

## **TECHNICAL ASSISTANCE – JOB ANALYSIS**

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### **GENERAL**

Job analysis is a process used to capture information about jobs, particularly tasks; duties; knowledge, skills and abilities (KSAs); and competencies. A job analysis may be used for multiple purposes, such as selection, compensation, and performance management. Each type has different goals and uses as described in the next paragraph. Many focuses are possible in a job analysis, but considerably more time and resources are required for a more thorough multi-purpose job analysis than for a single-purpose job analysis.

Selection-oriented job analysis techniques focus on identifying important work behaviors and the tasks associated with them. This includes an analysis of the important work behavior(s) required for successful performance and their relative importance and, if the behavior results in work product(s), an analysis of the work product(s). The information produced from this type of job analysis is most useful for making decisions on selection, performance management, and training.

In contrast, a classification-oriented job analysis may focus on relevant compensable factors (e.g., decision making, complexity), describing work behaviors in a way that distinguishes among levels within these factors. This type of job analysis is often is a foundation for compensation decisions based on similar work of all jobs in a class.

The information published in this document addresses the type of job analysis conducted for the purpose of employee selection. The selection-oriented job analysis is the basis for development of valid selection instruments that are used to differentiate between potentially good and poor workers. A job analysis that produces a valid examination should identify the job characteristics that distinguish among different levels of work performance, are not easily learned on the job, and are present to at least a moderate extent in the applicant pool. It is critical that the examination plan and examination(s) are not finalized until after the job analysis is completed.

Any job analysis should focus on the work behavior(s) and the tasks associated with them. If work behavior(s) are not observable, the job analysis should identify and analyze those aspects of the behavior(s) that can be observed and the observed work products. The work behavior(s) selected for measurement should be critical work behavior(s) as measured by importance and difficulty to learn, and/or frequent work behavior(s) constituting most of the job.

### **INFORMATION COLLECTION**

The HR specialist collects details about the job and performance levels and then groups that information into general factors that are important for successful job performance. The following are six basic techniques used to gather information about a job:

- Literature review
- Direct experience
- Interviews
- Worker logs
- Questionnaires
- Observation

Regardless of the technique, the information collected must be analyzed and its link to elements of the selection process documented.

## **CHARACTERISTICS OF GOOD JOB ANALYSES**

An appropriate job analysis consists of four key elements: reliability, validity; quantification; and adaptability. These are described below.

### Reliability

Reliability refers to the extent to which a process or a result can be replicated. A reliable job analysis procedure is one that provides essentially the same results when it: (1) is applied to the same job by another HR Specialist; (2) relies on a different sample of job experts; or (3) is applied at a different time. Reliability of a job analysis procedure does not guarantee its validity.

Standardized job analysis methods produce acceptable to high levels of reliability. Particularly high levels of reliability can be demonstrated for methods that rely on structured questionnaires such as worker-oriented questionnaires, job inventories, or checklists. This is especially true if the structure of these instruments carefully controls the usage and meaning of the language.

### Validity

Validity is the extent to which the analysis measures what it was designed to measure. It is a separate requirement from reliability. The validity of a procedure depends on its purpose. A job analysis can only be valid for examination development and selection if it identifies those factors that differentiate among levels of performance in the particular job. A job analysis method that simply describes what is done and does not evaluate levels of performance is not valid for development of an examination.

### Quantification

Quantification is an important aspect of most major job analysis methods. Quantification involves assigning a numeric value to the data in order to differentiate relative importance of items, analyze large amounts of data, and provide a defensible basis for selection decisions. However, the HR professional must utilize professional judgment acquired through study and practice to appropriately interpret the significance and use of results.

## Adaptability

Adaptability refers to the extent to which the results of an analysis are adaptable or useful in other contexts. Generally, procedures that are narrative and subjective are low in adaptability. Structured instruments that use a similar format and process for a variety of applications tend to be high in adaptability.

## **JOB ANALYSIS METHODS**

There are multiple methods of conducting a job analysis. The methods vary depending on how information is collected, analyzed, documented and used. For the result of a job analysis to be useful, the individual conducting the analysis needs to understand why the analysis is being conducted and how to complete the analysis properly. Five job analysis methods suited for selection purposes are: critical incident, job element, structured interview, task inventory, and total competency. The following provides a brief description of the methods and their advantages and disadvantages.

**CRITICAL INCIDENT**<sup>1</sup> - incidents of good and poor performance are collected from Subject Matter Experts (SMEs), reported verbatim, analyzed according to a set of classification criteria, or summarized and used to develop examinations.

### **Advantages**

- Examples of on-the-job behavior provide the data.
- HR specialist does not need to decide which elements from the job analysis to use.
- Identifies critical behaviors that can make or break an individual or organization.

### **Disadvantages**

- Less structured in administration and analysis than other methods.
- Mass narrative data does not lend itself to quantitative analysis.
- Can involve a time-consuming classification procedure to define factors from the identified critical incidents.
- Resources (people and hours) needed are substantial due to large number of critical incidents required.

**JOB ELEMENT**<sup>2</sup> (jury of experts approach) – a panel of SMEs rate the job elements.

### **Advantages**

- Well defined - Requires less interpretation than other methods (close to a cookbook method that meets professional standards).
- HR Professional role mainly as group facilitator.

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<sup>1</sup>Critical Incidents are defined as extreme behavior either outstandingly effective or ineffective with respect to attaining the aims of the activity. (Flanagan, 1954).

<sup>2</sup> Job Element is defined as, a worker characteristic which influences success in a job, including combinations of abilities, skills, knowledges, or personal characteristics (KSAP). (Primoff, 1975).

- Relatively efficient – no more than two days to produce a complete job analysis.
- Relatively small number of people involved in the job analysis.
- Documentation from this method is very complete and well organized.
- SMEs involved in every stage of job analysis and feel ownership of examination process.

#### **Disadvantages**

- Job Element methodology is difficult to communicate (results lack universal definition).
- Normal documentation does not provide specifics about some factor definitions.

**STRUCTURED INTERVIEW** - an oral questionnaire. SME(s) give information verbally in a face-to-face interview. Ideal for position examinations or low use class examinations where reliability is limited by a small number of SMEs.

#### **Advantages**

- Quick turnaround time.
- Minimal time and resources.
- Less planning and is more flexible to apply when examination must be developed rapidly.

#### **Disadvantages**

- Time-consuming if many SMEs are used.
- Requires skill of the HR specialist to use properly.
- Danger of interviewer bias - requires experienced job professional.
- Reliability not as high as the more time-consuming methods.
- Validity of method can be problem if interview not focused on differences among levels of performance.

**TASK INVENTORY** – list of tasks, which are evaluated on dimensions relevant for selection or other purposes. Task statements are normally grouped under duties, which describe a major work function. Range from 200 – 600 tasks when used for other than selection, but 50 - 200 tasks are normally adequate to develop selection instruments for a single class.

#### **Advantages**

- Objectivity.
- Reliable description of job or class of work when fully utilized.
- Provides a complete description of work being done, which can be used for classification purposes.
- Tasks can be used directly as items when developing checklist ratings of training and experience, which enhances defensibility and minimizes time to develop an examination from a completed job analysis.

#### **Disadvantages**

- Limited for selection use - does not focus on worker characteristics, which differentiate among levels of performance.
- Time consuming when fully utilized.
- Validity of resulting examination may suffer because tasks are discrete units of work, which do not adequately cover the relevant performance domain.

- Important non-routine, non-discrete behaviors may not be reflected in task statements.
- For tests other than a Training & Experience Checklist, knowledge, skills, abilities, and personal characteristics (KSAPs) must be inferred from numerous tasks and importance of any KSAP must be subjectively determined considering all tasks in which it is involved.

**TOTAL COMPETENCY** - a comprehensive job analysis method. The purpose of this job analysis is to identify the important and frequent tasks performed by job incumbents, and the KSAPs necessary to perform the tasks (Cascio, 1992). Designed to address the 10 primary characteristics that make a job analysis defensible.

#### **Advantages**

- Defensibility.
- More cost-effective statewide over time, since subsequent vacancies in same class may be filled by reviewing existing job analysis with SMEs and updating as needed, rather than conducting a complete new job analysis each time the class is filled.
- Links competencies to tasks in a manner that makes the link evident to the reader.
- Long-range benefits of not having to do full-blown job analysis each time a vacancy occurs.

#### **Disadvantages**

- Investment of time and effort. Difficult to convince an appointing authority of long-term investment if position needs to be filled immediately.
- Can be tedious to produce the calculations and documentation.

These methods are used for several reasons. They have no predefined set of factors so they allow for more flexibility than a predetermined factor structure. They cover a range of needs in doing job analyses because they differ in reliability, validity, and required documentation, resources, and time. Remember: a more thorough job analysis produces a higher quality of reliability, validity and documentation.

## **OBJECTIVES OF SELECTION-ORIENTED JOB ANALYSES**

When developing a job analysis for selection purposes, there are three basic considerations: validity, defensibility, and minimizing time and resources. These are described below.

### **Validity**

The five commonly used job analysis methods described above are intended to form the basis of content validity. An examination can claim content validity if the domain of job performance is adequately sampled by the examination. The job analysis should lead to development of a content-valid selection device that differentiates among performance levels in the areas selected for evaluation.

## Defensibility

Documentation is the key to defensibility. The analysis should provide as much documentation as is practical given the demands for validity and the limitations of time and resources. Reliability also contributes to the defensibility of a job analysis.

## Minimizing Time & Resources

Minimizing administrative time and resources should always be a consideration. This consideration will limit the other two objectives. In general, the more time and resources that are devoted to the job analysis, the more valid and defensible the resulting examination will be.

## **SELECTING A JOB ANALYSIS METHOD**

Choosing a job analysis method for development of any particular examination is not simple. It requires a great deal of professional judgment and analysis. The following provides a summary of the considerations in selecting a job analysis technique:

- The required level of validity and defensibility of the exam based on characteristics of the position(s) being filled (i.e., position level, likelihood the exam will be challenged, consequence of a poor hire or amount of time the position is left vacant, etc.)
- Time and resources required to develop and administer the job analysis method and exam
- Preliminary identification of competencies
- Preliminary examination plan

## **PREPARING FOR A JOB ANALYSIS**

There are a number of functions that may be completed prior to doing the actual job analysis. By investing time in planning and preparing for the job analysis, completion of the actual job analysis will take less time and effort.

### Subject Matter Expert (SME)

The subject matter expert(s) should be identified and invited to participate in the job analysis. One individual or a number of individuals may be identified. Generally, the HR professional will work with one or two SMEs, probably the supervisor and/or incumbent, when developing an examination to fill a specific position. If the job analysis will be used to develop an examination for system-wide use, SMEs from a number of agencies should be included.

To assist the SME(s) in preparing for the job analysis, you may wish to provide a copy of the Technical Assistance - Hiring Guide for Managers of The State of Colorado Personnel System and other relevant documents for review. The Technical Assistance can be found at <http://www.colorado.gov/dpa/dhr/select/docs/hiring.pdf>.

## Literature Review

A literature review involves researching existing documents related to the position/class for which the job analysis is being conducted. Documents you may wish to examine include:

- Class description - provides a quick overview of the class and indicates further job analysis needs for examination construction
- Position description questionnaire (PDQ) - provides detailed information about the specific job
- Existing job analyses, job profiles, and examinations - assist in making preliminary decisions about the exam plan and job analysis approaches
- Task inventory - provides a formally developed list of tasks and competencies (such as may be found on Office of Personnel Management's HR Manager) that may be used as a starting point for developing task statements and identifying competencies during the job analysis
- Performance plans and performance reviews of current and previous incumbents of the position - provide information about the performance domain that is the ultimate criterion for any selection device

## **DOCUMENTATION**

The amount and extent of the documentation produced for a job analysis depends on the method used. Listed below are the key elements that need to be included in the documentation at a minimum, regardless of the method:

- A description of the job analysis method used;
- The work behavior(s), associated tasks, and if the behavior results in a work product, a complete description of the work product;
- Criticality and/or importance of the work behavior(s);
- For each key work behavior, a link to the corresponding KSAs and the level required; and,
- A completed SME Information Sheet for each SME that participated in the process.

**TECHNICAL ASSISTANCE  
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