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**Job Analysis:
An Essential Human Resources Tool**

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Early 20th Century

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- Prior to 1920
 - Focus on trades and vocational education
 - Emphasis on motion studies and work simplification
 - Manufacturing
 - Major influence of World I
 - Need to select and train soldiers
 - Large scale recruitment and training

World War I

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- Work simplification
 - Recruits had a wide range of education and past experience
 - Need to recruit and train soldiers in a short amount of time
- Development of US Army mental tests provided measures of mental ability

Development of Large Scale Manufacturing

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- Work simplification made possible assembly line manufacturing
 - Manufacturing was broken down into minute steps
 - Jobs could be learned quickly by workers with minimal education
 - Large numbers of jobs were created
- Ford paid workers high enough wages so workers could afford to buy the cars they were building

Development of job analysis methods


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- World War I – Yoakum, Yerkes et al. 1920 describe analysis of gun-pointing behavior to develop a selection and training process for gun pointers on armed merchant ships
- Steps in the Job analysis for the gun-pointer project:
 1. Learn exactly what a gun-pointer had to do
 2. Reduce gun-pointing processes to their simplest neuromuscular terms
 3. Adapt approved scientific techniques to the study of these complex neuromuscular processes

Analysis of Gun-Pointer (Yoakum, Yerkes et al. 1920)

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- Steps in the analysis
 1. Measure time to start gun-pointing reaction when the target begins to move
 2. Accuracy of keeping sights on the moving target
 3. Time taken to respond to a change in direction of the moving target
 4. Soldier's ability to press the firing key when he was on the target
 5. The effect of soldier's firing on his pointing



Job analysis in 1920s

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- Link (1924)
 - “Much has been said and written about character analysis, but very little in comparison about job analysis”
 - “We have, therefore, these two distinct aspects of selection, the analysis of the man, and the analysis of the job, equally necessary in the selection of the right man for the job”

What is Job Analysis?

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- Bemis (1983)
 - “Job analysis is a systematic procedure for gathering, documenting and analyzing information about three basic aspects of a job: job content, job requirements, and context in which the job is performed”

Bemis, ctd.

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- Job Content – the activities involved in the job, including duties, tasks and possibly including detailed information about the activities that make up tasks
- Job Requirements – includes such factors as education, experience, degrees, licenses and certifications
- Job Context – includes the purpose, degree of accountability, extent of supervision received or exercised, potential consequences of error and physical demands and working conditions

Sources of job analysis information

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- Background research, including previous job analyses, job descriptions
- O*net
- Observation
- Interviews with incumbents, supervisors and managers
- Focus group meetings
- Questionnaires
- Worker logs

Job Analysis Techniques

Work-Oriented job analysis methods

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- Work-Oriented job analysis methods: focused on what the worker does
 - Time and motion studies
 - Process analysis
 - Functional job analysis
 - Developed by US Department of Labor
 - Focus on operations involving data, people and things
 - Used for the Dictionary of Job Titles (DOT), which is now being supplanted by the O*net
 - Task inventories

Work-Oriented job analysis methods, ctd.

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- Critical incident technique:
 1. What led up to the behavior
 2. What was the employee's behavior?
 3. What were the consequences of the behavior?

Worker-Oriented job analysis methods:
 These methods focus on the characteristics of the capabilities and characteristics needed to be successful in the job

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- Job Element Method
 - Developed by the U.S. Civil Service Commission in the 1950s (Ernest Primoff)
 - Focused on job elements (cognitive, psychomotor and work habits characteristics) required for success
 - Avoids incorporating task analysis
 - Job elements are rated on the following criteria:

Worker-Oriented methods
 Job Element Method, ctd.

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- Job Element Method rating scales
 - Barely acceptable worker: must an incumbent possess the element to be barely acceptable?
 - Superior Worker: Does the element distinguish super workers from those less capable
 - Trouble Likely if the element is ignored
 - Practical to Expect: is it practical to expect candidates to possess the element?
- J-Coefficient: a method of estimating the statistical validity of tests developed using the Job Element method – never widely adopted

Worker-Oriented methods, ctd.
 Position Analysis Questionnaire

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- Developed by Ernest McCormick in the 1960s
- Based on a standardized questionnaire that is administered by trained job analysts
- Scoring is by computer
- Since it uses a common set of elements for all jobs, it has been useful for job evaluation

Worker-Oriented methods, ctd.
 Other Worker-Oriented Methods (Brannick, et al., 2007)

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- Threshold Traits Analysis (Lopez)
 - Based on a set of 33 traits
 - “Can do” – physical, mental and learned abilities
 - “Will do” – Attitudes, motivation, social traits
- Ability Requirements Scales (Fleishman)
 - Based on a set of generic human abilities
 - Linked to tests
 - Allows clustering jobs into job families

Examples of Generic Human Abilities (Fleishman)
 Ability Requirements Scale

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Ability	Description
Cognitive Abilities Oral comprehension Mathematical reasoning Speed of closure Spatial orientation	Understand spoken words Reason with mathematical symbols Combine bits into meaningful pattern Tell where you are in relation to an object
Psychomotor Abilities Control precision Multilimb coordination Finger dexterity Speed-of-limb movement	Operate a vehicle Coordinate <i>movements</i> of two or more limbs Make skilled movements of the fingers Move limbs quickly
Physical Abilities Static strength Dynamic flexibility Gross body equilibrium Stamina	Exhibit push or pull strength Repeatedly bend, stretch, and twist Demonstrate balance Continue working over time
Sensory/Perceptual Abilities Night vision Hearing sensitivity Speech recognition Speech clarity	See in the dark Hear loudness and pitch Understand speech Speak clearly

Combination Job Analysis Method (C-JAM)
 (Brannick et al. 2007)

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- Includes aspects of several other job analysis methods
 - Includes identification of job tasks using SMEs
 - Tasks are rated by SMEs to obtain a measure of task importance
 - Identification and rating of attributes needed to perform the tasks - KSAOs
 - K = Knowledge of information required to do the job
 - S = Skills are the capacity to perform tasks requiring use of tools, equipment and machinery
 - A = Ability – capacity to carry out physical and mental acts required by the tasks, where use of tools, equipment and machinery is not a dominant factor
 - O = Other characteristics – refers to interests, values, temperaments and personality attributes (Competencies)

Combination Job Analysis Method (C-JAM), ctd.
(Brannick et al. 2007)

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- Rating scales for KSAOs are based on scales from the Job Element Method
 - ▣ Needed by a newly hired employee
 - ▣ Practical to expect in the labor market
 - ▣ Trouble likely if ignored in the selection process
 - ▣ Distinguishes superior from average worker
- C-JAM results in identifying KSAOs and linking them to important tasks

Competency Models

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- Based on the idea that competencies important for management and leadership capability
- Many competency models have been developed for use by management consultants
- There is not a single accepted definition of “competency”
- One author, Bartram (2005) has described the competencies used by the consulting firm SHL that they refer to as “The great eight competencies”
- Bartram refers to SHL’s approach as Criterion-Centric.
 - ▣ The use of competencies stated in the language of management is easier for managers to understand than personality construct labels

Competency Model Example – Bartram, 2005

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Eight Great Competencies - Bartram (2005)		
Competency Label	Description	Hypothesized Big Five, motivation and ability relationships
1. Leading and Deciding	Tells other people what to do. Decides what action to take.	Need for Power and Control
2. Supporting and Cooperating	Works well with other people; team player.	Agreeableness
3. Interacting and Presenting	Persuades others; has social confidence and presentation skills.	Extraversion, general mental ability
4. Analyzing and Interpreting	Analyzes problems effectively; comfortable with data.	General mental ability, openness to new experience
5. Creating and Conceptualizing	Deals effectively with change. Moves things forward according to the big picture.	Openness to new experience, general mental ability
6. Organizing and Executing	Plans work to meet objectives; ensures customer satisfaction.	Conscientiousness, general mental ability
7. Adapting and Coping	Handles pressure and bounces back after setbacks.	Emotional stability
8. Enterprising and Performing	Focuses on results. Understands finances.	Need for achievement, negative agreeableness
Adapted from Bartram and Brannick, et al.(2007)		

Why Analyze Jobs?

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- Classification and compensation
- Develop criterion measures
- Develop selection procedures
- Content-oriented validation
- Legal compliance
 - ▣ Civil Rights Act
 - ▣ Uniform Guidelines on Employee Selection Procedures
 - ▣ Fair Labor Standards Act and California DFEH
 - ▣ Americans with Disabilities Act
 - ▣ Equal Pay Act

Uniform Guidelines Statement on Job Analysis

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- Standard 60-3.14, A: " Any validity study should be based upon a review of information about the job for which the selection procedure is to be used. The review should include a job analysis except as provided in section 14B(3) of this section with respect to criterion-related validity. Any method of job analysis may be used if it provides the information required for the specific validation strategy used.

Uniform Guidelines Statement on Content Validity

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- Standard 60.3.14, C, (2): "There should be a job analysis which 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). 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) and/or important work behavior(s) constituting most of the job.

Fair Labor Standards Act (FLSA) and California Labor Code

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- Determination of exempt vs non-exempt status
 - Overtime is required for non-exempt employees
 - These employees must be paid for time in excess of 40 hours in a week at 1.5 times their hourly rate
 - Must pay for time in excess of 8 hours in a day at 1.5 times the hourly rate
 - Meal breaks
 - Non-exempt employees must be provided a meal break of at least 30 minutes after five hours of work in a shift
 - Each violation of the above rules results in a penalty of one full hour pay for each violation



Americans with Disabilities Act

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- Essential job functions
 - These are the most important functions of the job
 - Must be included in job descriptions
 - Criteria for identifying essential functions
 - The position exists for the purpose of performing the function
 - There are a limited number of employees available to perform the function or to take on the function
 - The function is specialized, and the incumbent is hired based on their ability to perform it

ADA, ctd.

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- Factors to consider in identifying essential functions
 - The judgment of the employer
 - The effect of not filling the position
 - Time spent performing the function
 - Input of SMEs who are familiar with performance of the function
 - Terms of a collective bargaining agreement may be considered

ADA, ctd.

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- A written job description listing the essential functions must be prepared prior to advertising the position
- Employees must be able to perform the function with or without accommodation
- Interactive process must be employed when processing a request for accommodation

Equal Pay Act of 1963

Prevention of pay discrimination based on sex

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- "SEC. 206. [Section 6] (d) (1) No employer having employees subject to any provisions of this section shall discriminate, within any establishment in which such employees are employed, between employees on the basis of sex by paying wages to employees in such establishment at a rate less than the rate at which he pays wages to employees of the opposite sex in such establishment for equal work on jobs the performance of which requires equal skill, effort, and responsibility, and which are performed under similar working conditions, except where such payment is made pursuant to (i) a seniority system; (ii) a merit system; (iii) a system which measures earnings by quantity or quality of production; or (iv) a differential based on any other factor other than sex:"

Equal Pay Act of 1963, ctd.

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- Equal Pay comparison – based on sex
 - The jobs to be compared must be in the same organization or unit of the same organization
 - Jobs are to be compared the following criteria
 - Skill: This includes evaluation of experience, ability, education and training required
 - Equal effort: This refers to the amount of physical or mental exertion needed to perform the job
 - Responsibility: Degree of accountability, including:
 - Number of employees supervised
 - Amount of authority or responsibility
 - Consequences of poor performance
 - Authority to represent the employer with customers, suppliers or upper management
 - Working conditions: Including hazardous working conditions
 - Consider job-related reasons for differences in pay

So many jobs – So little time

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- Public agencies and large companies have large numbers of job classes
 - Performing job analysis and validation for all of those jobs is a major challenge
 - Some techniques are available to help make the job somewhat more manageable.
 - Friedland et al. (1981) presents criteria to apply in establishing job analysis and validation priorities

So many jobs – So little time, ctd.

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- Factors to consider in establishing job analysis and validation priorities
- History of adverse impact on protected groups
 - Underrepresentation of minority groups and women
 - Large applicant groups in relation to the number of job openings
 - Frequency of examinations
 - History of candidate protests
 - Quality of candidates hired from past exams
 - Changes in job classifications as a result of reorganization or job restructuring

So many jobs – So little time, ctd.

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- Select the highest priority classifications for job analysis and validation
- Use an abbreviated job analysis approach for very small classes
- Some small classes have very low turnover and are seldom open for recruitment. These classes may not require attention until a recruitment is planned

So many jobs – So little time, ctd.

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- Essential job functions should be identified prior to recruitment for every examination
 - ADA requires that essential functions are identified prior to recruitment
 - Essential functions should be listed in job descriptions and made available to candidates in recruitment information

Conclusion

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- Development and applications of job analysis in human resources selection have been presented
- Legal implications of job analysis have been discussed in relation to key legislation and regulations
- Use of job analysis for job evaluation, training and other applications were not addressed
- It is clear that job analysis is central to a large proportion of human resources work

Job Analysis

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Questions?