Fleishman Job Analysis Survey (FJAS)

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HP Activity Categories:
Identification of competence requirements, training needs and selection process [1]

Resource Type:
Method

Abstract:

The Fleishman Job Analysis Survey (FJAS) is a long established job analysis instrument for the description of jobs and tasks in respect to required abilities and skills. It provides a common taxonomy of definitions of those abilities and skills which can be used by experts to assess tasks in regard to the requirements on those skills and abilities using Behaviour Anchored Rating Scales (BARS).

The FJAS consists of a total of 73 knowledge and skill scales for a variety of abilities from the cognitive, the psychomotor and the sensory domain as well as interactive and social domains. The method assumes that jobs / tasks can be differentiated by their skills / abilities that are required to perform them and that people, who know the job well (i.e. job incumbents, supervisors) can make reliable and valid assessments of the required skills / abilities.

The FJAS can be applied for all kinds of jobs but has a strong history in the aviation context. It reflects 4 decades of research on mental abilities. Factor analytic studies helped support the identification and description of a total of 52 various abilities. The FJAS provides a handbook proposing tests that might be used for selection. Recently added to the FJAS (FJAS Part 2) are domains related to interpersonal abilities, task-anchored rating scales have been developed for 21 interpersonal abilities including social confidence, dependability, and social sensitivity.

References

Developer and source:

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Year of development / publication, updates etc:


General Description

Purpose:

The FJAS determines the levels of knowledge, skills, and abilities (KSAs) required for performing a wide range of jobs / tasks. Each KSA is clearly defined and spans human abilities concerning cognitive, psychomotor, physical, and sensory-perceptual performance. Experienced employees (Subject matter experts) use behaviourally-anchored rating scales to determine how relevant each KSA is to their job.

Type (e.g. observation, questionnaire, interview, checklist, measurement instrument, etc.):

Survey Questionnaire; the FJAS consists of a series of behaviourally anchored 7-point rating scales (BARS)

Technical description of method or tool etc

Description of the content/study:

The FJAS determines the levels of knowledge, skills, and abilities (KSAs) required for performing a wide range of jobs / tasks. Each KSA is clearly defined and spans human abilities concerning cognitive, psychomotor, physical, and sensory-perceptual performance. Experienced employees (Subject matter experts) use behaviourally-anchored rating scales to determine how relevant each KSA is to their job. Consist of seventy three scales covering the domains of cognitive, psychomotor, (physical) and sensory abilities as well as interactive/social and knowledge/skills scales. FJAS is delivered with a detailed Administrators Guide (Fleishman & Reilly 1992a) and the Handbook of human abilities? (Fleishman & Reilly 1992) providing some theoretical background and lists of validated tests measuring a certain abilities including reference data of test providers. In 1996 the FJAS Part 2 was published offering additional social/interpersonal abilities.

The Ability Requirements Taxonomy covers five areas (covered also by BARS):

- Cognitive (21 Scales)
- Psychomotor (10 Scales)
- Physical (9 Scales)
- Sensory/perception (12 Scales)
- Social/inter-personal skills and abilities (21 Scales)


Technical requirements for using the method, tool, etc:

Application is usually not during task performance, experience in the job to be assessed is required.

Measure/Response Type:

Survey Questionnaire; the FJAS consists of a series of ?behaviourally anchored? 7-point rating scales (BARS).

Results obtained and interpretation:

The level to which certain ability is required in the job under question is measured, with all results being at above scale average meaning that this ability is relevant for the job and thus should be tested. For interpretation norms are provided. Mean ratings per scale.

Evaluation

Advantages:

The FJAS provides a full picture on relevant abilities and skills required to perform a task.

Sensitivity of measurement is ensured.

Diagnosticity: The FJAS identifies differences and similarities between jobs.

Generalisability: The widespread use and existing evidence from a broad area of application show, that the F-JAS has no systematically reduced generalisabilty and can be applied for all jobs.

There are no known problems with the acceptance of FJAS. The applicability in ATM and generally in aviation has been demonstrated in various studies.

Disadvantages:

n/a

Alternative Methods:

Task analysis, Critical Incident Technique, Position Analysis Questionnaire (PAQ). Possible to combine with other tools, like the SHAPE tools.

Usability (ease of use, efficiency, effectiveness)

Ease of use:
medium

Efficiency:
medium

Effectiveness:
high

Reliability:
Inter-Rater and Split-half reliability results from various studies gave high to very high reliability coefficients.

Validity:

Construct Validity: The FJAS scales are based on factor-analytical studies of abilities and skills; the FJAS provides a consistent, plausible and well to interpret pattern of ability requirements. In several studies it was demonstrated that profiles of abilities derived independently from each other were highly similar. On the other side, existing differences between different tasks / jobs lead to different ability profiles in the FJAS (this was demonstrated in studies with civil pilots (first officers vs. captains) and ATCOs (APP and ACC controllers).

Content Validity: This assumes that the FJAS covers all relevant abilities / skills required in a job to a high extent. This was also demonstrated in several studies with different jobs / job levels. Raters used about 80% of the scales available to describe the jobs in terms of required abilities. On the other side could 80% of the tasks performed by job incumbents be assigned to any of the 52 core abilities.

Predictive Validity: This was demonstrated in studies which used the (mean) FJAS score as predictor to predict the actual task performance of persons in a performance test as a criterion. It could also be shown that predictor tests selected based on FJAS profiles were valid predictors for task performance in the tests (Fleishman, E.A. & Mumford, M.D. (1991), Evaluating classifications of job behaviour: A construct validation of the ability requirement scales. Personnel Psychology, 44, 523-575.

Sample sizes of N >=20 raters are reported to lead to stable valid information (in terms of mean ratings) about job requirements.

The outcome of some studies on the validity show good construct, content and predictive validity in a number of studies; the F-JAS covers job requirements of different jobs and tasks to a high degree. The requirements of ISO 10075-3 regarding validity are fully met (i.e. concurrent validity) of the FJAS.

Required effort (to conduct & to analyse):

Medium to high effort to conduct and analyse the F-JAS.

**Level of HF expertise needed (required user qualification)**

Some basic understanding in human factors to be able to administer the FJAS. A set of FJAS-1 and/or FJAS-2 booklet (incl. administrator guide) has to be purchased. The researcher can decide which scales are applicable to the job in question.

Other expertise needed (required user qualification):

Detailed administrators guide, standard answer sheet, automated scoring is available.

**Cost Information**
As of 2011, the price is calculated as per job (up to 25 raters); for the F-JAS 1 price is 176,00 USD; for the F-JAS 2 (Interpersonal Scales) 143,00 USD. In addition the valuable Handbook of Human Abilities (Fleishman and Reilly) and the Taxonomies of human performance (Fleishman & Quaintance) will require another $100.00. Available online at http://www.managementresearchinstitute.com/f-jas.aspx [3]

The complete German Version including manuals and scales costs 244,75 EURO.

Low: (<1000 €) low costs to purchase, no special devices necessary
Experiences of use by SESAR partners (including references):


Applicability to lifecycle phase (E-OCVM):

All phases where job tasks are known or can be modelled.

Application Area:


Keywords:

Job analysis, Job survey.

Short Description:

The Fleishman Job Analysis Survey (FJAS) is a long established job analysis instrument. It consists of 73 knowledge and skill scales for a variety of abilities from the cognitive, the psychomotor and the sensory domain as well as interactive and social domains.

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Links
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