2. Tournament Theory

Lazear and Rosen (1981) model a theory in an internal labor market that creates incentives based on relative performance called tournament theory. Tournament theory incentivizes individuals to perform because only the top performers will be internally

promoted. This is similar to sporting events where 16 teams are quickly reduced to eight, then four, then two and finally one by competing against each other. The absolute performance of each team is irrelevant for their advancement as long as they outperform the other team. Thus, the theory is based on relative performance not absolute.

The effectiveness of tournament theory is based on three principles or conditions that must exist. They are the following: 1) Job positions are set in advance and promotion to those positions is based on relative performance, 2) lower level individuals are motivated by increasing spreads in wages associated with each advancing level, and 3) there is an optimal spread in wages at each level (Lazear & Oyer, 2007).

A major variable associated with tournament theory is the amount of noise or luck associated with each promotion (Lazear & Rosen, 1981). The more luck involved with each promotion the less effort an individual will exert at each level of the tournament since the outcome is based increasingly on growing risk due to increasing lack of control (Lazear & Rosen, 1981).

Over the last few decades research has been conducted on tournament theory (Green & Stokey, 1983; Nalebuff & Stiglitz, 1983; Dye, 1984; Lazear, 1989; Chan, 1995; Ehrenberg & Bognanno, 1990). Green and Stokey (1983) show how individual productivity is based on effort and some level of an unknown shock or a macro level event affecting productivity. Multiple shocks are very difficult for a manager to observe. Green and Stokey (1983) show how the use of tournament theory as an incentive can perform as well as or better than a time and money consuming multi-agent contract in eliciting worker effort.

B. WHAT IS THE PERFORMANCE APPRAISAL'S PURPOSE AND WHY IS IT CONDUCTED?

1. Accurate Measurement

Performance appraisals should be used to accurately measure actual individual performance or outputs over a period of time (Longenecker & Ludwig, 1990). Some organizations conduct performance appraisals to improve individual and organizational productivity (Cleveland, Murphy, & Williams, 1989). Accuracy is critical for the

appraisal to be useful and to justify the required time and money for its administration (Grote, 2005). Some researchers state that performance appraisals create numerous rating errors and their use should be banned (Coen & Jenkins, 2005). Other research has questioned if appraisals cause more harm to an organization than the benefits they provide (Murphy & Cleveland, 1995). Although some have voiced their concerns, many organizations continue to use performance appraisals because there is no better alternative to measure individual productivity (Murphy, 2008). According to Longenecker (1989) the goal of 100 percent accuracy of performance ratings is not likely achievable despite decades of efforts by researchers. On the other hand, when developed and conducted properly, performance appraisals provide benefits to productivity and worker development for the organization (Longenecker, 1989).

2. Differentiation of Talent and Traits

Performance appraisals could be conducted to better differentiate the varying productivity levels of workers (Cleveland et al., 1989). According to Borjas (2010), each individual produces different results or outputs based on innate ability, which is seldom observable. Since productivity varies among individuals based on heterogeneous inputs, performance appraisals are an opportunity to measure variations in performance (Grote, 2005).

Measuring variations accurately foster a culture of meritocracy and fairness (Quinn, Anderson, & Finkelstein, 1998). Quinn et al. (1998) note that individuals want to be evaluated fairly and honestly on their performance. Great organizations do not shy away from merit based recognitions (Quinn et al., 1998). Productivity will vary between individuals; most want those differences to be recognized (Grote, 2005). Performance appraisals that do not differentiate communicate to workers that merit is not valued (Quinn et al., 1998).

Each individual has unique and varying degrees of abilities to acquire and use innate skills. Performance appraisals identify these variances on the personal level (Cleveland et al., 1989). This information allows managers to improve counseling and provide training that benefits the individual (Grote, 2005).

3. Learning Process

Performance appraisals enable organizations to collect and learn about individual productivity. Organizations hire an individual without full knowledge of the individual's innate ability nor full information of the worker's productivity (Lazear & Oyer, 2007). Decades of research has been conducted in an effort to better predict productivity based on variables such as education, training, and experience but there is still great variation between the inputs of these formulas and actual worker productivity (Murphy, 2008). Farber and Gibbons (1996) hypothesize that firms make decisions to hire individuals based on a function of innate ability and a set of characteristics that are observable. Farber and Gibbons (1996) expresses this as $y = F(\alpha, X)$ where y is productivity, α is innate ability of the worker, and X is the set of characteristics that the firm can observe. Over time an organization will observe an individual's actions and behaviors. These observations signal an individual's ability to apply skill, innate abilities, and characteristics to a specific job. Lazear and Oyer (2007) explain that these signals are difficult for the organization to understand since they are full of noise. Performance appraisals can help to minimize the noise so that proper estimates can be made about an individual's abilities. Altonji and Pierret (2001) provide evidence that until productivity signals are collected, management discriminates across workers based on observable factors like education, test scores, and training.

Individual productivity is also a function of job characteristics (Jovanovic, 1979). To maximize productivity the organization needs to learn over time which jobs provide the best fit for each individual's abilities (Rosen, 1992; Lazear, 1998). In a labor market where there is a lack of complete information on workers' abilities and underlying productivity, performance appraisals can allow the organization to learn the abilities of workers and what jobs would provide a match to maximize productivity.

4. Managerial Decisions

Performance appraisals provide information that managers may use to make critical personnel decisions that affect productivity (Cleveland et al., 1989). Theodore Schultz (1961) coined the term human capital. Since then research has been directed to

improving and investing this capital (Lucas, 1988; Mankiw, Romer, & Weil, 1992; Cohen & Soto, 2007). Becker (1993) states that like other forms of capital, human capital yields income or other beneficial outputs. This is because human capital is the unique set of abilities and acquired skills that each person possesses (Borjas, 2010). Quinn et al. (1998) explain how human capital or intellect creates the most value in the economy. They state how this is easily seen in many sectors of the market including manufacturing. Fitz-Enz (2000) states that all assets are important for growth and productivity but only human capital can create value. Because of this, management's decisions affecting human capital may be the ultimate determinant of productivity and maintaining a competitive advantage (Youndt, Snell, Dean, & Lepak, 1996). The ability to manage human capital and convert it into useful productivity is a critical skill for executive management (Quinn et al., 1998).

5. Communication of Expected Behavior

Performance appraisals can provide a mechanism for management to clearly communicate what behavior is important to accomplish organizational goals (Lucia & Lepsinger, 1999). They can allow managers to shape the organization around values and behaviors that managers decide are important. Performance appraisals can be a tool for managers to use to ensure alignment. Simons (2000) illustrates the importance of aligning behaviors with mission through “goals and plans” and “performance measures.” See Figure 1.

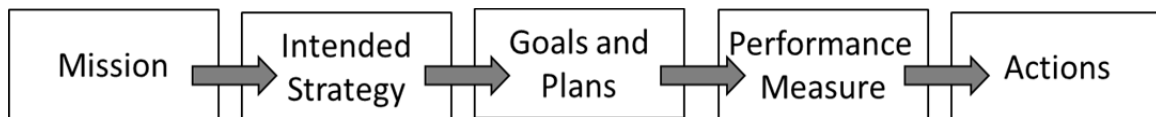


Figure 1. Linking Mission with Actions

6. Provide Feedback

Feedback is one of the most cited purposes for conducting performance appraisals in efforts to improve productivity (Bernardin & Beatty, 1984). According to Landy, Farr, and Jacobs (1982), feedback is information that indicates the accuracy and correctness of

past behaviors. Landy et al. (1982) state two primary functions of feedback: 1) Informs individual on where to direct future efforts. 2) Provides motivation for employees. Feedback increases effort because individuals want their effort to be recognized (Grote, 2005). Individuals desire to know how they have been doing and how their performance fares relative to others (Quinn et al., 1998). Landy et al. (1982) looked at six different studies and determined that feedback was correlated to improving performance from 30 to 57 percent of the time across a variety of situations and employees.

7. Enables Accountability

Performance appraisals are a mechanism for managers to use to ensure organizational justice (Grote, 2005). Justice is defined as being treated fairly or in a like fashion as others. When an individual who performs poorly is not held accountable by management it gives a signal to other workers that inferior performance is acceptable (Latham & Wexley, 1994). Discrimination on factors other than merit is widely considered unethical in society but if actual performance is not observed then decisions are being based on other factors (Altonji & Pierret, 2001). Grote (2005) explains that efforts to conduct performance appraisals are to identify true individual performance and to hold workers accountable for poor and good behavior.

C. WHAT ARE THE FOUNDATIONAL ELEMENTS OF A PERFORMANCE APPRAISAL?

1. Structure

The performance appraisal structure can be divided into three parts, the rating instrument, the rating procedures, and the rater. The rating instrument contains a variety of scales or other performance recording methods from type of anchor (behavior or numerical), number of scale points, number of judgments required by rater, and others (Landy & Farr, 1980). The rating procedures are the required actions to be performed by the rater during the performance appraisal process. Procedures, for example, might contain administrative guidance, physical location of rating, time pressure, or individual rater strategies (Landy & Farr, 1980). The third part of the performance appraisal structure is the rater. The performance appraisal instrument is only as good as the rater or

manager who is using it (Latham & Wexley, 1994). If a manager is not observing performance during the evaluation period or does not have the knowledge or skill to use the instrument properly then results will be less accurate (Longenecker, 1989). Longenecker and Ludwing (1990) show how despite a good rating instrument and procedure the rater's implementation of these elements is critical to accurate ratings.

2. Subjective versus Objective

Performance can be determined in two ways, objectively or subjectively. Landy and Farr (1983) calls objective methods, non-judgmental and subjective methods judgmental. An objective performance measurement does not require the judgment of another individual to determine the level of performance. Instead, performance is determined by hard data collected from operation outputs. Subjective data requires a manager to make a comparison and then judgment. Ideally, performance would be measured in objective terms but in reality performance is difficult to define and measure (Lazear, 1998; Landy & Farr, 1980). For instance, stock prices, an objective measure, might be appropriate to determine a CEO's productivity but for those below him a stock price is a noisy measurement (Baker, Gibbons, & Murphy, 1994).

Objective measures pulled from financial statements do not tell workers how to create value or align their behavior with management's goals (Baker et al., 1994). Subjective measures more accurately align with daily behaviors that are required for organizational success (Baker et al., 1994). Managers are typically in positions to properly evaluate such daily behaviors (Baker et al., 1994). Since objective measures are difficult to find and are typically incomplete, subjective measures are used by most organizations for performance evaluations (Pendergast, 1999).

3. Absolute versus Relative

Individual performance is evaluated by making a comparison to either an absolute standard or relative to another individual's performance. Both absolute and relative comparisons are valuable for a variety of reasons depending on the objectives of the organization (Bernardin & Beatty, 1984; Grote, 2005). The absolute method answers

questions concerning the overall level of worker productivity while the relative method defines who is the most productive.

Absolute methods compare individual performance to a defined behavior standard. For this comparison method to be accurate the standard of behavior must be clearly defined and include examples of specific behavior (Lucia & Lepsinger, 1999). Competency models including those that use a Behavior Anchored Rating Scale (BARS) and other behavior related criteria are examples of absolute standards. Absolute standards can facilitate clear communication, motivation, behavior alignment with strategy, and the consistent application of standards across the organization (Lucia & Lepsinger, 1999).

Absolute standards give management a measure to compare organizational levels of certain skills and abilities over time. For example, if management desired to ensure that the organization was improving in a certain competency they could reference the collective level of that competency by looking at individual levels.

Absolute comparison methods allow for the management of an organization's human capital. Similarly, absolute comparisons could also be used to facilitate difficult counseling questions to improve a manager's ability to discern between skill, characteristics, and knowledge as they relate to productivity (Lucia & Lepsinger, 1999).

The validity of a comparison implies that the rate on the performance appraisal represent actual performance free of error and biases (Bernardin & Beatty, 1984). Absolute methods of comparison allow for a high level of rater error including leniency, severity, and central tendency bias (Landy & Farr, 1983; Cascio, 1989). A specific error associated with absolute comparison methods is the inflation of ratings or leniency (Bernardin & Beatty, 1984). Raters may intentionally rate all workers at high levels of performance since a worker is compared to an absolute standard. A performance comparison to an absolute standard does not guarantee differentiation between individuals on performance if managers are unwilling to make tough calls on worker performance or if the managers do not observe and recall ongoing individual performance (Longenecker, 1989; Grote, 2005).

Relative methods evaluate an individual's performance by comparing it to another individual's performance. Paired comparisons and rank order are the most popular relative methods (Bernardin & Beatty, 1984; Grote, 2005). Relative methods force differentiation of individuals' performance since a comparison is required between two individuals. Since differentiation is considered critical to identify top performers this is an advantage over an absolute comparison (Grote, 2005).

Comparing one individual to another is relatively easier to accomplish than an absolute comparison (Landy & Farr, 1983; Bernardin & Beatty, 1984). Accurately comparing each individual to each absolute measure can be very challenging and time consuming. Research has shown that relative comparisons are more accurate and more reliable (Landy & Farr, 1983).

Incentives are an essential tool for management to motivate their workers and align behavior with goals (Simons, 2000). Relative rankings allow incentives to be incorporated in organizations even if output is hard to measure (Devaro, 2006). Relative methods provide management a mechanism to incentivize and increase productivity based on a comparison in contrast to the challenging task of determining individual output.

Another advantage of relative comparisons is its ability to neutralize unobserved productivity shocks (Lazear, 1995; Green & Stokey, 1983). Relative methods neutralize unobserved shocks since the comparison does not focus on absolute performance but relative productivity. An individual's relative production is unchanged despite the shock causing lower or higher levels of productivity (Lazear, 1995). If a relative comparison is used, the effect of the shock is the same on both individuals and the individual performing best will still be recognized (Lazear, 1995).

Relative methods do have limitations. Relative comparisons produce ordinal data that do not express the differences between each rank (Bernardin & Beatty, 1984). It is possible for an individual ranked number two to be far more productive than the number three ranked individual but barely less productive than the individual ranked number one. Also, by the nature of a relative comparison there is no absolute information to determine

how well an individual has performed (Bernardin et al., 1984). When relative methods are used an individual does not need to possess any specific level of skill, knowledge, or characteristic since they are evaluated on relative performance to others.

D. HOW IS RATING ACCURACY OF THE PERFORMANCE APPRAISAL IMPROVED?

1. Rater Training

Rater training is critical to improve the ability of the rater to conduct accurate performance appraisals (Latham & Wexley, 1994). Rater training serves two purposes: 1) It increases the manager's knowledge of the performance instrument and procedures. 2) It increases the knowledge of biases that unknowingly affect the manager's judgments. According to Latham and Wexley (1994), knowledge alone will not change raters' behavior. There must also be practical applications with feedback to ensure change (Latham & Wexley, 1994).

Training influences the process of performance appraisals (Longenecker, 1989). Some performance appraisals are inaccurate because a manager does not allow enough time to conduct a thorough analysis of individual performance or made little effort to notice performance over the period of evaluation (Grote, 2005). The performance appraisal process is an ongoing process that must be conducted frequently (Longenecker, 1989). Managers must make efforts throughout the evaluation period to note performance in order to be able to base judgments on information other than memory (Longenecker, 1989). Longenecker (1989) describes the appraisal process in five steps: 1) Communicate the worker's job description, goals, and performance standards, 2) Observe worker's actual performance and provide feedback on regular basis, 3) Store relevant performance data for future recalling, 4) Render judgment of worker performance in completing the appraisal instrument, and 5) Conduct an open and honest appraisal interview.

Biases unknowingly affect the manager's ability to make accurate judgments. The main biases associated with performance appraisals are halo, opportunity, recency, leniency (negative and positive), central tendency, restriction of range, and similar-to-me (Landy & Farr, 1983; Bernardin & Beatty, 1984; Latham & Wexley, 1994). Research has

shown how these biases if ignored will affect rating accuracy (Latham & Wexley, 1994). Rater training will not ensure the complete elimination of rater errors associated with biases but properly conducted rater training will cause a lasting improvement to performance appraisal rating accuracy (Latham & Wexley, 1994; Murphy, 2008).

2. Rater Attitude

An important issue for rating accuracy is the manager's willingness to provide an accurate and honest appraisal (Longenecker & Ludwig, 1990). Longenecker, Liverpool, and Wilson (1988) showed that despite well-designed rating instruments and procedures, rating accuracy was not ensured if the rater was not willing to accurately rate individuals' performances. Longenecker and Ludwig (1990) state several reasons why raters inflate or deflate ratings. Managers will manipulate ratings for a variety of reasons but they usually are based on a perceived best interest of their workers or themselves (Longenecker, 1989). Figure 2 describes the relationship of rating behavior and rater motives.

Positive Rater's Motive	<ul style="list-style-type: none"> -Keep the employee motivated -Maximize merit pay increase -Avoid creating a permanent record that might damage the employee's career -Reward good recent performance -Assist an employee with a personal problem -Reward effort -Liking the subordinate personally 	<ul style="list-style-type: none"> -Scare better performance out of an employee to prevent termination -Build a strong case against an employee who is destined to be terminated.
	Negative Rater's Motive	<ul style="list-style-type: none"> -Avoid hanging dirty laundry in public -Make themselves look good -Avoid conflict/confrontation with subordinate -Promote a problem employee up and out
Inflated Ratings		Deflated Ratings

Figure 2. Rater Motives and Manipulative Rating Behavior
(after Longenecker & Ludwig, 1990).

Longenecker and Ludwig (1990) found that many managers do not find anything wrong with positively motivated inaccuracies like those listed in the top of Figure 2.

The consequence of intentional rating inaccuracies for short-term gain has long-term effects that most managers do not consider (Grote, 2005; Longenecker & Ludwig, 1990). The long-term effect of inaccurate ratings at the organization level can cause problems with incentives, morale, training, and promotion decisions (Longenecker, 1989). For instance, the ability to use the performance appraisal to enhance productivity will be lost since results of the appraisal will be met with skepticism (Longenecker & Ludwig, 1990).

The consequence for inaccurate ratings is also felt at the local or individual level. Performance appraisal results are likely discussed among workers. If inaccuracies are perceived, there will be increasing distrust (Grote, 2005). Longenecker (1989) shows how rating inaccuracies decrease trust, diminish a manager's ability to reward high performers, increase workplace uncertainty, and create more performance problems than the performance appraisal solves. The performance appraisal process can only be effective if trust is maintained between the manager and the workers (Longenecker, Liverpool & Wilson, 1988).

E. FINANCIAL MANAGEMENT

1. Cost - Benefits

Labor costs continue to be the largest expense in many organizations (Saratoga Institute, 1994). As discussed earlier, performance appraisals can be conducted to collect information on individuals that will assist management in future financial decisions pertaining to promotions, retention efforts, performance incentives, and job fit (Bernardin & Beatty, 1984; Jovanovic, 1979; Rosen, 1992). If returns from human capital investments exceed costs then improved financial productivity should be the result of retaining the most productive individuals (Huselid, 1995). The financial performance of an organization is strongly tied to human capital management practices (Cascio, 1991; Flamholtz, 1985). Cascio (1991) states that financial returns for improvements made to the management of personnel are generally large. Huselid (1995) shows that organizations with high performance work practices, which include performance appraisals, show significant improvements on performance that also are financially

meaningful. Borman (1991) and Gerhart and Milkovich (1992) show how performance appraisals can increase firm profitability.

2. Performance Metric

Becker and Gerhart (1996) state that it is difficult to measure the influence of human capital on the bottom line of an organization. The financial costs of obtaining human capital are relatively easy to determine but the benefits are more difficult to quantify (Beck & Gerhart, 1996). Higgins (2014) states that to understand the financial benefits of human capital efforts analytics should be developed that numerically illustrate positive or negative changes to productivity. Higgins (2014) states that human capital metrics puts a number to an individual so that management can understand the value of that individual. An individual metric that is based on existing performance appraisal literature should give an organization the ability to develop policies that produce optimal results that are measureable. This in turn would reduce costs by allowing financial resources to be allocated more efficiently and effectively.

F. SUMMARY

The literature provides a structure by which the current performance appraisal systems of the Navy and Marine Corps can be evaluated. The literature is focused on incentive structures and performance appraisals: First, I looked at tournament theory and internal labor market concepts. Second, I laid out several purposes of the performance appraisal. Third, the foundational elements of performance appraisal structure and comparisons are explored. Fourth, I looked at means to improve rating accuracies. Lastly, I looked at the financial benefits of developing a performance metric that can assign a value of productivity to an individual and in turn provide management a tool for more effective and efficient use of finite financial resources.

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III. METHODOLOGY

This section describes the method for case selection, information collection, and information analysis. I establish criteria to evaluate each case and test my hypothesis.

A. CASE SELECTION

I choose two cases for this research. The cases are the published performance appraisal processes and rating instruments of the U.S. Navy and the U.S. Marine Corps (Department of the Navy, 2011; Department of the Navy, 2010). The two case studies were selected due to the similarities of each organization in structure, charter, and overall mission. Through the comparison and analysis of these cases, information is collected based on existing literature to determine how performance appraisals should be used to optimally signal Navy officer productivity.

I did not consider the other three branches of the United States Armed Forces, foreign militaries, non-military government employment, or private sector organizations due to the scope of this research.

B. CASE INFORMATION

I collected information on both case studies from military and non-military sources via the Internet. Both branches of the military have a written policy for conducting performance appraisals that includes the rating instrument and procedures. The information collected fully supports this research allowing for a comparison of both performance appraisal structures to principles identified in the existing literature.

C. ANALYSIS

The Navy and Marine performance appraisal policies are evaluated using criteria established in existing literature. The criteria are extensive although they do not cover all issues associated with performance appraisals; this research focuses on those items for which there is agreement among researchers.

The Navy and Marines' rating instruments and rating procedures are analyzed to determine the basis for which judgments and performance comparisons are made. Analysis is conducted to determine if and how the performance appraisal's purpose is achieved and the potential for eliminating rating inaccuracies.

IV. ANALYSIS

For the following analysis, the term performance appraisal structure (PAS) will refer to the rating instrument and procedural guidance for conducting performance appraisal.

A. NAVY –PAS

The current Navy officer PAS is documented in the Navy Bureau of Personnel Instruction (BUPERSINST) 1610.10C. The original 1610.10 instruction was published in August 1995 and has since gone through three revisions: A in September 2005, B in July 2008, and C in April 2011. The current version has two interim changes (IC) that were published in August and October 2013.

The rating instrument is NAVPERS 1610/2 and is called the Fitness Report & Counseling Record or FITREP for short. See Appendix A. The rating instrument contains three main sections that appraise performance. They are block 33 through 39-Performance Traits, block 41-Comments on Performance, and block 42-Promotion Recommendations. Guidance for each section is in the instruction.

Block 33 through 39-Performance Traits are comprised of seven traits: 1) Professional Expertise 2) Command or Organizational Climate/ Equal Opportunity 3) Military Bearing/Character 4) Teamwork 5) Mission Accomplishment and Initiative 6) Leadership and 7) Tactical Performance. The definition of each trait is defined in the instruction. Each trait is arranged into a Behavior Anchored Rating Scale (BARS) and is rated on a point system. The points and their definitions are: 1.0-Below Standards, 2.0-Progressing, 3.0-Meets Standards, 4.0-Above Standards, 5.0-Greatly Exceeds Standards. Behavioral descriptions are associated with the rates 1.0, 3.0, and 5.0. After appraising the performance traits, all seven trait grades are averaged to produce the “Member Trait Average.” This average is located in block 45-Signature of Reporting Senior (RS). The RS is typically the Commanding Officer and is the “rater” for all officer performance appraisals. Block 45 also contains the “Summary Group Average” which is the trait average of all individuals in the summary group being evaluated by the RS. A

summary group is the group of individuals of similar rank and promotion status who are being evaluated by the same RS.

Block 41-Comments on Performance is a large block to describe the ratings assigned to performance traits. The instruction states that numerical rankings among peers are “authorized” and that all comments should be based on “verifiable facts.” The block should be used for general comments but stock comments should be avoided.

Block 42-Promotion Recommendation is filled out by the RS. The options in descending order are: 1) Early Promote (EP), 2) Must Promote (MP), 3) Promotable (P), 4) Progressing, 5) Significant Problems. Recommendations of EP, MP, and P are all recommendations for the individual to be promoted. Block 43-Summary is the number of promotion recommendations per summary group.

The instruction restricts the distribution of promotion recommendations. They are required to be distributed as a percentage of the total number of individuals in the summary group and based on rank. In general, only 20 percent of the total number of individuals in the summary group may receive an EP. The number of MPs is regulated by a maximum combined percentage of EP and MP depending on rank. For O-3s there is no restriction for the number of MPs that can be assigned. Lastly, the highest recommendation an O-1 or O-2 can receive is P. See Appendix C for the full table.

The instruction states that promotion recommendations should be consistent with performance trait grades and with the individual’s trait average. The RS may take into account the difficulty of the assignment and the individual’s likely future value to the Navy. EP and MP recommendations should not be given simply because quotas are available. An individual can go from a promotion recommendation of “Significant Problems” on one report to EP on the next report based on his or her performance and the RS’s recommendation. The instruction also provides restrictions on promotion recommendations based on the results of performance trait grades. A P recommendation cannot be assigned with two or more 2.0 performance trait grades or with any 1.0 performance trait grade. A MP or EP recommendation may not be assigned with any performance trait assessed as 2.0.

B. MARINE CORPS–PAS

The current Marine officer PAS is documented in the Marine Corps Order P1610.7F dated November 19, 2010. The Marine Corps refers to the policy, procedures, and standards which govern the performance appraisal administration as the performance evaluation system (PES). Its stated purpose is to support the selection, promotion, and retention of the most qualified individuals.

The current Marine officer rating instrument is the NAVMC 10835 and is called the USMC Fitness Report (1610). See Appendix B. The rater is required to document his or her observations and assessment of performance as well as individual character. The appraisal instrument contains seven sections for the rater to record performance appraisals. The “rater” is called the Reporting Senior (RS) and is the next officer up the chain of command from the individual being evaluated. There is also another section for the Reviewing Officer (RO), the next officer up the chain of command from the RS, to make minimal appraisal inputs, ensure the RS is following established procedures, and to concur or reject the RS’s appraisal.

The seven sections used to evaluate performance can be split up into three sub-sections. They are: 1) Section A block 7–Promotion Recommendation 2) Sections D through H–Performance Anchored Rating Scales (PARS) 3) Section K–Reviewing Officer Comments.

The promotion recommendation block gives the RS four options. They are: 1) Yes 2) No 3) N/A 4) Leave it blank. Yes and No are the assigned recommendations of the RS when the individual is up for promotions on normal timelines. Leaving the promotion recommendation blank allows the RS to recommend a promotion ahead of a normal timeline. All recommendations are based on an individual’s “exhibited performance” and their capability or lack of capability to perform at the next level.

Billet accomplishment is a written narrative on what the individual has accomplished. This section is void of all references to the quality of work performed and is simply a report on what was accomplished during the time period of the appraisal.

Section D through G are 13 behavioral traits that account for 81 percent of the total performance comparisons contained in the rating instrument. The traits are broken down into four sections: 1) Section D-Mission Accomplishment: Performance and Proficiency 2) Section E-Individual Character: Courage, Effectiveness under stress, Initiative 3) Section F-Leadership: Leading Subordinates, Developing Subordinates, Setting the Example, Ensuring Well-Being of Subordinates, Communication Skills 4) Section G-Intellect and Wisdom: Professional Military Education (PME), Decision Making Ability, Judgment. Section H evaluates the fulfillment of evaluation responsibilities. Sections D through H are behavior anchored rating scales (BARS) that the Marines call performance anchored rating scales (PARS). The scale is similar to a BARS in that each trait is well defined in the instruction and anchored by letters that are associated with a point value. The ratings and associated point values are A=1.0, B=2.0, C=3.0, D=4.0, E=5.0, F=6.0, and H is unobserved with no point value assigned. Ratings of 2.0(B) through 4.0(D) represent favorable ratings. The measurements of 5.0(E) and 6.0(G) are reserved for the rare individuals who demonstrate sustained exceptional performance.

The average is calculated from all 13 observable trait grades but is not displayed on the appraisal instrument. Individuals can find an approximation of their relative performance called a Relative Value (RV) by referencing another document called the Master Brief Sheet (MBS). See Appendix D. The RV is computed based on their performance trait mean relative to the other individuals in group being evaluated. The RV depicts trait grades in a relative format from 80 being the lowest to 100 being the highest rating for all reports by an RS for that period.

Section K-Reviewing Officer Comments also contains performance appraisal data. This section allows the RO the next officer up the chain of command from the RS, to make an assessment of the individual's performance compared to the performance of others. This assessment is a relative comparison of the individual's performance to all Marines the RO has observed past and present. The options for ratings in descending orders are the following: 1) The Eminently Qualified Marine 2) One of the Few Exceptionally Qualified Marines 3) One of the many Highly Qualified Professionals Who

Form the Majority of This Grade 4) A Qualified Marine 5) Unsatisfactory. There are no grades associated with each selection. This section also allows for the RO to comment on their comparative assessment marks and the individual's potential.

C. CASE STUDY

Navy and Marine PAS are evaluated based on the existing literature.. A word and topic search was conducted to determine the amount of emphasis and attention each PAS gave to topics from incentive and performance appraisal literature. The words and topics are analyzed to determine their context in the section of the PAS where they are located. Topics and emphasis are analyzed to determine if there is message alignment or contradictions throughout the PAS. All chapters, enclosures, and appendixes of the Navy and Marine PAS were searched.

Overall themes and specific words related to each topic are analyzed based on the quantity of words, percentages of each PAS, and degrees of differentiation where appropriate. Results are recorded in Table 1. A detailed explanation of the analysis and table follow. For a record of the words search for each topic see Appendix E.

Table 1. Case Study Navy and Marine Performance Appraisal Systems

	Criteria	Navy	Marine
Subjective Comparison Basis	Absolute (Number of comparisons) (Percent of Comparisons)	7 87.5	13 92.8
	Relative (Number of comparisons) (Percent of Comparisons)	1 ^{††} 12.5	1 7.2
Purpose	Accuracy		
	Emphasis (Number of words) (Percent of total words)	11 0.20	139 2.17
	Rater Attitude (Number of words) (Percent of total words)	12 0.22	127 1.99
	Rater Training (Number of words) (Percent of total words)	0 0.00	8 0.13
	Fairness (Number of words) (Percent of total words)	17 0.31	19 0.30
	Differentiation of Talent		
	Performance Traits (Total Traits, Possible Trait Means) (Degrees of Differentiation ₁)	7, 15 ≤14 [†]	13, 66 ≤65
	Performance Comments (Degrees of Differentiation)	0	1
	Promotion Recommendations (Degrees of Differentiation)	2,3 ^{**}	1
	Rankings (Degrees of Differentiation)	n-1, n={1, ∞}	/
	Comparative Assessment (Degrees of Differentiation)	/	n-1, n≤7 [‡]
	Learning (Total Performance Traits) (Percent of Learning, Base percent = Navy)	7 100	13 185
	Communication of Expected Behavior (Average # of words describing each trait) (Percent of PAS describing behaviors*)	55 7.0	94 19.1
	Enable Feedback ("Am I becoming more productive?") ("How am I doing compared to others?")	Yes Yes	Yes Yes
	Accountability		
	Performance Traits	Yes	Yes
	Promotion Recommendation-Forced Distribution	No	/
	Rankings	Yes ^{††}	/
	Comparative Assessment	/	Yes
	Relative Value	/	Yes

† There are up to 14 degrees of differentiation if the rater uses all 15 performance trait averages without duplication.

‡ The Comparative Assessment allows seven options to rate an individual. There are up to n-1 degrees of differentiation assuming a rater uses all seven rates without duplication.

* Percentages are based on an individual performing at the "standards" or higher.

** Three degrees of differentiation are only required for O-4 through O-6, 2 degrees for O-3, and none for O-1 and O-2 since P is the only authorized promotion recommendation.

†† There is one relative comparison if the SR conducts rankings of all individuals in the group being evaluated.

D. SUBJECTIVE COMPARISON BASIS

1. Absolute

The Navy and Marine PASs rely mostly on absolute comparisons for the basis of evaluating individual performance. Both rely on performance trait scales that define individual behaviors and then derive other signals of productivity based on the performance traits average.

If rankings are conducted, the Navy makes seven absolute comparisons and one relative comparison. The Marines make 13 absolute comparisons and one relative comparison. The result is 87.5 percent of the Navy and 92.8 percent of the Marines use absolute comparisons for evaluating performance.

The Navy uses a trait average as a basis for a promotion recommendation and to compare an individual's trait average to a summary group trait average. The Marines use performance trait averages to calculate an individual's RV. The core of both performance appraisals are the evaluation of performance traits.

2. Relative

The Navy authorizes one relative comparison by ranking the individuals in a summary group. The Marines require one relative comparison, the "Comparative Assessment." The Navy is comparing individual's performance only in the current group being evaluated. The Marines compare the performance of an individual with all past, present, and future individuals at the same rank that the RO observes.

Since both the Navy and Marines rely heavily on the absolute method of comparisons neither approach maximizes differentiation of performance. Both PASs allow for rater leniency and other rater errors associated with absolute comparisons. The Marines have a relative comparison that is required in contrast to the Navy where RSs may choose not to rank individuals being evaluated eliminating all benefits of relative comparisons.

E. ACCURACY

1. Emphasis

The Navy PAS emphasizes “accuracy” 11 times or with 0.20 percent of the 5518 total words used. There is one sentence in the introduction paragraph and one in Section 18.6-Counseling Objectives that uses the word “accurate” as one of several adjectives to describe the performance assessment. There are no quotes from Navy leadership emphasizing the importance of the integrity of the appraisal process or producing accurate ratings.

The Marine PAS emphasizes “accuracy” 139 times or with 2.17 percent of the 6392 total words used by the Marine PAS. Accuracy is mentioned on 45 different pages in 13 sections including comments from the Commandant of the Marine Corps. The Commandant is quoted saying, “The complete fitness report is the most important information component in manpower management.” He states, “...the completion of this report is one of an officer’s most critical responsibilities.” The Commandant goes on to say inflated markings only serve to dilute the actual value of each report. Statements are made about the “scrupulous maintenance” of the appraisal structure. Chapter 1 of the instruction states that accuracy is one of the fundamental concepts of the evaluation system. Also, Section 1003-Objectives of the System is dedicated to the accuracy and importance of the performance appraisal process.

The Marine instruction has a separate section on preventing rating inflation that states the PAS is designed to reduce rating inflation. The Marine PAS attempts to do this in four ways: 1) Recognizes the tendency for raters to over-inflate ratings. 2) Requires raters to justify trait ratings that are marked at the upper extremes on the rating scale. 3) Appraisals are reviewed by the RO to ensure RS accuracy and adherence to guidance. 4) Each rater is appraised on their ability to evaluate the duties of their subordinates in Section H during their own performance appraisal. This puts the rater into a risk adverse position vice risk neutral since their ability and willingness to adhere to the performance appraisal guidance will affect their own performance appraisal. This structure arguably

improves rating accuracy as each rater will not be willing to inflate or deflate a performance appraisal of an individual that he or she cannot support with evidence.

The Marines' emphasis on rating accuracy is relatively clear to the user due to instructional guidance, dedicated sections on the importance of accuracy, and the Marine Commandant's comments reiterating the importance. The three elements are aligned allowing for clear guidance to Marines using the instruction and rating instrument. In contrast, the Navy PAS has less mention of rating accuracy giving a reader the option to assume that it may not be a problem or not important.

2. Rater Attitude

The Marine PAS emphasizes issues pertaining to the rater attitude 127 times or 1.99 percent of the 6392 total words. Section 1005- Key Concepts states that the performance appraisal is not a lever to exert influence on the individual being evaluated or a disciplinary tool. There is additional guidance in multiple sections that the purpose of the performance appraisal is to make future manpower decisions.

In contrast, the Navy PAS emphasizes issues pertaining to the attitude the rater should have 12 times or 0.22 percent of the 5518 total words. The Navy PAS provides no direct guidance on how a rater's attitude influences rating accuracy. The introduction in the instruction states the use of the rating instrument for promotions, training, and other managerial decisions but provides no restrictions on the rater to use performance appraisals for self-serving and short-term motivational purposes.

The Navy's lack of restrictions, accountability, and guidance would lead to inaccuracies and performance appraisals not based on merit. The Marines clearly recognize the importance of restricting raters from using the performance appraisal for ulterior purposes. They accomplish this by addressing the issue in the instruction and through accountability by the RO.

3. Rater Training

The Navy PAS does not address a training requirement for raters or its importance for producing accurate ratings. There is also no emphasis on the importance of informing all officers on how the performance appraisal system will influence career opportunities.

The Marine PAS emphasizes training in the PAS eight times or with 0.125 percent of the 6392 total words used in the Marine PAS. Chapter 1 of the instruction states that for the achievement of the PAS's fundamental concepts all participants must have knowledge of the system. Also, the Senior Marine Representative is required to ensure all individuals are educated on the PAS process.

Unlike the Navy, the Marines address the importance of knowing the PAS and place a mechanism of training in place to continue to instruct and communicate its purpose and importance.

4. Fairness

The Navy PAS emphasizes fairness 17 times or with 0.31 percent of the 5518 total words. Preferential treatment is not addressed in the appraisal instruction but the rating instrument is constructed in a way that does not discriminate on variables not merit based. The Navy PAS is non-discriminatory in that the rating instrument focuses on behavior or traits that would apply to all groups of individuals.

The Marine PAS emphasizes fairness 19 times or with 0.30 percent of the PAS's 6392 total words. Section 1005-Key Concepts provide guidance to the importance of fair but also thorough performance evaluations. This section also addresses unfair involvement from the RO in an effort to ensure performance appraisals are fair and accurate from the RS. Lastly, the Marine PAS is non-discriminatory in that the rating instrument focuses on behavior and traits that would apply to all groups of individuals.

F. DIFFERENTIATION OF TALENT

Differentiation of talent is the capability of the PAS to record variance in the performance grades of individuals. The analysis focuses on performance trait grades, performance comments, promotion recommendations, rankings, and comparative

assessment. The first three are common to both to the Navy and Marine PAS. Rankings are used in the Navy PAS and comparative assessment in the Marine PAS.

1. Performance Traits

The Navy and the Marines both use performance traits to differentiate talent. Both systems are based on absolute comparisons of behavior to a defined standard. Differentiation between these scales is a function of the number of performance traits appraised and the number of grade options for each trait.

The Navy appraises seven performance traits and the Marines appraise 13 traits. The increased number of performance traits allows the Marines performance appraisal to differentiate talent on six additional traits - 85 percent more than the Navy. The Navy's seven traits are graded on a scale of 1.0 to 5.0. This allows for 29 different performance trait averages or means between 1.0 and 5.0. For example an individual could receive seven 1.0 grades, seven 5.0 grades or a combination of seven 1.0 through 5.0 grades. The range of averages would be; 1.00, 1.14, 1.29, 1.43, 4.57, 4.71, 4.86, 5.00. There is a value of 0.1429 between each possible average. The Marines' 13 traits are graded on a scale of 1.0 to 7.0. This allows for 79 different performance trait averages between 1.0 and 7.0. The range of averages would be; 1.00, 1.08, 1.15, 1.23, ... 6.77, 6.85, 6.92, 7.00. There is a value of 0.0769 between each possible average.

The Marines have the option of 50 more trait means or 2.72 times the Navy performance trait scale to allow for the differentiation of talent. This comparison does not take into consideration other differences of the two PASs. To provide additional insight into the difference between the two scales, they are compared based on the definitions of the grading scales and rater guidance in each instruction.

The Navy rating instrument and instruction define a performance that "Meets Standards" with a trait grade of 3.0. This allows for three options, 3.0, 4.0, or 5.0, to appraise and individual performing at or above the "standards" level for each trait. These three options for all seven traits allow for 15 possible trait averages to differentiate talent.

For the Marines the only grade that is not meeting behavioral standards is 1.0 (A). This allows for six options per trait to appraise an individual who is performing at or above the “standards” level compared to the Navy’s three options. These six options for all 13 traits allow for 66 performance trait means to differentiate talent. The Marine instruction states that a solid performer with no deficiencies has earned a commendable 2.0(B) or 3.0(C). The instructional guidance is aligned with the rating instrument grounding grades for “standards” performance at 2.0(B).

After adjusting the performance trait ranges based on a common definition between the Navy and Marine PAS the grade definitions at the “standard” level or above there is less opportunity for the Navy to differentiate talent then when ignoring definitions. If the majority of individuals perform at the average or “standards” level there is less opportunity to differentiate talent than the scale 1.0 to 5.0 would initially indicate. When comparing the scales of both the Navy and Marines’ rating instruments based on a common definitions the Marines allow 66 trait averages compared to the Navy’s 15. This allows the Marines 4.40 more times the options to differentiation talent than the Navy.

The Marines are evaluating 13 traits vice the Navy’s seven which may cause more grade options simply because there are more traits. To adjust for this difference assume that both the Navy and the Marines only evaluate seven traits. In this case, the Navy would have 15 possible trait averages compared to the new Marine possibility of 36 trait averages for individuals performing at or above the “standards.” That is still 2.40 times more differentiation than the Navy.

A Navy SR who is appraising a group of individuals larger than 15 will have at least two individuals with the same trait average assuming that the rater tries to maximize the number of different trait averages given. This results in a max degree of differentiation of 14, or $n - 1$ where $n \leq 15$. With an $N > 15$ the result remains a maximum of 14 degrees of differentiation as some individuals will have the same trait average.

The Marine performance trait average results in a max degree of differentiation of $n - 1$ for $n \leq 66$. This assumes that all individuals have a different trait average. The

instruction states that a rater should evaluate an individual on his or her traits and reference the individual's performance trait average post evaluation only to minimize and adjust for rating inflation if appropriate.

Note that each performance trait scale is intentionally structured to provide differentiation for the actual populations of Navy and Marine officers. If the Navy has more below "standards" performing officers than the Marines then the Navy structure is doing a good job of capturing the variation within their own ranks. Additionally, based on the Marine structure there are no below "standards" Marine officers, only varying degrees of good ones or "adverse" at the lower extreme.

This differentiation is not forced by the rating instrument or required by the instruction. Both systems use absolute comparisons with the possibility of two or more individuals receiving the same grade. The Marine performance trait scales provide the rater on average 4.40 times more options for differentiation of talent. Despite this Marine advantage both PASs could provide additional differentiation through relative comparisons.

2. Performance Comments

Performance Comments for both PASs are to provide justification for performance trait grades. Comments are not designed to provide differentiation of talent according to the instructions. Both rating instruments provide sections for comments and each instruction discusses comment guidance. The Marine rating instrument allows for this throughout the Performance Trait section and the Navy rating instrument dedicates a separate section.

The Navy instruction requires comments for low trait grades. Grades of 1.0, three 2.0, or below 3.0 for Command Climate or Character require comment. For the Marines only the high grades require justification. Specifically, trait grades of 6.0(F) and 7.0(G) require comment.

The requirement to provide justification for high or low ratings may have negative incentives on the rater accuracy (Grote, 2005). According to Grote (2005) raters will

avoid assigning grades that require extra time or effort on their part. The Navy requirement to comment on lower grades incentivizes the rater to inflate grades. The Marines requirement to comment on higher grades incentivizes the rater to deflate grades. The impact of both inflating and deflating is greatest on the Navy since the scale is more limited with less performance trait average options for differentiation. The Marines attempt to counter the adverse incentive through training and instructional guidance on the importance of accurate ratings.

The Marines also have an additional section for the RO to make comments. These comments provide additional justification and add a degree of differentiation since comments could either agree or disagree with the RS's appraisal.

Both the Navy and Marine comments have no or little differentiation value. That is, they provided justification for ratings but there is no mechanism to ensure accuracy or differentiation of comments. Additionally, the requirement for comments may actually restrict variance of ratings if a rater is looking to complete the performance appraisal as quickly as possible. Requirements to justify performance trait grades require information that may take time to collect as well as time to write the justification. This additional effort required to justify a grade may incentivize the rater to assign a less extreme rating if time or individual performance information is limited.

3. Promotion Recommendations

The Marine promotion recommendation of “yes” or “no” is designed to differentiate between an individual who is not meeting the “standards” and an individual who is performing at or above the “standards.” Two individuals performing above the standards will receive the same recommendation and no differentiation between their performances will be provided.

The Navy promotion recommendation is a forced distribution structure with specific percentages assigned for each recommendation. See Appendix C. The promotion recommendation is designed to be “consistent” with the performance trait averages. For example, the individual with the highest performance trait average would have the highest performance recommendation. Based on the structure of the promotion

recommendations there is only differentiation between individuals with different promotion recommendations. Two individuals with EP recommendations will have no differentiation. For some ranks like O-3 the distribution of promotion recommendations is left to the discretion of the RS. The instruction limits the number of EPs but allows for unlimited MP. There is no requirement or guidance in the instruction to manage this distribution a specific way. Since individuals that receive the same promotion recommendation are not differentiated among themselves the degree of differentiation is dependent on the discretion of the RS using the full range of promotion recommendations available.

The Marine's degree of differentiation for the promotion recommendation cannot be greater than one since the recommendation options are either "yes" or "no." If one Marine is given a "yes" recommendation and another is given a "no" recommendation then there are two distinct grades with one degree of difference between the two individuals. If it is assumed that most individuals in a group will be recommended for promotion then the average degree of differentiation is reduced since all in the group will have the same promotion recommendation. For example, if there are 20 individuals in a group and one is not recommended for promotion then the 19 are differentiated from the one but are not differentiated from the other individuals in the group of 19.

The Navy's structure differentiates in five groups. The groups recommending for promotion are: 1) Early Promote (EP) 2) Must Promote (MP) 3) Promotable (P). The groups not recommending for promotion are: 1) Significant Problems 2) Progressing. The degree of differentiation of performance recommendations depends on the discretion of the RS. If the RS uses promotion recommendations of EPs and MPs for the entire group there will be less differentiation than if the RS recommendations EPs, MPs and Ps. For this reason, the Navy's degrees of differentiation can vary. Assuming that the majority of individuals will be recommended for promotion there is a max of three but as little as two degrees of differentiation for O-3s, and no degree of differentiation for O-1 and O-2s since P is the only authorized promotion recommendation for those ranks.

The Navy promotion recommendation provides more differentiation than the Marines. The Marines use their recommendation as simply a requirement to proceed

while the Navy incorporates a forced distribution allowing for greater differentiation. However, if the purpose of a promotion recommendation is to provide differentiation from those that should be considered for promotion and those that are not capable to move up then the only requirement is to have one degree of differentiation. If this is the case both the Navy and the Marine promotion recommendations would provide necessary promotion information despite the Navy structure being more complicated to interpret.

4. Rankings

The Navy authorizes but does not require ranking in the “Comments on Performance” section. The Navy PAS does not provide any guidance or recommendations for conducting rankings. Rankings force differentiation of talent. Differentiation is not dependent on the procedures or the discretion of the rater. If a rater is evaluating the performance of 20 individuals there would be 19 degrees of differentiation. Degrees of differentiation would equal $n-1$, where n is the number of individuals being evaluated and ranked.

Differentiation in the Navy is not forced since rankings are left to the discretion of the RS. If rankings are conducted for a portion of the group, for example the top third or the bottom third, then the degree of differentiation will be reduced. The degree of differentiation would then be calculated as n , where n is the number the RS decides to rank. To illustrate if three individuals are ranked from a group of ten, 1 of 10, 2 of 10, 3 of 10, then the performance of the remaining seven will not be differentiated. This ranking would result is three degrees of differentiation which is far less than possible with a full ranking. No ranking guidance or requirements are given in the Navy instruction so the potential degree of differentiation could be as little as zero if rankings were not conducted.

5. Comparative Assessment

The Marines rating instrument does not rank individuals but it does conduct a different type of relative comparison. In the “Reviewing Officer Comments” section, there is a space for comparing the individual’s performance to the performance of the other individuals that the RO has observed over his or her career. There are seven

different levels a RO can assign to an individual that is meeting or exceeding the standards. This allows for a maximum degree of differentiation of $n-1$ when $n \leq 7$ for the current group of individuals being evaluated. For differentiation to be maximized, the RO must mark each individual at a different level which is unlikely since most groups of individuals would be normally distributed around the mean. There is no restriction in the rating instrument for the RO assigning the same grade to every individual. The degree of differentiation would be zero if all individuals were marked at the same level.

G. LEARNING

The rating instrument and performance procedures provide a mechanism that allows the Navy and Marines to learn about the productivity and future potential of an individual. Neither, the Navy or Marine PASs makes explicit statements or references to learning about an individual's productivity but the rating instrument and its outputs computed from the comparisons allow for learning in broad and specific areas. Learning in both these cases occurs in two forms, specific and general. Specific learning is accomplished through the performance traits and general learning of individual productivity is accomplished through rankings and promotion recommendations.

The Navy PAS facilitates specific learning for seven performance traits. The Marine PAS collects information on 13 traits. This allows the Marines to collect specific information on 85 percent more types of behavior than the Navy. An example of this increased data collection is seen for the performance trait "Leadership." Both rating instruments measure this trait but the Marines define it more specifically. They divide the trait into five sub-traits which allow for five times the information to be collected.

The Navy and Marines' relative comparisons allow for general learning. The Navy's rankings in the "Comments on Performance" and the Marines' "Comparative Assessment" demonstrate individual productivity levels. Both relative performance comparisons allow for learning on an individual's relative productivity compared to others.

The validity of what is learned is a function of the accuracy of the performance appraisal's rating and the degree of differentiation of talent. If the rater did not accurately

appraise an individual's performance then what is learned about an individual's productivity will be incorrect or at least less accurate. If the performance appraisal did not differentiate an individual's performance then avoidable noise prevents a clearer productivity signal. Based on the Marines' emphasis on accuracy and differentiation of talent the potential validity of what is learned by the Marines is greater than that of the Navy.

H. COMMUNICATION OF EXPECTED BEHAVIOR

The Navy defines expected behaviors in the rating instrument as part of the performance trait scales. There are no expanding definitions or discussions on performance trait behaviors in the performance appraisal instruction.

The Marines define expected behaviors in both the performance appraisal instruction and the rating instrument. The instruction provides definitions and discussions for each performance trait and sub-trait. For example, Section D is titled "Mission Accomplishment" and is broken down into two sub categories of "Performance" and "Proficiency." The instruction first defines "Mission Accomplishment" and then explains its importance. Following this both sub traits, "Performance" and "Proficiency" are defined, three levels of behavior are described, and then both sub-traits are further explained in separate sections. The sub-trait definition and the three descriptions of different levels of behavior are duplicated on the rating instrument for scaling the performance trait.

As discussed earlier the Navy appraises performance on a 1.0 through a 5.0 scale with 3.0 through 5.0 representing marks for an individual performing at the "Meets Standards" level or above. The Navy provides three descriptions of behavior for each of the seven performance traits. Descriptions are provided for 1.0, 3.0, and 5.0 grades. This allows for two useful descriptions per trait or 14 total descriptions to communicate expected behavior of individuals performing at or above the "standards."

The Marines provide three descriptions of behaviors for each of the 13 performance traits. Descriptions are provided for 2.0(B), 4.0(D), 6.0(F) grades. All three behavior descriptions apply to an individual who is performing at or

above the “standards” level. This results in 39 descriptions of behaviors spread over 13 performance traits.

The Navy uses an average of 55 words per trait to define and describe the two levels of performance at or above the “standards” level. The Marines use 94 words to define the performance trait, discuss its importance, and describe three levels of performance at or above the same level. The Navy’s total word count for both the performance instruction and rating instrument is 603 words or 10.9 percent of the total words in the PAS. The Marines use 1221 words or 19.1 percent of the total words in the PAS. If you adjust the Navy and Marine word count for descriptions of behaviors for individuals performing at or above the “standards” level then the Navy uses 387 words at 7.0 percent compared to the Marines 1221 words at 19.1 percent.

The level of communication concerning expected behavior of the Marine PAS is 2.73 times higher than the Navy PAS. All Marine performance traits are defined and their importance is discussed in the instruction. This allows all Marines to understand the level of behavior that is expected and why it is important to the future of the Marine Corps.

I. ENABLE FEEDBACK

Both the Navy and Marines’ rating instruments provide information to enable feedback that can inform and motivate the individual being evaluated. Feedback could be divided into two categories similar to absolute and relative comparisons of performance. The first provides information on what an individual is doing well or needs improving and the second provides information on how the individual compares to others in his or her summary group. Both the Navy and Marine PASs answer an individual’s question with regard to both categories.

The Navy and Marine rating instrument answers the question, “What can I do better?” through the performance trait grades. Again, the Marines provide feedback on 13 performance traits compared to the Navy’s feedback on seven. The advantages of the Marines performance trait scale noted earlier also applies here. An individual who is performing at or above the “standards” could receive six different grades per trait. Over

time this allows an individual to be recognized for improvement and receive feedback with a corresponding trait grade.

For the Navy information on the question, “How am I doing compared to others?” is provided in rankings if conducted, “Promotion Recommendation,” and the “Summary Group Average.” For the Marines the information is contained in the “Comparative Assessment” and RV. If an individual is ranked they are given feedback on how they are performing in comparison to others in the group. If the RS does not rank an individual then feedback on relative performance can be received from “Promotion Recommendations.” If an individual receives an EP they can reference the total number of EPs, MPs, and Ps given and determine a relative standing with less clarity than rankings. “Promotion Recommendations” provide less clarity since the rating instrument does not differentiate between the top and bottom EP, MP, or P. Lastly, an individual’s performance trait average can be compared to the summary group average. An individual can note if his or her trait average is above or below the group average but receives little other feedback on how they compare to others. Without knowing the standard deviation of the group the individual cannot discern a clear relative position compared to the others.

A Marine officer receives feedback to the question “How am I doing compared to others?” from the “Comparative Assessment” and the RV produced from the performance trait average. Both sections are required to be completed for every performance appraisal. The “Comparative Assessment” tells an individual how they are doing in comparison to others of the same rank. The RV provides feedback on how an individual’s performance trait average relates to other individuals in the group at the time of receiving the appraisal as well as cumulatively over time. The RV is not a relative comparison but does provide feedback on the relative position of the individual’s performance trait average.

The Navy and Marine PAS answer both categories of questions but limit information is provided for relative performance related to others. The Marines provide superior relative information with the RV unless the Navy SR conducts rankings for all individuals in the summary group.

J. ACCOUNTABILITY

Performance trait grades, rankings, and promotion recommendations allow for accountability in the Navy's PAS. Performance trait grades provide accountability on seven broad traits. The SR's ability and willingness to conduct accurate appraisals is critical for an individual to be accountable for his or her behaviors.

The promotion recommendation forced distribution structure limits the ability of the rater to recognize high performers if the rater is evaluating a number of top performers that exceeds the allowed number of EP promotion recommendations. A rater is not required to assign EP promotion recommendations but they are limited in number if they do. Human performance is typically distributed normally with the majority of individuals performing around the means. The Navy's forced distribution percentages is skewed left and does not allow proper alignment with a normal distribution of human performances.

If rankings are conducted then individuals are accountable for their performance relative to other's performance. Relative comparisons such as rankings do not provide accountability for individuals who have improved their absolute productivity level.

The Marines PAS use performance trait grades, "Comparative Assessment" section, and the RV derived from an individual's trait average to provide accountable. These three sections do not have limits on the distribution of grades. The performance traits provide accountability for improving their productivity as it pertains to 13 traits. Each trait scale provides six grade options to recognize changes in behavior for an individual performing at or above the standards.

The "Comparative Assessment" is a relative comparison that provides accountability in relation to others. It is possible that an individual sees an improvement in his or her performance trait average but does not improve on the comparative assessment. The "Comparative Assessment" does not provide accountability for performance improvements unless those improvements change an individual's relative position.

The RV allows an individual to see how his or her absolute performance compares to others. Unlike the “Comparative Assessment” small improvements to relative position will be recognized.

The Marines emphasis on accuracy and accountability and their increased options for performance trait grades allow for individuals to receive acknowledgement for their performance even if only small improvements are made. They Navy PAS provides less options for accountability. If rankings are conducted there is good accountability for relative performance but small absolute individual improvements may not be notice on the rating instrument due to a lack of options for trait averages.

V. RECOMMENDATION AND CONCLUSION

A. RECOMMENDATION

The Navy is structured as an internal labor market with “tournament” style incentives. There are a set number of job opportunities at each level and promotion to those positions are based on relative performance. This incentive structure is not concerned with determining overall productivity but promoting the most productive individual relative to others.

The Navy’s PAS needs to be able to identify and differentiate the performance of individuals to ensure that the most productive individuals are being promoted. For the Navy to optimally signal an officer’s productivity the author recommends three actions based on research and the results of comparing the Navy and Marine PAS.

1. Emphasize Rating Accuracy

The Navy PAS puts very little emphasis on the rater’s attitude and its importance for the accuracy of ratings. Rating accuracy is fundamental to be able to optimally signal a Navy officer’s productivity. The lack of emphasis in the Navy instruction allows for a misalignment between the RS’s behavior and Navy manpower strategy. To improve accuracy the following steps should be taken: 1) Navy leadership should explicitly address the importance of the accuracy and integrity of the performance appraisal system. 2) Change the performance rating instruction to include three additional sections on accuracy, grade inflation, and training requirements for RSs. 3) Change the instruction to require an officer one level up the chain of command from the RS to monitor for grade inflation and compliance with the letter and spirit of the instruction. 4) External to the PAS ensure all negative incentives are removed that would incentivize inaccurate appraisals. A decline in an individual’s relative ranking should not be interpreted as a decline in performance. Performances naturally vary and relative comparisons should be allowed to represent these variations. For example, if an Operational Screen Board or Statutory Promotion Board penalizes an individual for a declining relative performance while his or her absolute performance is rising, this will incentivize RSs to inflate relative

performance. An individual's relative performance should have the freedom to be at the top one period and at the bottom the next. Any other expectations on relative performance will have negative effects on rating accuracy. Raters will be focused on smoothing grades vice simply appraising performance.

2. Integrate Relative Comparison

Relative comparisons clearly align the Navy's current incentive structure and tournament theory. Rankings should be required and conducted on every individual for every appraisal cycle. Rankings are simple and easy to conduct and provide significant improvements over performance traits to differentiate talent. Accuracy excluded, differentiation of talent is the most critical element of the PAS to optimally signal a Navy officer's productivity. A separate section should exist for rankings instead of being included in the "Comments on Performance" section. Performance traits should not be removed as they provide a baseline for individual behavior and a means for leadership to communicate expectations and give feedback.

Individuals should be ranked based on their behaviors and results of their behaviors. If individuals are ranked by looking at performance trait averages the rankings are not a relative comparison but the relative position of an absolute comparison. The Marine PAS instructs raters to first make comparisons based on how well an individual performed based on the written standards before looking at the distribution of rater grades. This concept is the optimal approach to ensure rating accuracy. One comparison should not influence another and grades based on performance should not be inflated or deflated for any means.

3. Cumulative Productivity Metric

A cumulative productivity metric (CPM) that accounts for organizational learning and individual sustained productivity should be established. Since rankings do not account for the differences between the performances of individuals they must be adjusted to align with a normal distribution of human performance. Individual performance will have less variance around the mean and greater variance toward the extremes. Guilford (1954) explains how to do this. The number of individuals being

ranked will equal the number of objects occupying the space under a normal distribution curve. For this example $\mu = 50$ and $\sigma = 20$. A standard deviation of 20 is selected to allow 2.5 standard deviations or 98.86 percent of all values to be approximately located between 0 and 100. Each object under the normal distribution curve takes up the same amount of space. For a ranking of one through 10 each object takes up 100/10 or 10 percent. We find the centile position, P for each object by performing the calculation, $P = \frac{(R_i - 0.5)100}{n}$ where R_i = rank value and n = number of things ranked. From the normal distribution tables we can find z values that represent standard deviations from the mean for each value of P. Using the normal distribution curve mentioned above we can calculate the normalized values of the ranking. See Table 2.

Table 2. Calculation of Normalized Score for Ranks 1–10

Rank(r_i)	Rank Value(R_i)	Centile(P)	z score	Normalized(N)
	$n-r_i+1$	$(R_i-0.5)/n$		$\mu+(\sigma*z \text{ score})$
1	10	95.0	1.64	82.9
2	9	85.0	1.04	70.7
3	8	75.0	0.67	63.5
4	7	65.0	0.39	57.7
5	6	55.0	0.13	52.5
6	5	45.0	-0.13	47.5
7	4	35.0	-0.39	42.3
8	3	25.0	-0.67	36.5
9	2	15.0	-1.04	29.3
10	1	5.0	-1.64	17.1

N is now the normalized value of the centile position P of each ranking (Figure 3). An individual ranked first in the above example is 1.64 standard deviations above the mean for an N value of 82.9. This value represents the individuals' productivity relative to the other nine individuals he or she is ranked against.

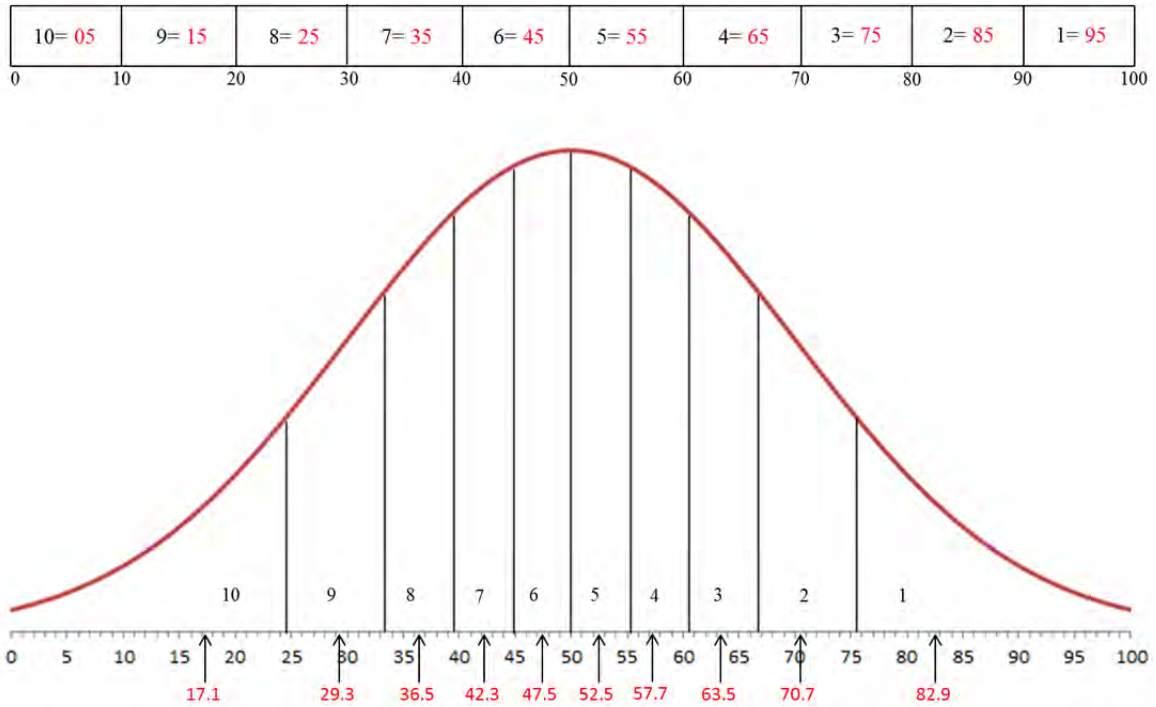


Figure 3. Normal Distribution of Centile (P)

When deriving a cumulative productivity metric the time of observation for each value of N is important. The value of N is based on the observation of the individual's performance for a specific period of time. The longer an individual is observed the more accurate the performance appraisal would be from the RS. See Table 3. CPM signals the average officer productivity over multiple observation periods.

Table 3. Cumulative Productivity Metric (CPM) Calculation

Period	Rank of 10 (ri)	N	Months (M)
1	8	36.5	9
2	5	52.5	7
3	2	70.7	5
4	1	82.9	10
			31
CPM		60.6	

B. CONCLUSION

Navy human capital is expensive to acquire, grow, incentivize, and retain. Failure to optimally signal the most productive officers will result in less effective allocation of financial resources. A performance appraisal system that outputs a CPM provides two advantages: 1) An additional mechanism to develop and adjust current financial management and manpower policies. 2) A means to measure the change in productivity as a result of enacted financial and manpower policies.

The CPM provides a signal of an individual’s cumulative productivity that can be quickly referenced and used for financial and manpower policies. Two applications of this are retention efforts and force structure realignment. Individuals that are eligible for a retention bonus like the Aviation Career Continuation Pay (ACCP) will have varying degrees of positive motivation and productivity levels. The combination of the two variables would influence how to properly incentivize an individual for retention. See Figure 4.

Motivation (Willingness)	High	No incentivize required	No incentivize required
	Low	Incentive required but not desired by the Navy	Incentive required
		Low	High
Productivity(Ability)			

Figure 4. Incentives Required to Retain Individuals Based on Motivation and Productivity

If one of the objectives of the ACCP is to retain the most skilled and productive officers then resources should be weighted to those individuals. The CPM allows for those highly productive individuals to be identified and polices written to specifically address their retention. Currently, ACCP funds are divided among all four quadrants. Establishing a CPM cutoff for ACCP eligibility would allow more funds to be available

to retain the individuals in the two highest productivity quadrants. Another variation on this “pay for performance” idea would be to offer a graduated ACCP amount based on CPM values. The more productive an individual, the greater the ACCP bonus they would receive. This would allow the same funds to be progressively distributed improving the retention of the most productive individuals at the same or less cost to the Navy.

The CPM provides a means to align the force structure with budgetary constraints. In recent years relative comparisons like rankings have become more widely used by private business to be able to identify and adjust their workforce as budgets are decreased (Olson & Davis, 2003). If financial constraints require downsizing the CPM proves a means to retain the highest level of human capital possible and ensure that past financial investments in human capital are maximized.

A fundamental principle of financial management is accountability. The CPM provides a means of accountability for current financial and manpower policies. Determining the results of an enacted policy can be measured by the change in the macro level of productivity whose measurement is facilitated by the CPM. Macro level productivity could be determined by calculating the mean CPM for the force, year group of department heads, individuals that are opting to depart the Navy vice reenlist, Operational Commanders, or some other group. The CPM allows cost benefit questions to be answered by measuring the effect of a specific program or policy on productivity. The CPM could measure the cost to retain “quality” vice “quantity.”

A PAS that outputs a CPM provides additional information for Navy leadership to make financial and manpower decisions and a means to measure the results of those decisions. The ability to identify, train, promote, and retain individuals with the greatest potential to improve human capital is possible if the PAS optimally signals productivity. Maximizing rating accuracy, using relative comparisons, and developing a CPM are needed to improve financial and manpower policies. Future Navy officer human capital and productivity levels will be determined today by the Navy’s ability to use the performance appraisal system to optimally signal productivity.

APPENDIX A. NAVY FITNESS REPORT AND COUNSELING RECORD (NAVPERs 1610/2)

1. Name (Last, First MI Suffix)				2. Grade/Rate		3. Desig		4. SSN	
5. ACT <input type="checkbox"/> FTS <input checked="" type="checkbox"/> INACT <input type="checkbox"/> A1/ADSW/265 <input type="checkbox"/>		6. UIC		7. Shp/Station			8. Promotion Status		9. Date Reported
Occasion for Report 10. Periodic <input type="checkbox"/>		11. Detachment of Individual <input type="checkbox"/>		12. Detachment of Reporting Senior <input type="checkbox"/>		13. Special <input type="checkbox"/>		Period of Report 14. From: _____ 15. To: _____	
16. Not Observed Report <input type="checkbox"/>		Type of Report 17. Regular <input type="checkbox"/>		18. Concurrent <input type="checkbox"/>		19. Ops Cdr <input type="checkbox"/>		20. Physical Readiness	
22. Reporting Senior (Last, FI MI)		23. Grade	24. Desig	25. Title		26. UIC		27. SSN	
28. Command employment and command achievements									
29. Primary/Collateral/Watchstanding duties. (Enter Primary duty abbreviation in box.) <div style="border: 1px solid black; height: 20px; width: 100%;"></div>									
For Mid-term Counseling Use. (When completing FITREP Enter 20 and 31 from counseling worksheet sgm 32.)				30. Date Counseled		31. Counselor		32. Signature of Individual Counseled	
PERFORMANCE TRAITS: 1.0 - Below standards / not progressing or UNSAT in any one standard, 2.0 - Does not yet meet all 3.0 standards, 3.0 - Meets all 3.0 standards, 4.0 - Exceeds most 3.0 standards; 5.0 - Meets overall criteria and most of the specific standards for 5.0. Standards are not all inclusive.									
PERFORMANCE TRAITS	1.0* Below Standards		2.0 Pro- gressing	3.0 Meets Standards		4.0 Above Standards	5.0 Greatly Exceeds Standards		
33. PROFESSIONAL EXPERTISE: Professional knowledge, proficiency, and qualifications. NOB <input type="checkbox"/>	- Lacks basic professional knowledge to perform effectively. - Cannot apply basic skills. - Fails to develop professionally or achieve timely qualifications.			- Has thorough professional knowledge. - Competently performs both routine and new tasks. - Steadily improves skills, achieves timely qualifications.			- Recognized expert, sought after to solve difficult problems. - Exceptionally skilled, develops and executes innovative ideas. - Achieves early/highly advanced qualifications.		
34. COMMAND OR ORGANIZATIONAL CLIMATE/EQUAL OPPORTUNITY: Professional knowledge, proficiency, and qualifications. NOB <input type="checkbox"/>	- Actions counter to Navy's retention/recruitment goals. - Uninvolved with mentoring or professional development of subordinates. - Actions counter to good order and discipline and negatively affect Command/Organizational climate. - Demonstrates exclusionary behavior. - Fails to value differences from cultural diversity.			- Positive leadership supports Navy's increased retention goals. Active in decreasing attrition. - Actions adequately encourage/support subordinates' personal/professional growth. - Demonstrates appreciation for contributions of Navy personnel. Positive influence on Command climate. - Values differences as strengths. - Fosters atmosphere of acceptance/inclusion per EO/EEO policy.			- Measurably contributes to Navy's increased retention and reduced attrition objectives. - Proactive leader/exemplary mentor. Involved in subordinates' personal development leading to professional growth/sustained commitment. - Initiates support programs for military, civilian, and families to achieve exceptional Command and Organizational climate. - The model of achievement. Develops unit cohesion by valuing differences as strengths.		
35. MILITARY BEARING/ CHARACTER: Appearance, conduct, physical fitness, adherence to Navy Core Values. NOB <input type="checkbox"/>	- Consistently unsatisfactory appearance. - Unsatisfactory demeanor or conduct. - Unable to meet one or more physical readiness standards. - Fails to live up to one or more Navy Core Values HONOR, COURAGE, COMMITMENT			- Excellent personal appearance. - Excellent demeanor or conduct. - Complies with physical readiness program. - Always lives up to Navy Core Values: HONOR, COURAGE, COMMITMENT.			- Exemplary personal appearance. - Exemplary representative of Navy. - A leader in physical readiness. - Exemplifies Navy Core Values: HONOR, COURAGE, COMMITMENT.		
36. TEAMWORK: Contributions towards team building and team results. NOB <input type="checkbox"/>	- Creates conflict, unwilling to work with others, puts self above team. - Fails to understand team goals or teamwork techniques. - Does not take direction well.			- Reinforces others' efforts, meets personal commitments to team. - Understands team goals, employs good teamwork techniques. - Accepts and offers team direction.			- Team builder, inspires cooperation and progress. - Talented mentor, focuses goals and techniques for team. - The best at accepting and offering team direction.		
37. MISSION ACCOMPLISHMENT AND INITIATIVE: Taking initiative, planning/prioritizing, achieving mission. NOB <input type="checkbox"/>	- Lacks initiative. - Unable to plan or prioritize. - Does not maintain readiness. - Fails to get the job done.			- Takes initiative to meet goals. - Plans/prioritizes effectively. - Maintains high state of readiness. - Always gets the job done.			- Develops innovative ways to accomplish mission. - Plans/prioritizes with exceptional skill and foresight. - Maintains superior readiness, even with limited resources. - Gets jobs done earlier and far better than expected.		

APPENDIX A (Cont.'d). NAVY FITNESS REPORT AND COUNSELING RECORD (NAVPERS 1610/2)

1. Name (Last, First MI Suffix)		2. Grade/Rate		3. Desig		4. SSN	
PERFORMANCE TRAITS	1.0* Below Standards	2.0 Pro- gressing	3.0 Meets Standards	4.0 Above Standards	5.0 Greatly Exceeds Standards		
38. LEADERSHIP: Organizing, motivating and developing others to accomplish goals. NOB <input type="checkbox"/>	-Neglects growth/development or welfare of subordinates. -Fails to organize, creates problems for subordinates. -Does not set or achieve goals relevant to command mission and vision. -Lacks ability to cope with or tolerate stress. -Inadequate communicator. -Tolerates hazards or unsafe practices.	<input type="checkbox"/>	- Effectively stimulates growth/development in subordinates. - Organizes successfully, implementing process improvements and efficiencies. - Sets/achieves useful, realistic goals that support command mission. - Performs well in stressful situations. - Clear, timely communicator. - Ensures safety of personnel and equipment.	<input type="checkbox"/>	- Inspiring motivator and trainer, subordinates reach highest level of growth and development. - Superb organizer, great foresight, develops process improvements and efficiencies. - Leadership achievements dramatically further command mission and vision. - Perseveres through the toughest challenges and inspires others. - Exceptional communicator. - Makes subordinates safety-conscious, maintains top safety record. - Constantly improves the personal and professional lives of others.	<input type="checkbox"/>	<input type="checkbox"/>
39. TACTICAL PERFORMANCE: (Warfare qualified officers only) Basic and tactical employment of weapons systems NOB <input type="checkbox"/>	-Has difficulty attaining qualifications expected for rank and experience. -Has difficulty in ship(s), aircraft or weapons systems employment. -Warfare skills in specialty are below standards compared to others of same rank and experience.	<input type="checkbox"/>	- Attains qualifications as required and expected. - Capably employs ship(s), aircraft, or weapons systems. Equal to others in warfare knowledge and employment. - Warfare skills in specialty equal to others of same rank and experience.	<input type="checkbox"/>	- Fully qualified at appropriate level for rank and experience. - Innovatively employs ship(s), aircraft, or weapons systems. Well above others in warfare knowledge and employment. - Warfare skills in specialty exceed others of same rank and experience.	<input type="checkbox"/>	<input type="checkbox"/>
40. I recommend screening this individual for next career milestone(s) as follows: (Maximum of two) Recommendations may be for competitive schools or duty assignments such as SCP, Dept Head, XO, OIC, CO, Major Command, War College, PG School.							
41. COMMENTS ON PERFORMANCE: *All 1.0 marks, three 2.0 marks, and 2.0 marks in Block 37 must be specifically substantiated in comments. Comments must be verifiable. Font: 10. Font must be 10 or 12 pitch (10 to 12 point) only. Use upper and lower case.							
Promotion Recommendation	NOB	Significant Problems	Progressing	Promotable	Must Promote	Early Promote	44 Reporting Senior Address
42 INDIVIDUAL							
43 SUMMARY	X						
45 Signature of Reporting Senior				46. Signature of individual evaluated. "I have seen this report, been apprised of my performance, and understand my right to make a statement."			
Date:				I intend to submit a statement <input type="checkbox"/> do not intend to submit a statement <input type="checkbox"/>			
Member Trait Average: 0.00		Summary Group Average:		Date:			
47. Typed name, grade, command, UIC, and signature of Regular Reporting Senior on Concurrent Report							
Date:							

APPENDIX B . MARINE FITNESS REPORT (NAVMC 10835)

USMC FITNESS REPORT (1610) NAVMC 10835 (Rev. 7-11) (EF) PREVIOUS EDITIONS WILL NOT BE USED FOUO - Privacy sensitive when filled in.		COMMANDANT'S GUIDANCE		DO NOT STAPLE THIS FORM				
<p>The completed fitness report is the most important information component in manpower management. It is the primary means of evaluating a Marine's performance and is the Commandant's primary tool for the selection of personnel for promotion, augmentation, resident schooling, command, and duty assignments. Therefore, the completion of this report is one of an officer's most critical responsibilities. Inherent in this duty is the commitment of each Reporting Senior and Reviewing Officer to ensure the integrity of the system by giving close attention to accurate marking and timely reporting. Every officer serves a role in the scrupulous maintenance of this evaluation system, ultimately important to both the individual and the Marine Corps. Inflationary markings only serve to dilute the actual value of each report. Reviewing Officers will not concur with inflated reports.</p>								
A. ADMINISTRATIVE INFORMATION								
1. Marine Reported On:								
a. Last Name	b. First Name	c. MI	d. SSN	e. Grade	f. DOR	g. PMOS	h. BILMOS	
2. Organization:								
a. MCC	b. RUC	c. Unit Description						
3. Occasion and Period Covered:								
a. OCC	b. From	To	c. Type	4. Duty Assignment (descriptive title):				
5. Special Case:								
a. Adverse	b. Not Observed	c. Extended	6. Marine Subject Of:		7. Recommended For Promotion:			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	a. Commendatory Material <input type="checkbox"/>	b. Derogatory Material <input type="checkbox"/>	c. Disciplinary Action <input type="checkbox"/>	a. Yes <input type="checkbox"/>	b. No <input type="checkbox"/>	c. N/A <input type="checkbox"/>
8. Special Information:								
a. QUAL	d. HT(In.)	g. Reserve Component	9. Duty Preference:					
b. PFT	e. WT	h. Status	a. Code	b. Descriptive Title				
c. CFT	f. Body Fat	i. Future Use	1st					
			2nd					
			3rd					
10. Reporting Senior:								
a. Last Name	b. Init	c. Service	d. SSN	e. Grade	f. Duty Assignment			
11. Reviewing Officer:								
a. Last Name	b. Init	c. Service	d. SSN	e. Grade	f. Duty Assignment			
B. BILLET DESCRIPTION								
C. BILLET ACCOMPLISHMENTS								

APPENDIX B (Cont'd). MARINE FITNESS REPORT (NAVMC 10835)

1. Marine Reported On:				2. Occasion and Period Covered:					
a. Last Name		b. First Name		c. MI	d. SSN	a. OCC		b. From	To
D. MISSION ACCOMPLISHMENT									
1. PERFORMANCE. Results achieved during the reporting period. How well those duties inherent to a Marine's billet, plus all additional duties, formally and informally assigned, were carried out. Reflects a Marine's aptitude, competence, and commitment to the unit's success above personal reward. Indicators are time and resource management, task prioritization, and tenacity to achieve positive ends consistently.									
ADV	Meets requirements of billet and additional duties. Aptitude, commitment, and competence meet expectations. Results maintain status quo.	Consistently produces quality results while measurably improving unit performance. Habitually makes effective use of time and resources; improves billet procedures and products. Positive impact extends beyond billet expectations.	Results far surpass expectations. Recognizes and exploits new resources; creates opportunities. Emulated; sought after as an expert with influence beyond unit. Impact significant; innovative approaches to problems produce significant gains in quality and efficiency.					N/O	
A	B	C	D	E	F	G	H		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. PROFICIENCY. Demonstrates technical knowledge and practical skill in the execution of the Marine's overall duties. Combines training, education and experience. Translates skills into actions which contribute to accomplishing tasks and missions. Imparts knowledge to others. Grade dependent.									
ADV	Competent. Possesses the requisite range of skills and knowledge commensurate with grade and experience. Understands and articulates basic functions related to mission accomplishment.	Demonstrates mastery of all required skills. Expertise, education and experience consistently enhance mission accomplishment. Innovative troubleshooter and problem solver. Effectively imparts skills to subordinates.	True expert in field. Knowledge and skills impact far beyond those of peers. Translates broad-based education and experience into forward thinking, innovative actions. Makes immeasurable impact on mission accomplishment. Peerless teacher, selflessly imparts expertise to subordinates, peers, and seniors.					N/O	
A	B	C	D	E	F	G	H		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JUSTIFICATION:									
E. INDIVIDUAL CHARACTER									
1. COURAGE. Moral or physical strength to overcome danger, fear, difficulty or anxiety. Personal acceptance of responsibility and accountability, placing conscience over competing interests regardless of consequences. Conscious, overriding decision to risk bodily harm or death to accomplish the mission or save others. The will to persevere despite uncertainty.									
ADV	Demonstrates inner strength and acceptance of responsibility commensurate with scope of duties and experience. Willing to face moral or physical challenges in pursuit of mission accomplishment.	Guided by conscience in all actions. Proven ability to overcome danger, fear, difficulty or anxiety. Exhibits bravery in the face of adversity and uncertainty. Not deterred by morally difficult situations or hazardous responsibilities.	Uncommon bravery and capacity to overcome obstacles and inspire others in the face of moral dilemma or life-threatening danger. Demonstrated under the most adverse conditions. Selfless. Always places conscience over competing interests regardless of physical or personal consequences.					N/O	
A	B	C	D	E	F	G	H		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. EFFECTIVENESS UNDER STRESS. Thinking, functioning and leading effectively under conditions of physical and/or mental pressure. Maintaining composure appropriate for the situation, while displaying steady purpose of action, enabling one to inspire others while continuing to lead under adverse conditions. Physical and emotional strength, resilience and endurance are elements.									
ADV	Exhibits discipline and stability under pressure. Judgment and effective problem-solving skills are evident.	Consistently demonstrates maturity, mental agility and willpower during periods of adversity. Provides order to chaos through the application of intuition, problem-solving skills, and leadership. Composure reassures others.	Demonstrates seldom-matched presence of mind under the most demanding circumstances. Stabilizes any situation through the resolute and timely application of direction, focus and personal presence.					N/O	
A	B	C	D	E	F	G	H		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. INITIATIVE. Action in the absence of specific direction. Seeing what needs to be done and acting without prompting. The instinct to begin a task and follow through energetically on one's own accord. Being creative, proactive and decisive. Transforming opportunity into action.									
ADV	Demonstrates willingness to take action in the absence of specific direction. Acts commensurate with grade, training and experience.	Self-motivated and action-oriented. Foresight and energy consistently transform opportunity into action. Develops and pursues creative, innovative solutions. Acts without prompting. Self-starter.	Highly motivated and proactive. Displays exceptional awareness of surroundings and environment. Uncanny ability to anticipate mission requirements and quickly formulate original, far-reaching solutions. Always takes decisive, effective action.					N/O	
A	B	C	D	E	F	G	H		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JUSTIFICATION:									

APPENDIX B (Cont'd). MARINE FITNESS REPORT (NAVMC 10835)

1. Marine Reported On:				2. Occasion and Period Covered:				
a. Last Name		b. First Name		c. MI	d. SSN	a. OCC	b. From To	
F. LEADERSHIP								
1. LEADING SUBORDINATES. The inseparable relationship between leader and led. The application of leadership principles to provide direction and motivate subordinates. Using authority, persuasion and personality to influence subordinates to accomplish assigned tasks. Sustaining motivation and morale while maximizing subordinates' performance.								
ADV	Engaged; provides instructions and directs execution. Seeks to accomplish mission in ways that sustain motivation and morale. Actions contribute to unit effectiveness.	Achieves a highly effective balance between direction and delegation. Effectively tasks subordinates and clearly delineates standards expected. Enhances performance through constructive supervision. Fosters motivation and enhances morale. Builds and sustains teams that successfully meet mission requirements. Encourages initiative and candor among subordinates.	Promotes creativity and energy among subordinates by striking the ideal balance of direction and delegation. Achieves highest levels of performance from subordinates by encouraging individual initiative. Engenders willing subordination, loyalty, and trust that allow subordinates to overcome their perceived limitations. Personal leadership fosters highest levels of motivation and morale, ensuring mission accomplishment even in the most difficult circumstances.					N/O
A	B	C	D	E	F	G	H	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. DEVELOPING SUBORDINATES. Commitment to train, educate, and challenge all Marines regardless of race, religion, ethnic background, or gender. Mentorship. Cultivating professional and personal development of subordinates. Developing team players and esprit de corps. Ability to combine teaching and coaching. Creating an atmosphere tolerant of mistakes in the course of learning.								
ADV	Maintains an environment that allows personal and professional development. Ensures subordinates participate in all mandated development programs.	Develops and institutes innovative programs, to include PME, that emphasize personal and professional development of subordinates. Challenges subordinates to exceed their perceived potential thereby enhancing unit morale and effectiveness. Creates an environment where all Marines are confident to learn through trial and error. As a mentor, prepares subordinates for increased responsibilities and duties.	Widely recognized and emulated as a teacher, coach and leader. Any Marine would desire to serve with this Marine because they know they will grow personally and professionally. Subordinate and unit performance far surpassed expected results due to MRO's mentorship and team building talents. Attitude toward subordinate development is infectious, extending beyond the unit.					N/O
A	B	C	D	E	F	G	H	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. SETTING THE EXAMPLE. The most visible facet of leadership: how well a Marine serves as a role model for all others. Personal action demonstrates the highest standards of conduct, ethical behavior, fitness, and appearance. Bearing, demeanor, and self-discipline are elements.								
ADV	Maintains Marine Corps standards for appearance, weight, and uniform wear. Sustains required level of physical fitness. Adheres to the tenets of the Marine Corps core values.	Personal conduct on and off duty reflects highest Marine Corps standards of integrity, bearing and appearance. Character is exceptional. Actively seeks self-improvement in wide-ranging areas. Dedication to duty and professional example encourage others' self-improvement efforts.	Model Marine, frequently emulated. Exemplary conduct, behavior, and actions are tone-setting. An inspiration to subordinates, peers, and seniors. Remarkable dedication to improving self and others.					N/O
A	B	C	D	E	F	G	H	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. ENSURING WELL-BEING OF SUBORDINATES. Genuine interest in the well-being of Marines. Efforts enhance subordinates' ability to concentrate/focus on unit mission accomplishment. Concern for family readiness is inherent. The importance placed on welfare of subordinates is based on the belief that Marines take care of their own.								
ADV	Deals confidently with issues pertinent to subordinate welfare and recognizes suitable courses of action that support subordinates' well-being. Applies available resources, allowing subordinates to effectively concentrate on the mission.	Instills and/or reinforces a sense of responsibility among junior Marines for themselves and their subordinates. Actively fosters the development of and uses support systems for subordinates which improve their ability to contribute to unit mission accomplishment. Efforts to enhance subordinate welfare improve the unit's ability to accomplish its mission.	Noticeably enhances subordinates well-being, resulting in a measurable increase in unit effectiveness. Maximizes unit and base resources to provide subordinates with the best support available. Proactive approach serves to energize unit members to "take care of their own," thereby correcting potential problems before they can hinder subordinates' effectiveness. Widely recognized for techniques and policies that produce results and build morale. Builds strong family atmosphere. Puts motto <i>Mission first, Marines always</i> , into action.					N/O
A	B	C	D	E	F	G	H	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. COMMUNICATION SKILLS. The efficient transmission and receipt of thoughts and ideas that enable and enhance leadership. Equal importance given to listening, speaking, writing, and critical reading skills. Interactive, allowing one to perceive problems and situations, provide concise guidance, and express complex ideas in a form easily understood by everyone. Allows subordinates to ask questions, raise issues and concerns and venture opinions. Contributes to a leader's ability to motivate as well as counsel.								
ADV	Skilled in receiving and conveying information. Communicates effectively in performance of duties.	Clearly articulates thoughts and ideas, verbally and in writing. Communication in all forms is accurate, intelligent, concise, and timely. Communicates with clarity and verve, ensuring understanding of intent or purpose. Encourages and considers the contributions of others.	Highly developed facility in verbal communication. Adapt in composing written documents of the highest quality. Combines presence and verbal skills which engender confidence and achieve understanding irrespective of the setting, situation, or size of the group addressed. Displays an intuitive sense of when and how to listen.					N/O
A	B	C	D	E	F	G	H	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
JUSTIFICATION:								

APPENDIX B (Cont'd). MARINE FITNESS REPORT (NAVMC 10835)

1. Marine Reported On:				2. Occasion and Period Covered:			
a. Last Name		b. First Name		c. MI	d. SSN	a. OCC	b. From To
G. INTELLECT AND WISDOM							
<p>1. PROFESSIONAL MILITARY EDUCATION (PME). Commitment to intellectual growth in ways beneficial to the Marine Corps. Increases the breadth and depth of warfighting and leadership aptitude. Resources include resident schools; professional qualifications and certification processes; nonresident and other extension courses; civilian educational institution coursework; a personal reading program that includes (but is not limited to) selections from the Commandant's Reading List; participation in discussion groups and military societies; and involvement in learning through new technologies.</p>							
ADV	Maintains currency in required military skills and related developments. Has completed or is enrolled in appropriate level of PME for grade and level of experience. Recognizes and understands new and creative approaches to service issues. Remains abreast of contemporary concepts and issues.	PME outlook extends beyond MOS and required education. Develops and follows a comprehensive personal program which includes broadened professional reading and/or academic course work; advances new concepts and ideas.	Dedicated to life-long learning. As a result of active and continuous efforts, widely recognized as an intellectual leader in professionally related topics. Makes time for study and takes advantage of all resources and programs. Introduces new and creative approaches to services issues. Engages in a broad spectrum of forums and dialogues.	N/O			
A	B	C	D	E	F	G	H
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>2. DECISION MAKING ABILITY. Viable and timely problem solution. Contributing elements are judgment and decisiveness. Decisions reflect the balance between an optimal solution and a satisfactory, workable solution that generates tempo. Decisions are made within the context of the commander's established intent and the goal of mission accomplishment. Anticipation, mental agility, intuition, and success are inherent.</p>							
ADV	Makes sound decisions leading to mission accomplishment. Actively collects and evaluates information and weighs alternatives to achieve timely results. Confidently approaches problems; accepts responsibility for outcomes.	Demonstrates mental agility; effectively prioritizes and solves multiple complex problems. Analytical abilities enhanced by experience, education, and intuition. Anticipates problems and implements viable, long-term solutions. Steadfast, willing to make difficult decisions.	Widely recognized and sought after to resolve the most critical, complex problems. Seldom matched analytical and intuitive abilities; accurately foresees unexpected problems and arrives at well-timed decisions despite fog and friction. Completely confident approach to all problems. Masterfully strikes a balance between the desire for perfect knowledge and greater tempo.	N/O			
A	B	C	D	E	F	G	H
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>3. JUDGMENT. The discretionary aspect of decision making. Draws on core values, knowledge, and personal experience to make wise choices. Comprehends the consequences of contemplated courses of action.</p>							
ADV	Majority of judgments are measured, circumspect, relevant and correct.	Decisions are consistent and uniformly correct, tempered by consideration of their consequences. Able to identify, isolate and assess relevant factors in the decision making process. Opinions sought by others. Subordinates personal interest in favor of impartiality.	Decisions reflect exceptional insight and wisdom beyond this Marine's experience. Counsel sought by all; often an arbiter. Consistent, superior judgment inspires the confidence of seniors.	N/O			
A	B	C	D	E	F	G	H
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JUSTIFICATION:							
H. FULFILLMENT OF EVALUATION RESPONSIBILITIES							
<p>1. EVALUATIONS. The extent to which this officer serving as a reporting official conducted, or required others to conduct, accurate, uninflated, and timely evaluations.</p>							
ADV	Occasionally submitted untimely or administratively incorrect evaluations. As RS, submitted one or more reports that contained inflated markings. As RO, concurred with one or more reports from subordinates that were returned by HQMC for inflated marking.	Prepared uninflated evaluations which were consistently submitted on time. Evaluations accurately described performance and character. Evaluations contained no inflated markings. No reports returned by RO or HQMC for inflated marking. No subordinates' reports returned by HQMC for inflated marking. Few, if any, reports were returned by RO or HQMC for administrative errors. Section Cs were void of superlatives. Justifications were specific, verifiable, substantive, and where possible, quantifiable and supported the markings given.	No reports submitted late. No reports returned by either RO or HQMC for administrative correction or inflated markings. No subordinates' reports returned by HQMC for administrative correction or inflated markings. Returned procedurally or administratively incorrect reports to subordinates for correction. As RO nonconcurred with all inflated reports.	N/O			
A	B	C	D	E	F	G	H
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JUSTIFICATION:							

APPENDIX B (Cont'd). MARINE FITNESS REPORT (NAVMC 10835)

1. Marine Reported On:				2. Occasion and Period Covered:		
a. Last Name	b. First Name	c. MI	d. SSN	a. OCC	b. From	To
I. DIRECTED AND ADDITIONAL COMMENTS						
J. CERTIFICATION						
1. I CERTIFY that to the best of my knowledge and belief all entries made hereon are true and without prejudice or partiality and that I have provided a signed copy of this report to the Marine Reported on.				_____		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
				(Signature of Reporting Senior)		(Date in YYYYMMDD format)
2. I ACKNOWLEDGE the adverse nature of this report and				_____		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="checkbox"/> I have no statement to make <input type="checkbox"/> I have attached a statement				(Signature of Marine Reported On)		(Date in YYYYMMDD format)
K. REVIEWING OFFICER COMMENTS						
1. OBSERVATION: <input type="checkbox"/> Sufficient <input type="checkbox"/> Insufficient			2. EVALUATION: <input type="checkbox"/> Concur <input type="checkbox"/> Do Not Concur			
3. COMPARATIVE ASSESSMENT: Provide a comparative assessment of potential by placing an "X" in the appropriate box. In marking the comparison, consider all Marines of this grade whose professional abilities are known to you personally.		DESCRIPTION		COMPARATIVE ASSESSMENT		
		THE EMINENTLY QUALIFIED MARINE		<input type="checkbox"/>		
		ONE OF THE FEW		<input type="checkbox"/>		
		EXCEPTIONALLY QUALIFIED MARINES		<input type="checkbox"/>		
		ONE OF THE MANY HIGHLY QUALIFIED		<input type="checkbox"/>		
		PROFESSIONALS WHO FORM THE MAJORITY OF THIS GRADE		<input type="checkbox"/>		
		A QUALIFIED MARINE		<input type="checkbox"/>		
		UNSATISFACTORY		<input type="checkbox"/>		
4. REVIEWING OFFICER COMMENTS: Amplify your comparative assessment mark; evaluate potential for continued professional development to include: promotion, command, assignment, resident PME, and retention; and put Reporting Senior marks and comments in perspective.						
5. I CERTIFY that to the best of my knowledge and belief all entries made hereon are true and without prejudice or partiality.				_____		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
				(Signature of Reviewing Officer)		(Date in YYYYMMDD format)
6. I ACKNOWLEDGE the adverse nature of this report and				_____		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="checkbox"/> I have no statement to make <input type="checkbox"/> I have attached a statement				(Signature of Marine Reported On)		(Date in YYYYMMDD format)
L. ADDENDUM PAGE						
ADDENDUM PAGE ATTACHED: <input type="checkbox"/> YES						

APPENDIX B (Cont'd). MARINE FITNESS REPORT (NAVMC 10835)

USMC FITNESS REPORT					DO NOT STAPLE THIS FORM		
NAVMC 11297 (Rev. 7-11) (EF) FOUO - Privacy sensitive when filled in.					ADDENDUM PAGE		
A. PURPOSE							
1. Marine Reported On:					2. Occasion and Period Covered:		
a. Last Name	b. First Name	c. M.I	d. SSN	e. Grade	a. OCC	b. From	To
3. Purpose:							
a. Continuation of Comments Justification	Section I RO	b. Accelerated Promotion Justification	c. Adverse Report MRO Statement 3rd Officer Sighter		d. Admin Review	e. Supplemental Material	f. HQMC Use
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. TEXT							
C. SUBMITTED BY							
1. a. Last Name	b. First Name	c. MI	2. SSN	3. Service	4. Grade		
_____ Signature					□□□□ □□ □□ (Date in YYYYMMDD format)		
D. GENERAL/SENIOR OFFICER ADVERSE REPORT SIGHTING							
1. a. Last Name	b. First Name	c. MI	2. SSN	3. Service	4. Grade		
5. Title					□□□□ □□ □□ (Date in YYYYMMDD format)		
_____ Signature							

APPENDIX C. NAVY MAXIMUM LIMITS ON “EARLY PROMOTE” AND “MUST PROMOTE” RECOMMENDATIONS (BUPERINST 1610.10C)

Summary Group Size	Early Promote	Must Promote (May be increased by one for each Early Promote recommendation not used)				Promotable
	E1-E9 LDO O1/O2 W2-W5 O3-O6	E1-E5 (see note) W2 LDO O1-O2 O3	E5-E6 (see note)	E7-E9 W3-W5 O4	O5-O6	O1-O2 (ALL EXCEPT LDO)
1	1	No Limit				No Limit
2	1		1	1	1	
3	1		1	1	1	
4	1		2	1	1	
5	1		2	2	1	
6	2		2	1	1	
7	2		3	2	1	
8	2		3	2	2	
9	2		4	3	2	
10	2		4	3	2	
11	3		4	3	2	
12	3		5	3	2	
13	3		5	4	3	
14	3		6	4	3	
15	3		6	5	3	
16	4		6	4	3	
17	4		7	5	3	
18	4		7	5	4	
19	4		8	6	4	
20	4		8	6	4	
21	5		8	6	4	
22	5		9	6	4	
23	5		9	7	5	
24	5		10	7	5	
25	5		10	8	5	
26	6		10	7	5	
27	6		11	8	5	
28	6		11	8	6	
29	6		12	9	6	
30	6		12	9	6	

Notes:

1. All summary groups of two can receive one Early Promote and Must Promote.
2. For E7-E9, W3/W4/W5, and O4, the Must Promote maximum declines by 1 for groups of 6, 16, 26, etc., due to arithmetical transfer of a quota to the Early Promote column. Total Early Promote/Must Promote quotas remain at 50 percent.
3. 60 percent combined early and must promote upper limits will become effective 15 March 2011 for E5s.

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APPENDIX D. MARINE MASTER BRIEF SHEET (MCO P1610.7F)

ADMINISTRATIVE SUMMARY											REPORTING SENIOR MARKINGS											REVIEWING OFFICER MARKINGS			
Grade	DC	From	To	Months	Billot Description	Reporting Senior	Promote	Repts	Per	Frs	Co	LT	Js	Us	Se	Us	Co	NS	Sec	Jud	Ind	Reviewing Officer	RO marks - same grade at processing		
BMOS	Type			Co	Ab	Command		13 of 16	Rpt Avg	RS Avg	Rpt High	Rpt at High	RY at Proc	Cum RY	Clear	Concur	RO marks - same grade cumulative								
Capt	OC	19960801		9	Company Commander	LtCol B	Yes	13 of 16	4.57	3.52	4.57	1	100.00	100.00	Col Y	Yes	81	82	83	84	25	16	87	88	
		19960803			1st Battalion 2d Marines										Staff		81	82	83	84	23	116	37	88	
Maj	AN	19960804		3	Operations Officer	LtCol B	Yes	4 of 7	4.36	4.13	4.50	1	98.11	98.11	Col R	Yes	81	82	83	24	25	26	87	88	
		19960801			1st Battalion 2d Marines										Staff		81	82	83	74	73	56	87	88	
Maj	CH	19960801		6	Operations Officer	LtCol B	Yes	7 of 7	4.50	4.13	4.50	2	100.00	100.00	Col A	Yes	81	82	83	34	25	16	87	88	
		20001119			1st Battalion 2d Marines										Staff		51	82	83	44	17	126	77	88	
Maj	TR	20001118		3	BN Executive Officer	LtCol S	Yes	6 of 14	4.93	4.46	4.93	1	100.00	100.00	Col A	Yes	81	82	83	34	25	26	87	88	
		20000414			1st Battalion 2d Marines										Staff		51	82	83	44	17	126	77	88	

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**APPENDIX E. RATING INSTRUMENT WORD AND
TOPIC SEARCH CRITERIA**

	Word	USN		USMC	
		Total	Relevant	Total	Relevant
Accuracy					
Emphasis					
	accuracy	0	0	16	7
	accurate (in-, -ly)	10	2	56	51
	bias (un-, -ed, -es)	4	2	1	1
	evaluate (-d)	31	2	28	15
	evaluating	3	1	8	7
	fair (ly, ness)	9	2	9	8
	inflate (un-, -d)	0	0	50	36
	inflation (ary)	0	0	11	10
	inflating	0	0	1	1
	verifiable	2	2	3	3
	verified	0	0	1	0
	verify	5	0	1	0
Rater Attitude					
	attitude	2	0	2	0
	bias (un-, -ed, -es)	4	2	1	1
	courage	4	0	19	4
	evaluate (d)	26	0	33	11
	evaluating	5	0	4	4
	fair (ly, ness)	9	2	9	8
	influence (d)	3	0	5	0
	influencing	1	0	0	0
	lever (age, aging)	0	0	1	1
	manpower	3	0	21	4
	motivate (d)	3	3*	4	0
	motivation	0	0	6	0
	personnel	118	0	38	12
	posture	0	0	0	0
	promote (d)	71	0	11	2
	promotion	148	5	74	56
	select (ion)	82	3	33	17
	tool	3	0	20	7
	workforce	10	0	0	0

	Word	USN		USMC	
		Total	Relevant	Total	Relevant
Rater Training					
	educate	0	0	4	2
	education	11	0	37	6
	learn (s, ing)	1	0	8	0
	train (ed, ing)	84	0	64	0
Fairness					
	bias (un-, -ed, -es)	4	2	1	1
	discriminate (d)	0	0	2	2
	fair (un-, -ly, -ness)	9	2	11	10
	honest (dis-, -ly)	0	0	2	1
	just (un-, -ify, -ice, -ified, -ifiable)	25	13	5	3
	thorough (ly)	0	0	6	2
Learning					
	learn (-ing, -ed)	1	0	7	0
	determine	15	0	23	0
	gain	9	0	4	0
	get	2	0	8	0
	grasp	2	0	0	0

LIST OF REFERENCES

- Altonji, J. G., & Pierret, C. R. (2001). Employer learning and statistical discrimination. *The Quarterly Journal of Economics*, *116*(1), 313–350. Retrieved from <http://www.jstor.org/stable/2696451>
- Baker, G., Gibbons, R., & Murphy, K. J. (1994). Subjective measures in optimal incentives contracts. *The Quarterly Journal of Economics*, *109*, 1125–1156. Retrieved from <http://www.jstor.org/stable/2118358>
- Banner, D. K., & Cook, R. A., (1984). Ethical dilemmas in performance appraisal. *Journal of Business Ethics*, *3*, 327–333. Retrieved from <http://www.jstor.org/stable/25071460>
- Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). Chicago, IL: The University of Chicago Press.
- Becker, B., & Gerhart, B. (1996). The impact of human resource management on organizational performance: progress and prospects. *Academy of Management Journal*, *39*(4), 779–801.
- Bernardin, H. J., & Beatty, R. W. (1984). *Performance appraisal*. Boston, MA: Kent Publishing.
- Borjas, G. J. (2010). *Labor economics* (5th ed.). New York, NY: McGraw-Hill Irwin.
- Borman, W.C. (1991). Job behavior, performance, and effectiveness. In M.D. Dunnette & L.M. Hough, *Handbook of industrial an organizational psychology*(2nd ed.). 2, 271–326, Palo Alto, CA: Consulting Psychologist Press
- Cascio, W.F. (1991). *Costing human resources: the financial impact of behavior in organizations* (3rd ed.). Boston, MA: PWS-Kent
- Cascio, W.F. (1998). *Applied psychology in human resource management* (5th ed.). Upper Saddle River, NJ: Prentice Hall.
- Chan, W. (1996). External recruitment versus internal promotion. *Journal of Labor Economics*, *14*(4), 555–570. Retrieved from <http://www.jstor.org/stable/2535439>
- Cleveland, J. N., Murphy, K. R., & Williams, R. E. (1989). Multiple uses of performance appraisal: Prevalence and correlates. *Journal of Applied Psychology*, *74*, 130–135. Retrieved from <http://www.tamu.edu/faculty/payne/PA/Cleveland%20et%20al.%201989.pdf>

- Cohen, D., & Soto, M. (2007). Growth and human capital: good data, good results. *Journal of Economic Growth*, *12*(1), 51–76. doi:10.1007/s10887-007-9011-5
- Department of the Navy. (2010, November 19). *Performance evaluation systems* (Marine Corps Order P1610.7F W/CH2). Washington, DC.
- Department of the Navy. (2011, April 20). Navy performance evaluation system (BUPERS Instruction 1610.10C W/CH2). Arlington, VA.
- De Varo, J. (2006). Internal promotion competitions in firms. *The RAND Journal of Economics*, *37*, 521–542. Retrieved from <http://www.jstor.org/stable/25046258>
- Doeringer, P. B., & Piore, M. J. (1985). *Internal labor markets and manpower analysis*. Armonk, NY: M. E. Sharpe.
- Dye, R. A. (1984). The trouble with tournaments. *Economic Inquiry*, *22*(1), 147–149.
- Ehrenberg, R. G., & Bognanno, M. L. (1990). Do tournaments have incentive effects? *Journal of Political Economy*, *98*(6), 1307–1324. Retrieved from <http://digitalcommons.ilr.cornell.edu/cgi/>
- Farber, H. S., & Gibbons, R. (1996). Learning and wage dynamics. *The Quarterly Journal of Economics*, *CXI*, 1007–1047. Retrieved from <http://qje.oxfordjournals.org/content/111/4/1007.full.pdf>
- Fitz-Enz, J. (2000). *The ROI of human capital: Measuring the economic value of employee performance*. New York: Amacom.
- Flamholtz, E.G. (1985). *Human resource accounting* (2nd ed.). San Francisco, CA: Jossey-Bass
- Gerhart, R.A., & Milkovich, G.T. (1992). Employee compensation: research and practice. In M.D. Dunnette & L.M. Hough, *Handbook of industrial an organizational psychology*. 3, 481-569, Palo Alto, CA: Consulting Psychologist Press
- Green, J. R., & Stokey, N. L. (1983). A comparison of tournaments and contracts. *Journal of Political Economy*, *91*(3), 349–364. doi:10.1086/261153
- Grote, D. (2005). *Forced ranking*. Boston, MA: Harvard Business School Press.
- Guilford, J.P. (1954). *Psychometric methods* (2nd ed.). New York, NY: McGraw-Hill.
- Higgins, J. (2014). Bringing HR and finance together with analytics. *Society for Human Resource Management-HR Magazine*. 59(11). Retrieved from <http://www.shrm.org/publications/hrmagazine/editorialcontent/2014/1114/pages/1114-hr-finance-analytics.aspx>

- Huselid, M.A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *The Academy of Management Journal*, 38(3), 635–672. Retrieved from <http://www.jstor.org/stable/256741>
- Jovanovic, B. (1979). Firm-specific capital and turnover. *Journal of Political Economy*, 87(6), 1246–1260. Retrieved from <http://www.jstor.org/stable/1833331>
- Landy, F. J., & Farr, J. L. (1980). Performance Rating. *Psychological Bulletin*, 87(1), 72–107. Retrieved from http://www.corwin.com/upm-data/22609_Vol_1_1.pdf
- Landy, F. J., Farr, J. L., & Jacobs, R. R. (1982). The bottom line in performance evaluation. *Public Productivity Review*, 6, 78–92. Retrieved from <http://www.jstor.org/stable/3380403>
- Landy, F. J., & Farr, J. L. (1983). *The measurement of work performance: Methods, theory, and applications*. San Diego, CA: Academic Press.
- Latham, G. P., & Wexley, K. N. (1994). *Increasing productivity through performance appraisal* (2nd ed.). Reading, MA: Addison-Wesley.
- Lazear, E. P., & Rosen, S. (1981). Rank-order tournaments as optimum contracts. *The Journal of Political Economy*, 89(5), 841–864. Retrieved from <http://www.jstor.org/stable/1830810>
- Lazear, E. P. (1989). Pay equality and industrial politics. *Journal of Political Economy*, 97(3), 561–580. Retrieved from <http://www.jstor.org/stable/1830455>
- Lazear, E. P. (1998). *Personnel economics* (3rd ed.). Cambridge, MA: Massachusetts Institute of Technology.
- Lazear, E. P., & Oyer, P. (2007, October). *Personnel Economics* (National Bureau of Economics Research Working Paper 13480). Retrieved National Bureau of Economics Research website: <http://www.nber.org/papers/w13480>
- Longenecker, C. O. (1989). Truth or consequences: Politics and performance appraisals. *Business Horizons*, 32(6), 76–82. doi:10.1016/0007-6813(89)90043-8
- Longenecker, C. O., Liverpool, P. R., & Wilson, K. Y. (1988). An assessment of manager/subordinate perceptions of performance appraisal effectiveness. *Journal of Business and Psychology*, 2(4), 311–320. Retrieved from <http://www.jstor.org/stable/25092153>
- Longenecker, C. O., & Ludwig, D. (1990). Ethical dilemmas in performance appraisal revisited. *Journal of Business Ethics*, 9(12), 961–969. Retrieved from <http://www.jstor.org/stable/25072119>

- Longenecker, C. O., Sims, H. P., & Gioia, D. A. (1987). Behind the mask: The politics of employee appraisal. *The Academy of Management Executive*, 1(3), 183–193. Retrieved from <http://www.jstor.org/stable/4164751>
- Lucas, R., (1998). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42.
- Lucia, A. D., & Lepsinger, R. (1999). *The art and science of competency models: Pinpointing critical success factors in organizations*. San Francisco, CA: Jossey-Bass Pfeiffer.
- MacLeod, W. B. (2003). Optimal contracting with subjective evaluation. *The American Economic Review*, 93(1), 216–240. Retrieved from <http://www.jstor.org/stable/3132169>
- Mankiw, G., Romer, D., & Weil, D. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107(2), 402–437. doi:10.2307/2118477
- Murphy, K. R. (2008). Explaining the weak relationship between job performance and ratings of job performance. *Industrial and Organizational Psychology*, 1, 148–160.
- Nalebuff, B. J., & Stiglitz, J. E. (1983). Prizes and incentives towards a general theory of compensation and competition. *Bell Journal of Economy*, 14(1), 21–43. Retrieved from <http://www.jstor.org/stable/3003535>
- Navy Financial Management and Comptroller. (2014, November 10). *FY 2015 President's Budget*. Retrieved from <http://www.finance.hq.navy.mil/fmc/>
- Olson, C. A., & Davis, G. M. (2003, March 1). March 2003: Pros and cons of forced ranking and other relative performance-ranking systems. Society for Human Resource Management website http://www.shrm.org/LegalIssues/LegalReport/Pages/CMS_003991.aspx
- Prendergast, C. (1999). The provision of incentives in firms. *Journal of Economic Literature*, 37(1), 7–63. Retrieved from <http://www.jstor.org/stable/2564725>
- Quinn, J. B., Anderson, P., & Finkelstein, S. (1998). Managing professional intellect: Making the most of the best. *Harvard Business Review*, 74, 71–80.
- Rosen, S. (1992). The military as an internal labor market: Some allocation, productivity, and incentive problems. *Social Science Quarterly*, 73(2), 227–237.
- Saratoga Institute, (1994). *1993 human resource effectiveness report*. Saratoga, CA: Saratoga Institute.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1–17. Retrieved from <http://www.jstor.org/stable/1818907>

Simons, R. (2000). *Performance measurement and control systems for implementing strategy*. Upper Saddle River, NJ: Prentice-Hall, Inc.

Youndt, S. A., Snell, A. S., Dean, J. W., & Lepak, D. P. (1996). Human resource management, manufacturing strategy, and firm performance. *The Academy of Management Journal*, 39(4), 836–866. Retrieved from <http://www.jstor.org/stable/256714>

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