

# APPENDIX B

## Review and Comments on Job Evaluation Factors

by

James R. Beatty and Jerry T. Edge

January 6, 2009

### Introduction

Before discussing the recommendations and comments regarding the job evaluation factors, the specific job evaluation methodology, and the changes made by the Job Classification Subcommittee, we thought a short review of job evaluation would be helpful to ensure that we are all viewing this process in the same light.

### Job Evaluation

“Job Evaluation is the process of systematically determining the relative worth of jobs to create a job structure for the organization. The evaluation is based on a combination of job content, skills required, value to the organization, organization culture, and the external market.” (Milkovich & Newman, 2008, p. 114)

In simple terms, it is a process or technique that strives to provide a systematic, rational, and consistent approach to defining the relative worth of jobs within an organization. Job evaluation is a system for analyzing and comparing different jobs and placing them in rank order according to the overall demands of each one. It is not concerned with the volume of work, or the person doing it, or with determining pay. It is used to establish a job-worth hierarchy based on the organization’s philosophy or value system and provides the basis for an equitable and defensible pay structure, particularly in determining equal pay for equal value.

Job evaluation is a relative judgment and the definitions used to make this judgment are not absolute. Factor and degree definitions are general in nature because they cover an adverse range of job content. Words such as “coordinate,” “direct,” “considerable,” “integrate” and “occasionally” take meaning from benchmark evaluations, not from a dictionary.

Over the past thirty years, the point factor job evaluation system, which was once the primary evaluation system in use, has declined in use; and market pricing has increased in use. Market pricing is the process of analyzing salary survey data to establish the external worth of jobs as represented by their dollar value in the labor market. To quote *Job Evaluation: Methods to the Process* (WorldatWork, 2006, p. 11): “Currently one of the most common methods of determining relative job worth within an organization is to exclusively use market survey information (external).”

In summary, a job evaluation that leads to a job worth hierarchy is one of the key components of a base pay structure design. The job worth hierarchy indicates the perceived value of jobs in relation to each other within an organization. It forms the basis for grouping jobs of similar value together (WorldatWork, 2006, p. 11).

The Fair Labor Standards Act was enacted as a component of President Franklin D. Roosevelt's New Deal in 1938. The FLSA had three primary goals: a) to ensure fair and equitable wages for the services performed by employees; b) to discourage long workweeks by requiring that employers pay at a higher rate for each hour worked over 40 per week; and c) to limit the working age, hours, and job duties of children. In addition, the FLSA granted employees the right to join a labor organization for the purpose of bargaining collectively through representatives of their own choosing, and the employer must work in conjunction with the union. In 1963, the Equal Pay Act of 1938 was amended to prohibit pay differentials on jobs that are substantially equal in regard to skill, effort, responsibility, and working conditions. However, bona fide factors such as seniority, merit, production-based systems and other job factors are considered exceptions. As a result of the federal and other guidelines and subsequent court cases, most job evaluation systems today utilize a number of compensable factors but group them under the above mentioned four factors. That is, "the level of work refers to the skill required for the job, any mental or physical effort needed, levels of responsibility/accountability and various working conditions (basically the generic factor groups identified in the Equal Pay Act of 1963)." (WorldatWork, 2006, p. 19)

With this basic description of job evaluation in mind, the following sections will address issues and areas of concern, if any, for each factor in the Job Evaluation Plan of the Higher Education System of West Virginia. Subsequent to the discussions regarding each of the individual factors, summary conclusions and recommendations will be addressed

### **Review of Job Evaluation Factors**

#### **Factor I: Knowledge**

A number of minor changes have been made to Factor 1 by the Classification Sub-Committee in order to expand the definitions to better fit government terminology (e.g., regulatory agency, certification, or license). Also, clarifying words have been added to degree definitions by the Sub-Committee. There were no jobs evaluated at degree level 1. Therefore, the Committee deleted degree 1 and then moved the remaining degree numbers and points downward (e.g., previous degree 2 becomes degree 1; previous degree 3 becomes degree 2; etc.). As a result there are now seven (7) degrees instead of the original eight (8).

The addition of half-points for licensure or certification requirements makes this factor more complex, as it now has 14 degrees instead of the original 8. While it is difficult to measure 8 levels of distinct knowledge, adding an additional six makes the evaluation process even more complex and difficult. The addition of a licensure or certification is not enough to make a distinct difference. For example, if a particular certification or license is required by law or by government to hold that job, without that certification or license the potential employee is not eligible for that job. Job evaluation is a measure of the knowledge necessary to perform the job, however acquired.

#### **Factor 2: Experience**

## Changed definitions

Degrees	Old	New
1	0-6 months	<12 months
2	6-12 Months	1 Year
3	1-2 Years	2 Years
4	2-3 Years	3 Years
5	3-4 Years	4 Years
6	4-6 Years	5-6 Years
7	6-8 Years	7-8 Years
8	8+ Years	>8 Years

This change can potentially lower the valuation position, thus lowering the total point value. For example, the old format required 3 to 4 years experience for the associate degree. Now the criteria are more specific. If it is 3 years, then the degree will decrease to degree 4 instead of degree 5. It is difficult to break the valuation down that precisely.

### **Factor 3: Complexity & Problem Solving**

As with Factor 1, half-points have been added to Factor 3. As a result, some jobs have moved from one grade to another. For example, Records Assistant I moved from grade 6 to grade 7 by adding an additional 43 points, based on the half-point change. Once again, a job evaluation system does not measure job content with the same precision that a yard stick will measure height or a scale measures weight. While some of the degrees within a job evaluation system may be precise the total job evaluation system is a relative ranking measurement (perhaps only ordinal) and not a precise measurement system, such as an interval or ratio scale.

Further, including a part of one degree as an “occasional” part of the next degree, for example, should not change it from the first degree to halfway between the two. Many, if not most, jobs have the requirement to “occasionally” handle problems or situations that are out of the normal range of duties. “Occasionally” is not easily defined or quantified; therefore, it is not easy to measure consistently.

### **Factor 4: Freedom of Action**

The comments In Factor 3 above, relating to half-points and the use of the words “on occasion” or “occasionally,” also apply to Factor 4.

### **Factor 5: Scope and Effect**

Factor 5 consists of two components: The Impact of Actions and the Nature of Actions. With regard to the Impact of Actions, the changes made by the Committee seem to be mostly cosmetic. Therefore, we do not perceive any cause for concern. The changes to Impact of Actions degree definitions, including the removal of budget numbers for all except degree 7 (which went from \$50M in one school and over \$200M in more than one school or division of a doctoral-level institution, to University Centers with budgets of over \$100M) does not appear to make a significant change. The terminology seems to have been changed to fit the school terminology.

With regard to Nature of Action(s), it appears that no changes were made to this sub factor by the Committee.

### **Factor 6: Breadth of Responsibility**

The Committee's changes to Factor 6 are minor. The degree definitions were apparently modified to provide clarity and make the statements less wordy.

### **Factor 7: Intrasystems Contacts**

The Committee's changes to Factor 7 appear to be cosmetic in nature and do not appear to have a significant impact on the evaluation. The changes serve to provide more clarity than in the previous versions.

### **Factor 8: External Contacts**

The Committee's changes in Factor 8 also appear to be cosmetic in nature and do not appear to have a significant impact on the evaluation. The changes again have provided more clarity, an important consideration when working with job evaluations.

### **Factor 9: Direct Supervision Exercised**

As with Factor 7 and 8, the changes in Factor 9 seem to be mostly cosmetic in nature and appear to have no significant effect on the evaluations of a job. The number of direct reports appears to have been changed to reflect half-time and part-time employees by changing to full-time equivalent numbers.

### **Factor 10: Indirect Supervision Exercised**

As in Factor 7 and Factor 8, the changes in Factor 10 seem to be mostly cosmetic in nature and appear to have no significant effect on the evaluations of a job. The number of direct reports appears to have been changed to reflect half-time and part-time employees by changing to full-time equivalent numbers.

## **Factor 11: Health, Safety and Physical Considerations**

Factor 11 has now combined components of two previous factors (Original Factor 11: Physical Coordination; and original Factor 12: Working Conditions and Physical Demands). This resulted in one broader factor entitled Health Safety and Physical Considerations. Thus, the two sub-factors under original Factor 12 (Working conditions and Demands) and the one sub-factor under original Factor 11 (Physical Coordination) are now under Factor 11.

With regard to Physical Coordination, there were very few and only minor changes. Those changes appear to make no significant impact.

With regard to Working Conditions, there were some minor changes, including amending the definition and pulling out physical demands (which is now included under Physical, Mental, and Emotional Demands). In the newly created Factor 11, the Physical Demands dimension is now changed to “Physical, Mental, and Emotional Demands.” The degree levels have not been changed and thus do not appear to cause any major effect on the evaluation process. The degree definitions now include the emotional and mental demands.

### **Comments, Conclusions, and Recommendations Regarding the Job Evaluation Factors**

After a thorough and extensive review of the job evaluation methodology and the changes made by the Job Evaluation Committee, we offer the following comments, conclusions, and recommendations.

1. Most of the changes are minor in nature, such as clarifying terminology and the inclusion of part-time jobs by the use of full time equivalent employees under Direct Supervision.
  2. The addition of half-points is a concern, as it changes the original intent of the evaluation system.
    - Half-points are included in the evaluation for five of the factors: 1) Knowledge, 2) Experience, 3) Complexity and Problem Solving, 4) Freedom of Action, and 9) Direct Supervision Exercised.
    - The half-point for experience on the job of “supervisor of motor pool” may be an error, as that is the only job with half-points on experience.
    - There are just over 400 jobs with half-points in the evaluation.
- ✓ If we assume that these jobs would have been evaluated at the degree below the half point, (2 instead of 2.5), then:
- There are 175 jobs that have no grade change because of the half-point changes
  - There are eight (8) jobs that have been increased by two grades
  - There are 231 jobs that have been moved up by one grade.

- There are 686 jobs listed in the PIQ Summary tab of the spreadsheet we received. This means that 272 jobs do not have half-points.

If these jobs have not been reevaluated since the half-point system was introduced, they will need to be reevaluated in order to prevent a disparate impact on those employees who occupy those jobs. Disparate impact indicates that there is an unintentional disparity between the proportion of a protected group, or in this case those holding jobs that have not been evaluated with half-points and those that have.

While we are not in favor of half-points in a job evaluation system, there are no hard and fast rules about the design of a job evaluation system, with the exception that the compensable factors have to be related to job content. Total points are simply the expression of the relativity of pay in the salary market. There are no value judgments in job evaluation plan design. Factor weights and points are calculated to capture the policy implicit in the salary market. There are no absolute principles of point progression within a degree, nor are there absolute rules about the proportional weights across compensable factors. However, half-points will tend to dilute the evaluation system.

If the Committee's revisions to the job evaluation plan were done to make the plan a better fit to the culture and business strategy of the organization, then we see no need to eliminate the half-points. Therefore, if you are comfortable with your modifications, then our recommendation is to make these changes a permanent part of the job evaluation system. Keep in mind, however, that those jobs that have not been evaluated since the half-points were added need to be re-evaluated at the earliest time possible.

### **Responses to Job Evaluation Plan Service Items**

In summary, we have been asked to examine the Classification Committee's recommendations and the revision of the Job Evaluation Plan. That examination is discussed above. Further, in response to other specific questions, we are providing summary comments that review the Classification Committee's recommended revisions to the Job Evaluation Plan, examining the following concerns:

- a. Does the current definition of each factor change so significantly that it would cause job classifications' datalines to increase or decrease, thereby requiring movement of classified employees to new pay grade/salaries? If so, what is the probable impact and numbers of job classes involved?

**Our comments:** Most of the changes were cosmetic in nature. We believe the wording changes will not require a reevaluation of all PIQs. However, we do recommend that any job that has not been reevaluated since the half-points were added should be reevaluated as soon as possible. From our thorough and detailed analysis of the data, there appear to be 272 jobs without half-points in the evaluation. We do not know how many of those jobs have been reevaluated as a

result of the revisions in the job evaluation plan. The scope of the reevaluation process could include as many as 272 jobs.

- b. Do the revisions that were made on the selected factors ultimately have an impact on the remaining factors in terms of needing to change the weighting, definition, or scope?

**Our comments:** We do not believe so, as the total points that could be awarded do not appear to have significantly changed; therefore, the factor percents should remain approximately the same.

- c. Do the recommended changes to Factor 2, Experience, constitute a substantial evaluative change that would require the change or review of all PIQs in the classified system?

**Our comments:** When one evaluates a job, education or the equivalent in experience is used. An explanation delivered by the Supreme Court in the case of *Griggs vs. Duke Power Co.* in part addresses this issue (401 U.S. 424, 431 (1971)). That explanation basically stated that one could use a degree in education or other test only if it was a bona fide occupational requirement and had been validated as such. Mr. Chief Justice Burger delivered the opinion of the Court, stating in part:

“We granted the writ in this case to resolve the question whether an employer is prohibited by the Civil Rights Act of 1964, Title VII, from requiring a high school education [401 U.S. 424, 426] or passing of a standardized general intelligence test as a condition of employment in or transfer to jobs when (a) neither standard is shown to be significantly related to successful job performance, (b) both requirements operate to disqualify Negroes at a substantially higher rate than white applicants, and (c) the jobs in question formerly had been filled only by white employees as part of a longstanding practice of giving preference to whites.” (401 U.S. 424, 431 (1971)).

- d. Do the other recommended revisions require a new weighting of all the factors?

**Our comments:** As we stated in item b above, we do not believe this will be necessary, as the total points that could be awarded have not substantially changed; therefore, the factor percents should remain approximately the same.

- e. Do the substitutions between education and experience create double counting?

**Our comments:** When we reviewed the Knowledge factor, we found that it includes the equivalent experience in lieu of education; therefore, we do not believe that constitutes double counting with the experience factor. Even if it does, it does not render a job evaluation system invalid. It just puts more emphasis on experience than on education.

- f. Is the addition of “emotional demands” under Factor 13, Physical Demands, and a measurable and viable concept? Will its addition also trigger comprehensive reviews and data-line adjustments?

**Our comments:** The definitions that you have used to describe the behavior of an incumbent on a job that caused “emotional demands” generally appear to be measureable in Factor 11 (which incorporates components of original Factor 13). For example, the following statement in Degree 4 of part C of Factor 11 (Physical, Mental, and Emotional Demands) appears to be measureable: “Interruptions influence priorities, externally imposed deadlines set and revised with short notice, may have conflict resolution on a regular basis.” This statement can most likely be measured by observing the incumbent in a job for a period of time. However, it might be made clearer by changing the phrase “may have conflict resolution on a regular basis” to read “may cause conflict on a regular basis.” There may be opportunities for carefully editing other phrases as well.

- g. Do the revisions to each factor accomplish the goals of the Classification Committee?

**Our comments:** The changes that have been made appear to make the evaluation of the jobs at West Virginia Higher Education easier and more consistent. In addition, the definitions are less wordy and more easily related to an educational institution. Please remember that developing a Job Evaluation is an art as well as a science, and should be based on continuous process improvement. Therefore, continual diligence is necessary.

- h. Are the revisions are consistent with best practices?

**Our comments:** In general, we feel the revisions are consistent with most generally accepted guidelines for job evaluations. The only revision that appears to be in conflict with best practices is the addition of half-points, and we have addressed that issue numerous times elsewhere in this report.

- i. Do the recommended revisions require all employees to complete a new PIQ based on the definitions set forth in the Job Evaluation Plan?

**Our comments:** No, the PIQ describes the job that any incumbent has to perform to be successful. There is nothing in the changes to the job evaluation plan that changes the duties of the individual on the job. With that being said, the Experience Factor (Factor 2) change could be construed to cause a change and should be carefully considered. However, the change appears to be minor enough that we do not feel the employee should be required to rewrite his or her PIQ.

## References

Griggs vs. Duke Power Company. 401 U.S. 424, 431 (1971).

Milkovich, G.T., & Newman, J.M. (2008). *Compensation* (9th ed.). Boston: McGraw-Hill.

WorldatWork (2006). *Job evaluation: Methods to the process*. Scottsdale, AZ: WorldatWork.

## Glossary

The following glossary of terms provides a set of definitions that can and most likely will be referred to in future discussions and developments.

**Ability:** Ability is one of the four primary characteristics frequently used to perform a job analysis and/or evaluate successful job performance, along with knowledge, skills, and other characteristics. The knowledge, ability, skills, and other factors (KASO) are widely used in such analyses (Beatty, 2008; KnowledgePoint, 1998). The *ability* component represents “an individual’s capability to engage in a specific behavior” (Milkovich & Newman, 2008) and is often viewed as a person’s “natural talents or dexterity” (WorldatWork, 2006).

**Adverse Impact:** Adverse impact refers a personnel decision in which the basis of requirements in effect serves to screen out a disproportionate number of minority or protected group applicants. Adverse impact is established if the selection rate of the protected group is less than four-fifths of that of the majority group or the group with the highest rate. (Kleiman & Durham, 1981, p.105) The Uniform Guidelines on Employee Selection Procedures (1978) defines the four-fifths rule as follows:

“A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact. Smaller differences in selection rate may nevertheless constitute adverse impact, where they are significant in both statistical and practical terms or, where a user’s actions have discouraged applicants disproportionately on grounds of race, sex, or ethnic group. Greater differences in selection rate may not constitute adverse impact where the differences are based on small numbers and are not statistically significant, or where special recruiting or other programs cause the pool of minority or female candidates to be atypical of the normal pool of applicants from that group. Where the user’s evidence concerning the impact of a selection procedure indicates adverse impact but is based upon numbers which are too small to be reliable, evidence concerning the impact of the procedure over a longer period of time and/or evidence concerning the impact which the selection procedure had when used in the same manner in similar circumstances elsewhere may be considered in determining adverse impact. Where the user has not maintained data on adverse impact as required by the documentation section of applicable guidelines, the Federal enforcement agencies may draw an inference of adverse impact of the selection process from the failure of the user to maintain such data, if the user has an underutilization of a group in the job category, as compared to the group’s representation in the relevant labor market or, in the case of jobs filled from within, the applicable work force.”

**Anchor:** With regard to performance evaluation or assessment, an anchor refers to a specific descriptor (e.g., number, behavioral statement, adjective) that represents some degree of performance along a continuum.

**Appeals Procedures:** An appeals procedure is a mechanism that has been created to address pay disagreements. Such procedures provide an opportunity for employees and managers to express their complaints and receive a hearing.

**Benchmark Conversion:** A benchmark conversion is the “process of matching survey jobs by applying the employer’s plan to the external jobs and then comparing the worth of the external job with its internal ‘match’” (Milkovich & Newman, 2008). Also see benchmark jobs.

**Benchmark Jobs:** Benchmark jobs are jobs that can be commonly found in most organizations. Since information is usually available on such jobs, and since such jobs are usually stable, they can be used for making pay comparisons, both internally and externally. Pay data for benchmark jobs can be obtained from many published surveys. Such jobs can be used to develop a job-worth hierarchy. The use of salary surveys often requires the identification of benchmark jobs within the organization so that these jobs can be used as surrogates for less common jobs that are more unique to the organization and cannot be located in typical salary surveys.

**Bonus:** A bonus is usually a lump-sum payment given to an individual as a reward for achieving a specified goal or target.

**Broadbanding:** Broadbanding has become a widely used approach for addressing perceived inequities due to narrow widths of traditional grades in a classification system. With broadbanding, pay grades are collapsed into fewer grades, resulting in wider bands for the reduced number of pay grades. Broadbanding leads to considerable overlap among the bands. In design, it provides more flexibility for giving pay increases; however, in practice, the broad bands are often broken into smaller segments within the bands, with various approaches for capping these segments.

**Central Tendency:** Central tendency is a measure of a distribution that in some way describes or defines the center of that distribution. There are alternative ways to define or examine the center of a distribution. The most common measures of central tendency are the mode, median, mean (both weighted and unweighted), trimmed mean, geometric mean, and harmonic mean. Measures of location are closely related to measures of central tendency. The most common measures of location are percentile points (of which the median is the 50<sup>th</sup> percentile point), tricile points, quartile points, and decile points. Determining which measure of central tendency is appropriate for any given set of data is based on the level of measurement of the data being analyzed. If the data achieve at least interval level scale, the mean (i.e., average) is usually the preferred measure of central tendency (Beatty, 2000).

**Checklist:** A checklist is an instrument used to assess whether a particular trait or behavior is indicative or descriptive of a ratee. It consists of a number of items (i.e., statements). These items or statements, if present, can either simply checked or can be evaluated relative to different levels of effectiveness (e.g., poor, average, or good performance). The rater must choose the items that describe the ratee’s performance. A checklist can also be designed as a Mixed Standard Scale (MSS), a Forced Choice Scale (FCS), or other approaches, as described elsewhere.

**Civil Rights Act (CRA) of 1964:** The Civil Rights Act (CRA) of 1964 was passed by Congress in 1964 to make employment discrimination on the basis of race, religion, national origin, and sex unlawful. The CRA is the basis of EEOC's uniform guidelines. (See Title VII.)

**Comparable Worth:** The United States Supreme Court, in interpreting the legislative history of the Equal Pay Act, has consistently held that the theory of the "comparable worth" of jobs was discarded by Congress in favor of the ... "same or similar job" language currently found in the statute. The standard that complainants must meet with respect to this question is to show that the respondent "pays different wages to employees of opposite sexes for equal work on jobs the performance of which requires equal skill, effort and responsibility and which are performed under similar working conditions" (*Corning Glass Works v. Brennan*, 417 U.S. 188, 194, (1974)). Further, in *Lemons et al. v. The City and County of Denver* (1974), a suit was filed based on the proposition that nurses were underpaid in city positions and in the community in comparison to other and different jobs which the suit asserted were of equal worth to the employer. The court ruled that the suit crossed job description lines into areas of entirely different skills, thus bringing into play a whole new world for the courts. In conclusion, the court rules that "until some better signal from Congress is received we cannot venture into it. ... The equal pay for 'comparable work' concept has been rejected by Congress in favor of 'equal work' in 1962. The jobs to which the complainants compare themselves are jobs which require different skills and abilities than the work performed by the complainants. [The court found] that the comparison jobs are 'comparable' but are not the 'same' or 'similar' for purposes of the Equal Pay Act." (*Lemons, supra*, at 229.)

"In adopting the 'equal pay for equal work' formula, Congress carefully considered and ultimately rejected the 'equal pay for comparable worth' standard advanced by respondents and several amici. As the legislative history of the Equal Pay Act amply demonstrates, Congress realized that the adoption of the comparable-worth doctrine would ignore the economic realities of supply and demand and would involve both governmental agencies and courts in the impossible task of ascertaining the worth of comparable work, an area in which they have little expertise." (*County of Washington v. Gunther*, 452 U.S. 161, 182, 1981).

**Compa-Ratio:** A *comparison ratio*, or *compa-ratio*, is a method used to compare an individual's salary relative to his or her pay grade midpoint. It is computed by dividing the salary by the midpoint, thus yielding a salary-to-midpoint ratio. This compa ratio is often used as a measure of internal equity. Organizations also frequently calculate department compa-ratios. A *department compa-ratio* is computed by dividing the aggregate pay for the department by the aggregate midpoint for the department. (See department compa-ratio and market index.)

**Compensable Factor:** Most jobs are evaluated on the basis of their compensable factors. The compensable factors of a job are the factors the organization is willing to pay for to adequately perform that job, and thus must be work-related. They are often used to help determine the worth of a job. The generic compensable factors identified by the Equal Pay Act (1963) are skill, effort, responsibility, and working conditions, although education, experience required, physical demands, working conditions, visual demands, need to work independently, risks of the

job, supervisory responsibility, accountability, and complexity of tasks have been viewed as compensable factors. The identification of compensable factors is essential for job evaluations, which are used to determine job-worth.

**Compensable Factor Degree:** Each compensable factor usually consists of levels (sometimes referred to as degrees). These levels are anchored with words that allow the job evaluation committee to easily rating individual jobs against the compensable factors. “In quantitative job evaluation plans, measurement scales or “yardsticks” that identify specific levels or amounts of a compensable factor. Usually, there are five to seven degrees for each factor” (WorldatWork, 2006).

**Compensable Factor Weights:** Each compensable factor is usually given some weight relative to its value in the total evaluation point system. Some factors are usually worth more than other factors. An arbitrary decision is usually made with regard to the minimum and maximum values for any factor. The process then requires the scaling of each compensable factor relative to the weight of the compensable factor. The compensable factor weight becomes “the percentage weight or ‘influence’ a single compensable factor has in a quantitative job evaluation plan” (WorldatWork, 2006).

**Compensating Differentials:** Compensating differentials are based on “economic theory that attributes the variety of pay rates in the external labor market to differences in attractive as well as negative characteristics in jobs. Pay differences must overcome negative characteristics to attract employees” (Milkovich & Newman, 2008).

**Compensation Differentials:** Compensation differentials are “differentials in pay among jobs across and within organizations, and differences among individuals in the same job in an organization” (Milkovich & Newman, 2008).

**Compression (in pay):** Pay compression (aka, salary compression) is the result of having very narrow pay differentials among jobs across organizational levels, regardless of employee skills or experience. When the market-rate for a particular job outpaces the pay structure of the organization, compression often occurs.

**Constant Midpoint Progression:** Most pay structures attempt to have constant midpoint progressions. That is, the midpoints from grade to grade should follow some logical progression. This progression is usually based on a constant percent increase from midpoint to midpoint, not a constant monetary increase. This is usually accomplished by determining the midpoint of the lowest grade and the midpoint of the highest grade. Given that information and the use of a calculator or computer that includes a Time Value of Money (TVM) function, a constant midpoint progression can be created that will have equal percent increases from midpoint to midpoint. By letting the *Present Value* (PV) of the TVM equal the midpoint of the lowest grade, letting the *Future Value* (FV) of the TVM equal the midpoint of the highest grade, and letting the *Number of Periods* (N) equal the number of grades minus 1, solving for the *Interest* (I) will yield a percent value to use for establishing the constant midpoint progression.

**Consumer Price Index (CPI):** The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services, based on a typical family's consumption. The market basket is developed from surveys of consumers, based on detailed information provided by families and individuals on what they actually buy during a specified time period.

**Cost-of-Living Adjustments (COLAS):** A Cost-of-Living Adjustment, or COLA, is an annual adjustment in wages that attempts to offset employee purchasing power. COLAs are typically based on the Consumer Price Index (CPI). Compensation administrators often calculate cost-of-living indices and salary differentials with regard to geographic locations. Employees often want to know the salary adjustment needed to remain "whole" with regard to their existing standard of living if they move from one location to another. Social Security's general benefit increases have been based on cost-of-living increases since 1975.

**Correlation and Correlation Coefficient:** The word *correlate* consists of two terms: *co* and *relate*. When examining whether two variables are related or associated, we are examining whether they go together in some manner or another. To evaluate this relationship, we use a mathematical measure, the *correlation coefficient*. Although there are several mathematical approaches for measuring relationships among variables, the most commonly used form of the correlation coefficient is the *Pearson product-moment correlation coefficient*, named so in honor of Karl Pearson, one of the leading founders of correlation and regression analysis. All correlation coefficients must fall within the range of -1.00 to +1.00. The sign associated with this coefficient indicates the direction of the relationship—either positive or negative. A zero correlation coefficient suggests that no predictable relationship exists between the variables (Beatty, 2000).

**Department Compa-Ratio:** Organizations frequently calculate department compa-ratios to obtain a department salary-to-department midpoint ratio. A department compa -ratio is computed by dividing the aggregate pay for the department by the aggregate midpoint for the department. (See compa-ratio and market index.)

**Disparate Impact:** Disparate impact indicates that there is an unintentional disparity between the proportion of a protected group applying for a position and the proportion actually getting the job. (Dessler, 1994)

**Disparate Treatment:** Disparate treatment indicates that there is an intentional disparity between the proportion of a protected group and the proportion actually getting the job (Dessler, 1994).

**Dispersion:** The word dispersion is interchangeable with the words *variability* or *spread*. It is a measure of how a set of data values vary. Dispersion can be measured by various qualitative and quantitative approaches, depending on the level of measurement (see elsewhere) of the data. When the data are based on nominal values, the most common measure of variability, dispersion, or spread is the variation ratio. When the data are ordinal, the range, the interquartile range, the semi-interquartile range, and the median deviation become optional tools. When the data are at

least interval, the analyst should consider the mean deviation, the variance, and most importantly, the standard deviation. When the data achieve ratio level status, the coefficient of variation can be computed. In finance and investments, volatility is often used to define variability, reflecting on the fluctuation of stock prices relative to some measure of central tendency.

**Entitlement:** An entitlement is a misbelief held by an employee that he or she is entitled to rewards whether or not he/she performs adequately or whether or not the organization performs well. Entitlement is also often thought of as having a perception of being entitled to a job, regardless of qualifications.

**Equal Pay Act (EPA) of 1938 (amended 1963):** The 1963 legislation of the Equal Pay Act amended the Fair Labor Standards Act (FLSA) of 1938 to prohibit pay differentials or jobs that are substantially equal in regard to skills, efforts, responsibility, and working conditions. However, bona fide factors such as seniority, merit, production-based systems, and other job factors, are considered exceptions (not gender).

**Equity Theory:** Equity theory describes the exchange relationship between rewards and contributions in the employment exchange. As defined by Adams (1965), “The [employment] exchange must be judged as a fair or equitable one, and it must meet the expectations of [both] participants.” As elaborated on by Beatty (1984), “The organization expects the employee to perform work and contribute to productivity, while the employee expects the organization to reward in a fair and just manner.” As explained by Atchison and Belcher (1971), equity theory is based on “two overlapping input-output systems in which the inputs to one system are the outputs to the other system.” This employment exchange relationship is further clarified by Belcher (1974) as consisting of four components: a) contributions, b) rewards, c) the comparison process, and d) the results (related actions).

**Error:** An action that deviates from the expected, has unwanted consequences, and disrupts ongoing work.

**Exempt Jobs:** Exempt jobs are those jobs not subject to the provisions of the Fair Labor Standards Act (see elsewhere) with regard to minimum wage and overtime work/pay. Most executives, administrators, professionals, and outside sales representatives are exempt employees.

**Expatriates:** Expatriates are employees who have been assigned to positions outside their base country for a given period of time in excess of one year. The determination of the time period is based on either of two approaches: a) the bona fide residence test, which requires the employee (e.g., the taxpayer) to be a bona fide resident of a foreign country or countries for an uninterrupted period that includes a full tax year; or b) the physical presence test, which requires the employee (e.g., the taxpayer) to be present in a foreign country or countries for at least 330 days during a period of 12 consecutive months.

**External Equity:** See market index.

**Face Validity:** Face validity is concerned with whether a measurement instrument or evaluation tool appears to be measuring what it is purporting to measure. A test or evaluation is not necessarily valid just because it has face validity, but most valid tests do have face validity. The presence or absence of face validity will affect the cooperation of the participant in completing an evaluation or assessment task. There is no numerical value for assessing face validity; instead, the assessment of face validity is usually obtained by soliciting subjective comments about the instrument from administrators, managers, supervisors, job incumbents, and other evaluators.

**Factor Analysis:** Factor analysis is a statistical procedure used to identify variables or items that cluster together and to identify clusters that are considerably different from other clusters. The ideal factor analysis would consist of a number of clusters (factors) that are orthogonal to each other but contain items (variables) that are highly interrelated. Factor analysis is often used to reduce a large number of variables into a smaller number of underlying factors.

**Factor Comparison Method:** A factor comparison method is a job evaluation method in which a series of rankings are performed to assess which positions contain more of each specific compensable factor than other jobs being evaluated. The factor rankings for the compensable factors of each position are assigned numerical values, weighted, and then added together to determine the total job score” (WorldatWork, 2006).

**Fair Labor Standards Act (FLSA).** The Fair Labor Standards Act was enacted as a component of President Franklin D. Roosevelt’s New Deal in 1938. The FLSA had three primary goals: 1) to ensure fair and equitable wages for the services performed by employees, 2) to discourage long workweeks by requiring that employers pay at a higher rate for each hour worked over 40 per week, and 3) to limit the working age, hours, and job duties of children. In addition, the FLSA granted employees the right to join a labor organization for the purpose of bargaining collectively through representatives of their own choosing, and the employer must work in conjunction with the union.

**Forced Choice Scale (FCS):** A forced choice scale is a checklist of performance statements that are equally positive or negative but differ in their ability to discriminate between effective and ineffective work behaviors. The rater is forced to choose from a group of statements the subset that is most characteristic of the ratee.

**Forced Distribution Scale:** A forced distribution scale is a ranking procedure in which subordinates are sorted into ordered performance categories depicting different levels of performance. The ratees are forced to fit a normal distribution (bell-shaped curve) of performance.

**Generic Job Analysis:** A generic job analysis is performed by using a less-detailed data collection process by using a broad job description that covers a large number of related tasks. “The result is often that two employees doing the same broadly defined job could be doing entirely different, yet related, tasks” (Milkovich & Newman, 2008).

**Hay System:** The Hay system is a point factor job evaluation system based on a set of fundamental factors that are universally applicable. The system was developed by Ned Hay in 1948 and continues to be widely used today. The Hay approach to job evaluation is based on three requirements: a) know how, b) problem solving, and c) accountability. These three factors are subdivided into their dimensions. For example, the dimensions for know-how are technical know how, management know how, and human relation skills. For problem-solving, the dimensions are thinking environment and thinking challenge. For accountability, the dimensions are freedom to act, magnitude, and impact. Each dimension is assigned points based on a point-table. The system is primarily used for exempt jobs, although it can be used for nonexempt jobs as well. The Hay method focuses on the content of the job, not the employee's effectiveness on the job.

**Hierarchy of Jobs (Job Structures):** Job evaluation has come to mean the overall process of developing an organization's job worth *hierarchy* by ordering jobs according to their relative content or worth. It is a systematic approach for determining the worth of jobs and provides and the basis for building a hierarchy of jobs. Job evaluation usually comes after job analysis, the creation of job descriptions, and the identification of compensable factors. It is then used to develop a compensation structure, based on this determined job hierarchy.

**Histogram:** A histogram is a graphical tool for displaying data. With histograms, a series of bars is displayed in order to indicate the frequencies associated with each value along a continuum. Histograms are appropriate for continuous data, while bar graphs are appropriate for discrete data.

**I-Bars:** Pay structures are often displayed by I-Bars, which provide a visualization of the structure. An I-Bar resembles the capital letter I, with a horizontal line in the middle. The top of the I-Bar corresponds to the maximum of the pay grade, and the bottom of the I-Bar corresponds to the minimum of the pay grade. The horizontal line in the middle of the I-Bar corresponds to the midpoint. (See pay structure; also see midpoint of the pay grade.) (Beatty, 2002.)

**Internal Equity:** See compa ratio.

**Internal Alignment:** An important aspect in the development of a hierarchy of jobs and the pay associated with these jobs is to examine the relationships among the skill levels of the jobs, the alignment of equal pay for jobs of equal worth, and appropriate pay differentials for jobs that are not of equal worth. This alignment process usually includes participation among employees and management in the acceptance of these relationships (Milkovich & Newman, 2008).

**Job:** A job is the totality of all work elements existing in combination and interacting over time. The elements of a job can change with time and experience. It is a term contained in the hierarchy of job analysis which spans descending levels of specificity (Dessler, 1994).

**Job Analysis:** Job analysis is the procedure for determining the duties and skill requirements of a job and the kind of person that should perform it. Information is collected in regard to job activities, human behaviors, machines, tools, equipment and work aids used, performance

standards, job context, personnel requirements, and other factors. The job analysis provides a systematic process for identifying, analyzing, and evaluating the unique contributions of each job within a hierarchy of jobs. A job analysis is necessary for conducting job evaluations (Dessler, 1994; Vogeley, 1995). A job analysis often relies on obtaining sources of information about jobs, the level of the jobs, conducting job analysis interviews, and/or using some form of a job analysis questionnaire. Common tools for performing a job analysis include the Position Analysis Questionnaire (PAQ), the Fleishman Job Analysis Survey (F-JAS), the Common Metric System (CMQ) that uses the input of job incumbents and job evaluators through a computerized system that leads to the development of job descriptions (Harvey, 1993), the Position Information Questionnaire (PIQ), and other such tools.

**Job Class:** A job class is a grouping of jobs that are substantially similar for pay purposes (Milkovich & Newman, 2008). (See job grade.)

**Job Description:** A job description is a list of job duties, such as responsibilities, reporting relationships, working conditions, and supervisory responsibilities. It is often the beginning step or the output of a job analysis (Dessler, 1994).

**Job Dimension:** Broad categories of duties, responsibilities, and activities which comprise a job.

**Job Documentation:** Documentation consists of various forms and/or instruments, job analysis questionnaires, job family matrices, job descriptions, and job specifications.

**Job Evaluation:** Job evaluation has come to mean the *overall* process of developing an organization's job worth hierarchy. It is a systematic approach for determining the relative worth of jobs to create a job structure for the organization. The evaluation is based on a combination of job content, skills required, the value of the job to the organization, the organization's culture, the its internal structure, and the external market. The job evaluation process usually follows the job analysis process, the creation of job descriptions, and the identification of compensable factors. It is then used to develop a compensation structure, based on this determined job hierarchy. A *point factor system* is the most common job evaluation method. In simple terms, it is a process or technique that strives to provide a systematic, rational, and consistent approach to defining the relative worth of jobs within an organization. It provides a system for analyzing and comparing different jobs and placing them in rank order according to the overall demands of each job. It is not concerned with the volume of work, or the person doing the job, or with determining pay. Instead, it is used to provide the basis for an equitable and defensible pay structure, particularly in determining equal pay for equal value. Over the past thirty years, the use of a point factor job evaluation system, which was once the primary job evaluation system, has declined in use, while market pricing has increased in popularity. Market pricing is the process of analyzing salary survey data to establish the external worth of jobs as represented by their dollar value in the labor market.

**Job Family:** A job family is "a group of jobs having the same nature of work (e.g., accounting) but requiring different levels of skill, effort, responsibility, or working conditions (e.g., a/p accountant, accounting supervisor)" (WorldatWork, 2006).

**Job Grade:** A job grade (i.e., pay grade) is “one of the classes, levels, or groups into which jobs of the same or similar value are grouped for compensation purposes. Usually, all positions in a grade have the same pay range: minimum, midpoint, and maximum. However, sometimes different jobs in the same pay grade have different pay ranges, due to market conditions for some of the positions” (WorldatWork, 2006).

**Job Specification:** A job specification is a list of human requirements (human profile) that is the requisite education, skills, personality traits, etc. It is another product of job analysis. (Dessler, 1994)

**Job Worth:** Job worth is the worth of a job relative to the entire arena of jobs. The most common approach to establishing the worth of a job is through market pricing: using market data to determine the price and, therefore, the worth of each job. Market pricing is, in essence, “job evaluation” without an evaluation of the job’s content, in that no internal standard or value for the job is determined. Such a hierarchy of job worth is thus established entirely by market prices (Beatty & Beatty, 1984).

**Knowledge:** Knowledge is one of the four primary characteristics of KASO (see below) needed to perform a job analysis, along with ability, skills, and other characteristics. *Knowledge* is often defined as the acquired mental information necessary to perform the job.

**Knowledge, Ability, Skills, and Other Characteristics (KASO):** Knowledge, ability, skills, and other characteristics (KASO) are primary characteristics frequently used to perform a job analysis and/or evaluate successful job performance.

**Lag Policy:** A lag structure policy is based on a philosophy that the structure should match the competitive pay at the start of the plan year. After the onset of the year, the structure will gradually lag further and further behind competitive pay. This is the least expensive of the three policies (i.e., lead, lag, and lead/lag).

**Lead Policy:** A lead structure policy is based on a philosophy that the structure should lead the market throughout the year. The structure eventually matches the competition at year’s end, if the organization’s forecasting of the market is accurate. This is the most aggressive, and therefore, the most expensive of the structure policy philosophies.

**Lead/Lag Policy:** A lead/lag structure policy is based on a philosophy that the structure should match the competitive pay at the middle of the plan year. To accomplish this goal, the structure is designed to lead the competition at the beginning of the plan year, match the competition at mid-year, and lag behind the competition at the end of the plan year. This is a compromise structure policy, as it is more expensive than a lag structure policy but less expensive than a lead structure policy.

**Levels of Measurement:** There are four basic levels of measurement for a set of data: 1) nominal, ordinal, 3) interval, and 4) ratio. With nominal level data, only the mode is appropriate as a measure of central tendency. With ordinal level data, the mode and the median are

appropriate. With interval level data, the mode, median, and mean are appropriate. With ratio level data, the mode, median, mean, geometric mean, and harmonic mean are appropriate.

**Locality Pay:** Locality pay is a pay rate that has been adjusted for geographic areas that have substantially different market conditions, including housing expenses, cost of living expenses, shortage or abundance of labor, and/or other factors.

**Market Index:** The term “market index” is often used to determine a ratio of an individual’s pay relative to the market pay for that same job. This ratio is often used to represent a measure of external equity. It is calculated by dividing the individual’s pay by some measure of the market pay for that job, such as the mean or the median.

**Market Pricing:** Market pricing is the process of analyzing salary survey data to establish the external worth of jobs as represented by their dollar value in the labor market. Thus, the pay structure becomes a direct function of matching pay for the vast majority of jobs with the pay rates found for similar jobs in the external market.

**Market Survey (i.e., Salary Survey):** Most organizations depend on surveying the pay market in order to determine appropriate pay for jobs within its hierarchy of jobs. Market or salary surveys are usually conducted by selecting sample jobs (e.g., benchmark jobs) from within the organization and then surveying external organizations from within the competitive market for that industry.

**Maturity Curve:** In compensation, a maturity curve is a graph of current pay versus the number of years since a professional has earned his or her last degree (YSLD). This model provides a means for determining competitive pay for specific employees with different levels of experience. Such maturity curves are often nonlinear, showing a fairly steep slope during the early years of employment and a tapering of the maturity curve as the employee ages. A maturity curve is similar to a learning curve.

**Maximum of Pay Grade:** The maximum of a pay grade represents the maximum monetary amount for that grade. The maximum is usually calculated from knowledge of the desired range spread (see elsewhere) and the minimum of the pay grade, as follows:

$$\text{Maximum} = \text{Minimum} \times (1 + \text{Desired Range Spread})$$

**Midpoint of Pay Grade:** The midpoint of a pay grade represents a monetary amount that falls at the middle point of the pay grade. Most pay grades are based on a maximum value, a minimum value, and a midpoint that falls halfway between the maximum and minimum values. The midpoint is usually based on some characteristic of the market, arbitrarily selected from among the market mean, median, or other value (such as P<sub>75</sub>, P<sub>25</sub>, etc.). The pay structure is often displayed by an I-Bar (a visual that resembles the capital letter I, with a horizontal line in the middle). The top of the I-Bar corresponds to the maximum of the pay grade, and the bottom of the I-Bar corresponds to the minimum of the pay grade. The horizontal line in the middle of the I-Bar corresponds to the midpoint. (See pay structure.)

**Minimum of Pay Grade:** The minimum of a pay grade represents the smallest monetary amount for that grade. The minimum is usually calculated from a knowledge of the desired range spread and the midpoint of the pay grade, as follows:

$$\text{Minimum} = \left( \frac{\text{Midpoint}}{1 + \left( \frac{\text{Desired Range Spread}}{2} \right)} \right)$$

**Mutually-Defined-Objectives (MDO):** The Mutually-defined-objectives approach is a system similar to MBO. The supervisor and job incumbent mutually define objectives to be defined, worked on, measured, and evaluated during a specified evaluation period. MDOs are based on goals that are consistent with the needs of the job, are worthwhile challenges, sometimes become career development opportunities, provide opportunities for results and/or increased productivity, are defined by measurable outcomes, are specific, are achievable, are within the employee’s realm of authority, are supported by determining the results expected, and are based on such measurable items as quantity, quality, timeliness, cost and other measurable factors.

**Nonexempt Employees:** Nonexempt employees are employees who are subject to the provisions of the Fair Labor Standards Act (see elsewhere). They must be paid for every hour of overtime they work. The FLSA and state laws regulate what constitutes “overtime.” Not all salaried employees are exempt, and simply paying an employee a salary does not make him or her automatically exempt.

**Outliers:** Outliers are unusual values that fall outside the generally acceptable range of data. By making an observation relative to the mean and the standard deviation of a distribution (i.e., by determining the z-value for an observation), it is possible to estimate the probability of obtaining a value that far from the mean. Based on statistical theory, at least 75% of the observations in any distribution will fall within  $z = \pm 2.00$ , and at least 89.9% of the observations in any distribution will fall within  $z = \pm 3.00$ . Thus, z-values of  $\pm 2.00$  or  $\pm 3.00$  can serve as benchmarks for determining outliers (see Tchebycheff’s theorem). As an example, suppose the pay for a particular individual is the observed value, the average pay for incumbents of that job is the expected value, and the standard deviation of that distribution of pay for the job incumbents is the measure of chance. The z-score is then computed as follows:

$$z = \frac{\text{Observed Value} - \text{Expected Value}}{\text{Chance}}$$

$$= \frac{X - \bar{X}}{s}$$

**Paired Comparison Method:** The paired-comparison method, unlike simple rank ordering, offers a formal process for ensuring that each ratee is compared to all other ratees. There will always be  $[(n) (n - 1)] \div 2$  possible pairs of ratees to compare, where  $n$  represents the number of

rates. Each pair is presented to the rater, who picks the employee whose overall performance is better. The final ranking of the ratees is based on the percentage of times each person was selected as the better ratee; various score conversion systems have been developed to calculate the rank ordering. A major drawback of this approach is that it can quickly become cumbersome, especially when there are very many ratees to be evaluated by a single rater. For example, if there are 20 employees to be evaluated, there will be 190 paired comparisons to be made.

**Pay Grade:** See job grade.

**Pay Structure:** An organization's pay structure is an administrative tool designed to reflect that organization's pay philosophy and to provide a visualization of the relationships among pay grades. The visualization of the pay structure consists of a set of I-Bars for each pay grade (see minimum, midpoint, and maximum of pay grades). An examination of this visualization provides an indication of the internal equity within the structure (see compa-ratio), the progression of the pay grades, and the overlapping of the grades. This visualization is often juxtaposed with percentile bars (see percentile bars) based on the market. This juxtaposition then provides a view of the organization's external equity (see market index).

**Percentile Bars:** A percentile bar is based on the 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup>, and 90<sup>th</sup> percentiles, as well as the mean. (The 50<sup>th</sup> percentile is also known as the median.) Such bars are usually displayed vertically, although they can also be displayed horizontally. When presented vertically, the distance from the bottom of the bar to the top includes 80% of the data, since it spans the distance from P<sub>10</sub> to P<sub>90</sub>. Most percentile bars include these five percentile points, as well as the mean. The area from P<sub>25</sub> to P<sub>75</sub>, representing the middle 50% of the cases, is usually shaded within the percentile bar. The location of the median (i.e., P<sub>50</sub>), which will always fall within this shaded area, is indicated by placing a straight line beside its corresponding numerical value. The location of the mean is typically denoted by using a circle with a dot in the middle (Beatty, 2000).

**Point Factor Method:** The point factor method is by far the most popular of the major methods of job evaluation. This method requires the evaluator to rate each job on a series of factors (e.g., physical effort, complexity of tasks, education, risk) presumed to contribute to overall job worth. Points are assigned to "degrees" of each factor to indicate the extent to which a job possesses the factor. Job descriptions are often used to develop statements associated with the degrees. Total points for each job are computed in order to compare relative worth and eventually assign salary levels. Job prices are assigned by grouping jobs into job families and into similar point totals within job families. Key jobs (*benchmark jobs*) are then selected within each group and pay data sought from salary surveys. The pay philosophy selected by the organization (e.g., survey midpoint plus 10 percent for the benchmark job) is then used to price all jobs within this job group (Beatty & Beatty, 1984).

**Position Analysis Questionnaire:** The Position Analysis Questionnaire (PAQ) is a tool commonly used in job analysis to classify job information into seven basic factors: a)

information input, b) mental processes, c) work output, d) relationships with other persons, e) job context, f) other job characteristics, and g) general dimensions (Milkovich & Newman, 2008).

**Range:** The range is a measure of variability, dispersion, or spread. It is based on the distance between the highest value and the lowest value in a set of ordered data. In order to be able to determine the range, the data must be at least ordinal level.

**Range (of Pay):** The pay range the monetary value obtained by subtracting the minimum of the pay grade from the maximum of the pay grade.

**Range Penetration:** Range penetration is a concept similar to compa-ratio or position in grade. Range penetration is usually calculated as a ratio that compares the individual's pay to the minimum of the pay grade, relative to the range of the pay grade. The formula for calculating the range penetration is as follows:

$$\text{Range Penetration} = \left( \frac{\text{Pay} - \text{Minimum}}{\text{Maximum} - \text{Minimum}} \right)$$

**Range Spread:** The range spread is the difference between the maximum value of the pay grade and the minimum value of the pay grade (i.e., the range of the pay grade), relative to the minimum value of the pay grade. This ratio is then usually multiplied by 100 to determine a percent. The formula for calculating the range spread is thus calculated as follows:

$$\text{Range Spread} = \left( \frac{\text{Maximum} - \text{Minimum}}{\text{Minimum}} \right) \times 100$$

**Range Spread (Desired):** Desired range spreads are based on arbitrary decisions. Prior to broadbanding, desired range spreads were fairly simple and consistent. The lower pay grades would typically be assigned small range spreads (perhaps range spreads of 25 to 40 percent), and the range spreads for subsequent pay grades would increase in some incremental fashion to perhaps 45 to 60 percent. There was and is no "correct" range spread for any particular pay grade. However, desired range spreads provide guidance in determining the minimums and maximums of pay grades. (See minimum of pay grade, midpoint of pay grade, and maximum of pay grade.)

**Rank Ordering:** Rank ordering is the simplest type of a ranking method. Raters rank subordinates from best to worst performers, based on their overall performance. Raters can also rank jobs and other workforce characteristics.

**Reliability:** A measure of internal consistency, the degree to which a test score remains stable over repeated measurements. The concept of reliability refers to a measurement instrument's ability to provide consistently reproducible results. A test which has the quality of reproducibility is one which will provide identical results if we repeatedly measure the same trait under duplicated conditions. Consequently, reliability is synonymous with repeatability or

consistency. Our ability to examine the true reliability of a test is impacted by any learning process which occurs as a result of the first administration of the test which can influence results during another setting (such as memory) and by time lapses between the administration of the test over different settings (when additional learning can occur). There are numerous approaches available for determining the reliability of a measurement instrument, including a) *test-retest reliability*, b) *alternate forms reliability*, c) *subdivided tests reliability*, and d) *internal consistency reliability*.

**Scaling:** The process by which we record and measure variables according to rules. Scaling can be the process of creating a scale by putting a group of related items a logical sequence.

**Skill:** Skill is one of the four primary characteristics frequently used to perform a job analysis and/or evaluate successful job performance, along with ability, knowledge, and other characteristics. The knowledge, ability, skills, and other factors (KASO) are widely used in such analyses (Beatty, 2008; KnowledgePoint, 1998). The *skill* component often refers to an acquired manual skill that is a measurable behavior. Such skills apply to technicians, operators, mechanics, office workers, etc., in which the skill is rather clearly defined (Milkovich & Newman, 2008; WorldatWork, 2006)

**Summated Rating Scale:** The summated rating scale is a rating scale that consists of several performance statements to be rated using a continuum of discrete categories representing different degrees of performance.

**Task:** A task is one or more elements or skills that comprise the activities of a job.

**Tchebycheff's Theorem:** Tchebycheff's theorem is based on mathematics and statistical theory. Under any circumstances, at least 75% of the observations in any distribution will always fall within two standard deviations of the mean (i.e.,  $z = \pm 2.00$ ). Further, Tchebycheff's theorem reveals that at least 89.9% of the observations in any distribution will fall within three standard deviations of the mean (i.e.,  $z = \pm 3.00$ ). Thus,  $z$ -values of  $\pm 2.00$  and  $\pm 3.00$  can serve as benchmarks for determining outliers. The probability of an observation falling more than two standard deviations from either side of the mean is at most 25 percent, while the probability of an observation falling more than three standard deviations from either side of the mean is at most about 11 percent. Thus, if a distribution is reasonably symmetric, no more than 5.5 percent of the cases will fall 3 standard deviations above the mean, and no more than 5.5 percent of the cases will fall 3 standard deviations below the mean. Compensation analysts often red-circle values that fall at least  $\pm 2.00$  from the mean and double-red-circle values that fall at least  $\pm 3.00$  from the mean. Such values are then considered outliers and require further examination. (See outliers.)

**Title VII of the 1964 Civil Rights Act (CRA):** The section of the Civil Rights Act that states an organization cannot discriminate on the basis of color, race, religion, sex or national origin with respect to employment. (Dessler, 1994) Title VII is an essential component of the Civil Rights Act of 1964. Thus, it is unlawful to fail to hire or refuse to hire or discharge an individual or to limit, segregate, or classify an employee or applicant because of these personal characteristics.

The Uniform Guidelines on Employment Selection Procedures issued by the Equal Employment Opportunity Commission (EEOC) in 1978 views evaluations as a selection procedure; consequently, the evaluations themselves may not demonstrate any adverse impact on any person or group protected by the CRA (See Civil Rights Act of 1964.)

**Validity:** The validity of an instrument is concerned with its ability to accurately measure what it is designed to measure. Validity addresses questions regarding whether the instrument is measuring what it is supposed to be measuring, and, if so how well it measures this trait or concept. There are various forms and terms for methods of assessing validity, including 1) concurrent validity, 2) content validity, 3) construct validity, 4) convergent validity, 5) criterion-related validity, 6) differential validity, 7) discriminant validity, 8) face validity, and 9) predictive validity.

**Validity, Concurrent:** Statistical correlation between a predictor (an item on the evaluation form) and actual job performance. Concurrent validity is concerned with predicting present performance. We are attempting to correlate scores on the instrument with some direct measure of the characteristic. For example, a correlation between scores on some test required for renewal of a driver's license and the actual driving ability of the individual on the road would assess the test's concurrent validity. It would be much too expensive to evaluate the actual road performance of all drivers; thus, if an instrument can be used which will closely correspond with present driving ability, it will have great value. As another example, a personality inventory designed to determine mental stability must have concurrent validity if it is to be used in court cases. Here, we are attempting to determine the current state of mind of the individual, not predict future behavior. (Of course, in certain situations, the court may be interested in predicting future or past behavior as well.) All other conditions being equal, concurrent validity should have a higher validity coefficient than predictive validity; the instrument is being correlated with measures which are being assessed simultaneously rather than in the future, when change can become a factor. Thus, an instrument which has good predictive validity should also have good concurrent validity.

**Validity, Content:** The degree to which scores or ratings on the appraisal are representative of all job behaviors required to perform a job. Content validity has also been referred to as "circular validity," "relevance," "intrinsic validity," and "representativeness" in the measurement literature. This form of validity is concerned with the representativeness of the instrument content in regard to the potential item domain. It is important that a scale adequately include a sample of items from all possible items. If an instrument is multidimensional (i.e., purports to assess more than one characteristic), each characteristic should be proportionally represented by its corresponding subscale. To assess the content validity of an instrument, we must first identify a panel of judges with expertise regarding the characteristics of interest. This panel is then asked to determine the appropriateness and representativeness of the items. All commercial instruments should be examined in regard to content validity during the developmental stages, well before implementation of the instrument in the intended settings. If such a process is followed, there is less chance that the total instrument will be influenced by irrelevant items. Often, face validity is thought of as a subset of content validity.

**Validity, Construct:** The degree to which scores may be interpreted as measuring a property such as motivation. Construct validity, also referred to elsewhere in the literature as “factorial validity” or “trait validity,” is concerned with whether the instrument is measuring what it claims to be measuring. Thus, construct validity gets right at the heart of validity: an identification of the constructs being assessed by the instrument. The process of construct validation is concerned with what the instrument actually measures, not just what it is designed to measure. There are at least five statistical methods of assessing the construct validity of an instrument: 1) discriminant analysis, 2) factor analysis, 3) correlational analysis, 4) pre-post tests of significance, and 5) the multitrait-multimethod matrix approach.

**Validity, Convergent:** Convergent validity examines whether the validity coefficients are significantly different than zero and are sufficiently large enough to encourage further examination. Convergent validity is often used with the *discriminant validity* of traits. That is, we examine to see whether the validity coefficients are higher than the corresponding correlations among different traits measured by different methods within the same heterotrait-heteromethod matrix. Of course, the validities should be higher than the correlations between the variable of interest and correlations with other variables based upon the same method or on other methods. (See discriminant validity.)

**Validity, Criterion-Related:** Scores or ratings on the evaluation are related to some criteria (e.g. expert judgment). Several terms have been used in reference to criterion-related validity, including “predictive validity,” “empirical validity,” and “statistical validity.” Regardless of the nomenclature, criterion-related validity is concerned with obtaining a correlation coefficient between the instrument scores and one or more external variables which are known to directly measure the characteristic of interest. Criterion-related validity coefficients will be less than reliability coefficients, since reliability is a necessary but not sufficient condition for validity. For convenience, we often subdivide criterion-related validity into two types: predictive validity and concurrent validity.

**Validity, Differential:** When large enough minority groups exist, it is often important to obtain separate validation studies for each of these subgroups. We may find that for the general public, certain relationships will hold. However, when we examine subgroups within the population, these relationships may no longer be meaningful.

**Validity, Discriminant:** The correlation between the same traits as rated by different raters should be higher than the correlation between different traits as rated by the same rater. (See convergent validity.)

**Validity, Face:** Face validity is concerned with whether the instrument *appears* to be measuring what it is purporting to be measuring. A test is not necessarily valid just because it has face validity, but most valid tests have face validity. The presence or absence of face validity will affect the motivation of the participant. There is no numerical value for assessing face validity. The assessment of face validity is usually obtained by soliciting subjective comments about the instrument from administrators, users, instrument takers, and potential takers.

**Validity, Predictive:** Predictive validity is concerned with the ability of the instrument to make long range forecasts regarding the characteristic of interest. Thus, we attempt to correlate the scores obtained on the instrument with some measure of the characteristic which is ascertained in the future. Examples of predictive validity are the correlations between selection scores for job applicants and future performance on the job, correlations between graduate entrance examinations and success in graduate school, or correlations between scores on stress instruments and future heart disease. Instruments which have modest but statistically significant predictive validity can be very useful in increasing overall productivity in industrial settings.

**Variability:** Variability is concerned with the variation, dispersion, or spread of a set of values. There are many measures of variation, including the variation ratio, the range, the interquartile range, the semi-interquartile range, the median deviation, the mean deviation, the variance, the standard deviation, and the coefficient of variation. Determining which of these measures is appropriate for any given data is based on the level of measurement of the data being analyzed. If the data achieve at least interval level scale, the standard deviation is usually the measure of variability of preference.

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