JOB ANALYSIS
(and Job Evaluation)
Personnel Psychology – subfield of I/O psychology focusing on the management of human resources

- Recruitment
- Selection
- Placement
- Psychometrics
- Individual differences
- Criterion development
- Performance appraisal
- Training and development
- Team selection and training
- Legal issues - Equal Employment Opportunity, Title VII, CRA 1991
Applicant/employee flow through and interactions with various personnel systems

Recruitment → Selection → Placement → Performance Appraisal → Termination

Training

JOB ANALYSIS
Job Analysis

• systematic assessment of behaviors (and subsequently, KSAs) required to perform a job
• process by which we obtain information about jobs
• an information gathering process devoted to the collection and analysis of job-related information for use in a wide variety of ways
  ▪ selection
  ▪ criterion development & performance appraisal
  ▪ training & development
  ▪ job evaluation & compensation
  ▪ job design
Job Analysis Process/Sequence

1. Collect job-related information
2. Determine duties, MWBs, & tasks
3. Determine KSAOs:
   - Needed upon entry
   - Importance
4. Determine:
   - Importance
   - Frequency
   - Consequences of error
   - Difficulty
5. Finalize job description
6. Use for specified personnel function (e.g., selection, training, criterion development, performance appraisal, job evaluation, and job design)
Job Analysis-Based Test Development Sequence

1. Collect job-related information
2. Identify/Determine duties, major work behaviors, & tasks
3. Identify/Determine KSAOs underlying major work behaviors, & tasks
4. Develop and finalize job description (iterative process)
5. Design and develop tests to measure KSAOs
Collecting Job-Related Information

Hierarchy of Terms

• Class/Series
  ▪ Job Family/Class
  ▪ Job
    □ Position
      - Incumbent
      - Incumbent

• Duty
  ▪ Task
    □ Element
Collecting Job-Related Information

• Who performs a job analysis?
• What information is to be collected?
  ▪ description of the job
  ▪ major work behaviors and activities
  ▪ knowledge, skills, and abilities (KSAs)
  ▪ outcomes of worker activities
  ▪ working conditions — physical & social
Collecting job-related information

**Sources of Job Analysis Information (Methods)**

- interviews
- observation
- performance
- questionnaires — standardized [PAQ] and unstandardized
- task inventories/checklists
- critical incidents
- training materials
- Dictionary of Occupational Titles (DOT)
- O*Net
- employee log books/diaries
- previous/old job descriptions
- other sources
Interviews

- most common method
- types
  - open/unstructured
  - semi-structured
  - structured
- if conducted properly, interviews can be a very effective job analysis tool
• Limitations
  ▪ information distortion
    ▪ social sources of inaccuracy
      - social influence processes
      - self-presentation processes
    ▪ cognitive sources of inaccuracy
      - limitations in info processing systems
      - biases in info processing systems
    - can minimize effects by interviewing multiple levels
  
  ▪ resource demands = time and money
    - interview small subset, develop questionnaires, and then administer to larger sample
Observation

- natural complement to interviewing
- job analyst (observer) observes and records on-going job behaviors. Can also be accomplished via video-taping
- disadvantage of intrusiveness and reactance; incumbents may modify their behavior when under observation
  - typical vs maximal performance
  - constrained by job type
- advantage of firsthand information
Performance/Participation

- job analyst performs the job
- advantage of firsthand experience
- disadvantages
  - KSAs required
  - risk and liability
  - function of the job
Questionnaires, Task Inventories/Checklists

<table>
<thead>
<tr>
<th>DUTIES</th>
<th>Importance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Designs and creates a variety of signs (including public information signs, park identification signs, truck signs, traffic regulatory signs, and signs on football field) using computer programs and vinyl sign making equipment.</td>
<td>□ □ □ □ □ □</td>
<td>□ □ □ □ □ □</td>
</tr>
<tr>
<td>II. Designs signs and logos, paints signs by hand, and drives vehicle to work site to letter office doors or to install signs.</td>
<td>□ □ □ □ □ □</td>
<td>□ □ □ □ □ □</td>
</tr>
<tr>
<td>III. Silkscreens signs.</td>
<td>□ □ □ □ □ □</td>
<td>□ □ □ □ □ □</td>
</tr>
<tr>
<td>IV. Performs other related tasks as assigned or required.</td>
<td>□ □ □ □ □ □</td>
<td>□ □ □ □ □ □</td>
</tr>
</tbody>
</table>
Job analysis methods

Questionnaires, Task Inventories/Checklists

• standardized or nonstandardized

• Position Analysis Questionnaire (PAQ) — most common standardized job analysis questionnaire

• standardized measures have the advantage of furnishing normative data, but have the disadvantage of being inflexible

• nonstandardized questionnaires/inventories are those that the job analyst or I/O psychologist develops for his/her own specific use on a particular project
Critical Incidents Approach

- behaviors that make crucial differences for doing job effectively or ineffectively
- what led up the incident?
- what did the individual do?
- what were the consequences?
- were consequences controllable?
Training Materials

- training manuals and standard operating procedures are often good sources of information
- a content analysis of these manuals can provide a comprehensive review of what must be learned in order to succeed on the job, what worker traits are considered to be important, and what the attributes of effective performance are
Dictionary of Occupational Titles (DOT)

- published by the Department Of Labor
- 1977, 4th edition; 1986, supplement
- provides standardized, comprehensive descriptions of job duties and related information
- 20,000+ military and civilian occupations
- each job is identified by a 9-digit occupational code. Amongst others, the code identifies a job's particular occupational group, and rates the functions performed (people, data, things)
Occupational Information Network (O*Net)

- Department of Labor
- online replacement of DOT
- <online.onetcenter.org>
Additional Sources

- Employee log books/diaries
- Previous/old job descriptions
Job Analysis Process/Sequence

1. Collect job-related information
2. Determine duties, MWBs, & tasks
3. Determine KSAOs
   - needed upon entry
   - importance
4. Determine:
   - importance
   - frequency
   - consequences of error
   - difficulty
5. Finalize job description
6. Use for specified personnel function (e.g., selection, training, criterion development, performance appraisal, job evaluation, and job design)
Job Analysis Process/Sequence

1. Collect job-related information
2. Determine duties, MWBs, & tasks
3. Determine KSAOs
   - needed upon entry
   - importance
4. Determine:
   - importance
   - frequency
   - consequences of error
   - difficulty
5. Finalize job description
6. Use for specified personnel function (e.g., selection, training, criterion development, performance appraisal, job evaluation, and job design)
Rating Data/Scales

- Importance
- Frequency/Time spent
- Criticality (imp & freq)
- Difficulty of learning/Time to proficiency
- Criticality/Consequences of errors
- Needed-upon-entry

- Team interdependency
  - team-relatedness
  - team workflow
# Determining MWBs & KSAs

## MWB and Task Importance and Frequency

<table>
<thead>
<tr>
<th>DUTIES</th>
<th>Importance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Designs and creates a variety of signs (including public information signs, park identification signs, truck signs, traffic regulatory signs, and signs on football field) using computer programs and vinyl sign making equipment.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>II. Designs signs and logos, paints signs by hand, and drives vehicle to work site to letter office doors or to install signs.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>III. Silkscreens signs.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>IV. Performs other related tasks as assigned or required.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>
Determining MWBs & KSAs

KSA Needed-Upon-Entry and Importance

### Knowledge, Skills, and Abilities

<table>
<thead>
<tr>
<th>Needed Upon Entry?</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0 1 2 3 4 5</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Designs and creates a variety of signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(including public information signs, park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>identification signs, truck signs, traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>regulatory signs, and signs on football field)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>using computer programs and vinyl sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>making equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Knowledge of the methods used to prepare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>metal surfaces for painting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Knowledge of the methods, materials, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equipment used in making and applying vinyl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sign faces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Knowledge of the basic techniques of all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard methods for painting such as airbrush,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spray gun, and others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Knowledge of computers and specialized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>software and equipment used in the production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of signs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Team-Relatedness and Team Workflow as Metrics of Team Interdependence

• Continued importance and centrality of teams in modern organizations
• Task analysis system to quantify teamness of occupations, jobs, and tasks
• Ability to numerically describe team requirements
• Quantifies “teamness” in a manner similar to how we quantify “importance” as a task characteristic
• Measure of perceived interdependence
• Potential uses
  – career exploration
  – training
  – job design
  – selection
  – research
  – as a diagnostic tool
Rating Data/Scales

- Teamness → two facets
  - how much?
  - what type?
- Team-Relatedness → degree or amount of interdependence
- Team Workflow → type of interdependence
KSAO Linkages to MWBs

- rational/judgmental but can and should be empirically confirmed

<table>
<thead>
<tr>
<th></th>
<th>Knowledge of I/O</th>
<th>Skill at conveying information</th>
<th>Ability to project voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giving lectures</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Preparing exams</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Job Analysis Process/Sequence

1. Collect job-related information
2. Determine duties, MWBs, & tasks
3. Determine KSAOs
   - needed upon entry
   - importance
4. Determine:
   - importance
   - frequency
   - consequences of error
   - difficulty
5. Finalize job description
6. Use for specified personnel function (e.g., selection, training, criterion development, performance appraisal, job evaluation, and job design)
Job Analysis Process/Sequence

1. Collect job-related information
2. Determine duties, MWBs, & tasks
3. Determine KSAOs
   - Importance
   - Frequency
   - Consequences of error
   - Difficulty
4. Determine:
   - Needed upon entry
   - Importance
5. Finalize job description
6. Use for specified personnel function (e.g., selection, training, criterion development, performance appraisal, job evaluation, and job design)
Job Description

• final product or outcome of the job analysis process
  ▪ job description
    ▪ narrative describing MWBs and associated tasks
    ▪ KSAs (linked to tasks) [job specifications]
    ▪ minimum qualifications
Job Description

- written statement of what the incumbent does, how he/she does it, and why he/she does it
- statement of the tasks, responsibilities, and working conditions
- this information can then be used to determine what KSAs and other characteristics are required to perform the job
Job Description

- narrative

- elements
  - title
  - activities and procedures
  - working conditions ➔ physical & social environment
  - conditions of employment
Task Statements

• Action verb
• Result
• Tools used
• Outcome ("in order to")
• Discretion

• “Gives lectures to students using overhead projector in order to convey information about Personnel Psychology”
Short Order Cook

 Prepares food and serves restaurant patrons at counters or tables. Takes orders from customers and cooks foods requiring short preparation time. Completes order from steamtable and serves customer. Accepts payment or writes charge slip. Carves meats, makes sandwiches, and brews coffee. Usually found in small establishments, such as lunch counters and snack bars.
Hair Stylist

Specializes in dressing hair according to latest style or period, following instructions of patron. Questions patron to determine hairdressing requirements. Studies facial features of patron or performing artist and arranges shapes, and trims hair to achieve desired effect, using fingers, combs, barber scissors, hair-waving solutions, hairpins and other accessories. Dyes, tints, bleaches, or curls or waves hair as required. May create new style especially for patron. May clean and style wigs and hairpieces.
Sign Painter

Designs and creates a variety of signs (including public information signs, park identification signs, truck signs, traffic regulatory signs, and signs on football field) using computer programs and vinyl sign making equipment. Designs signs and logos, paints signs by hand, and drives vehicle to work site to letter office doors or to install signs. Silkscreens signs. Performs other related tasks as assigned or required.
## Knowledge, Skills, and Abilities Required for the Position of Sign Painter

<table>
<thead>
<tr>
<th>Duties</th>
<th>Knowledge, Skills, and Abilities</th>
</tr>
</thead>
</table>
| I. Designs and creates a variety of signs (including public information signs, park identification signs, truck signs, traffic regulatory signs, and signs on football field) using computer programs and vinyl sign making equipment. | **Knowledge**
1. knowledge of the methods used to prepare metal surfaces for painting
2. knowledge of the methods, materials, and equipment used in making and applying vinyl sign faces
3. knowledge of the basic techniques of all standard methods for painting such as airbrush, spray gun, and others
4. knowledge of computers and specialized software and equipment used in the production of signs

**Skills**
1. skill in the preparation of metal sign blanks
2. skill in determining the tools and equipment needed to complete signs
3. skill in use of hand tools, specialized software and equipment used in the production of signs

**Abilities**
1. ability to interpret work from sketches, rough layouts, standard drawings, and specifications
2. ability to read English at the 8th grade level (paint cans, instructions)
3. ability to do simple math calculations (adding, proportions)
4. manual dexterity
5. visual acuity
6. finger dexterity |
Job Evaluation

• job evaluation is a procedure that is used to determine the relative value of jobs to organizations and thus the level of compensation to be paid
• relative value of job based on internal (and external equity)
• used to determine salary
• job evaluation uses information obtained from the job analysis
Job evaluation is **NOT** job analysis

Equal Pay vs. Comparable Worth

- Equal pay – equal pay for equal work
  - compensable factors
    - effort
    - skill
    - responsibility
    - working conditions

- Comparable worth ➔ equal pay for comparable worth

- It is important to realize that **job analysis** and **job evaluation** are two very different things.
Summary

• Job analysis is the basis/foundation of most, if not all personnel/HRM functions

• Both a professional and legal requirement
  - Albermarle Paper Co. v. Moody (1975) — job analysis is a necessary part of test validation and must be done to defend challenged employment practices
Summary

- Important factors to consider
  - the job analysis must . . .
    - be behaviorally based (i.e., start w/ specific observables)
      - to the extent that one strays from behaviors that can be “seen, heard, otherwise perceived,” reliability is reduced
    - be supervised by a trained job analyst
    - use multiple methods and sources
    - use SMEs and incumbents that are a representative sample
    - be on-site
    - be well documented
Summary

• Complexities of job analysis
  ▪ dynamic nature of job performance
    – time-determined changes
    – employee-determined changes
    – situation-determined changes
  ▪ future-oriented job analysis
    – job analysis for jobs that do not yet exist
Summary

• Factors that influence job analysis outcomes
  ▪ source
  ▪ method

• Implications for meta-analysis
Summary

• Competencies and competency modeling
Some Common Misconceptions

• Job analysis is NOT a way to determine how well employees are performing their jobs; that procedure is called performance appraisal.

• Job analysis is NOT a way to determine the value of a job; that procedure is called job evaluation.