A NEW APPROACH TO JOB EVALUATION

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INTRODUCTION

Job evaluation is the process of establishing the relative worth of jobs, to provide a basis for a pay structure, by analysing jobs in terms of «job demands», or «factors». Factors vary with job populations but will normally include the knowledge demanded by the job, mental skills, such as problem- solving and numerical ability and communicating skills.

Different degrees, or levels, of demand are recognised (but nor always carefully defined) within each factor. For example, for a factor «numerical ability», it may be appropriate, for a particular job population, to deline the levels of demand as follows :

Low

Elementary arithmetic ; adding ; subtracting ; dividing and multiplying.

Moderate

Calculation and use of percentages ; fractions and decimals.

High

(i) Use and interpretation of formulae ; usually repetitive.

(ii) Substitution of symbols of formulae, e.g. compound interest rates.

very high

Use and interpretation of different/more complex formulae ; involving selection of information.

In the present method there are four demand levels. It would be unwise to have more than four or five levels, because of our inability to discriminate consistently between a greater number. Nevertheless some methods of job evaluation do have more levels.

The job analysis entails determining, for each job, its demand level for each factor.

THE POINTS GAME

It is unfortunate that a subject as important as job evaluation should be characterized by more subjectivity than is necessary, for example :

(i) Think of a number

In the available analytical methods different numbers of (maximum) points are allotted for different factors. This builds subjective relativities into the method at the outset. Why should that factor be given, say, eight points? Where did eight come from ? Think of another number.

(ii) **Alpha grading indicated**

It is currently common practice to allot points to each demand level within each factor, thus assuming further sets of relative values ; for example, if eight points were given to the factor «problem - solving», the set of assumed relative values for the four levels, may be 2, 4, 6, 8. This determination to allot numbers to prose definitions is really quite extraordinary. It illustrates the fascination of numbers for the innumerate. Why not 1, 2, 4, 8 instead of 2, 4, 6, 8? They would be equally round, whole, tidy - and suspicious - numbers.

In will be obvious, to the salary earners affected, that only minor amendments would be needed to the assumed points values of factors, and the assumed points values of demand levels to get quite different results. The assumptions are the main determinants of the results and they make a mockery of the demand level definitions and the job analysis.

The only equitable, and rational, course is initially to use alpha grades - «A» for the highest, and so on ; for a major part of job evaluation is to determine these relativities. One of the reasons why alpha grading has not been employed in past methods could have been a lack of development effort in job evaluation ; another reason could have been the lack of appreciation of modern methods of statistical interpretation.

(iii) Inescapable approximations

Assessors are not able to evaluate the demand level within a factor more accurately than placing jobs in one of a limited number of categories, say, four, whereas jobs are probably more spread out over the range of demand. The allotment of jobs to these categories, or levels, are therefore approximations (e.g. that all the jobs graded «A» for a given factor have an approximately equal level of demand for that factor).

Such approximations are inescapable because of our inability to discriminate consistently between a greater number of levels.

(iv) Unwarranted Claims of accuracy

There is a tendency in some job evaluation applications to attach too high a degree of accuracy to total point scores and to the points intervals between jobs. This is due to users overlooking the nature of the raw data - the approximations, let alone the assumptions - on which the evaluation is based. Given the quality of the basic data, it is unwise to claim, for any method, that it can quantify the demand gap between jobs.

(v) Meaning of «relative worth»

It needs to be stressed to all involved that job evaluation is not an exact science, all that it can do is to place jobs in a rank order of demand - and that is all that «relative worth» means. And it can only do that if the approximations are accepted.

If the foregoing is true we should deal in «ranks» and not points, yet the available analytical methods are points methods. If any unjustifiable assumptions entailed in these methods become apparent to employees there is likely to be dissatisfaction with the resulting pay relativities.

A review of the existing methods of job evaluation led to the development of the present method. This new method was designed to take full advantage of modern statistical thinking and to eliminate the weaknesses of other methods. The salient features are now briefly described.

JOB ANALYSIS

The range of Work

An examination of the range of work carried out enables the factors under which jobs should be analysed to be identified. The factors will be reviewed during and at the end of the first stage of the exercise, that is the evaluation of a representative sample of jobs. During the examination the several jobs in the job population are identified and job titles clarified.

Definitions of Demands

Within each factor only four levels of demand are recognised, and defined, for the purpose of job analysis. Unlike other methods, no assumptions are made about the values of the demand levels. The highest level is termed «A» and the other levels, in descending order of demand, «B», «C» and «D». The draft definitions of demand are progressively refined throughout the first stage.

JobDemand Vectors

The results of the analyses are the job demand vectors for each job. A job demand vector is simply a statement of the levels of demand in each factor, for that job, in alpha form, for example :

B B A B A B B B D G

STATISTICAL INTERPRETATION

The job demand vectors form a matrix and are input to the computer in that form :

	FACTORS									
	1	2	3	4	5	6	7	8	9	10
Job 1	B	B	A	B	A	(B)	B	B	D	(C)
Job 2	B	B	A	B	A	(C)	B	B	D	(B)

etc., to, say, Job 50.

The relative worth of whole jobs is the sum of the relative worths of their constituent job demands. These constituent job demands are shown in the job demand vectors.

To determine whether or not Job 1 has a greater total demand than Job 2 we need to know the relative worth of these constituent demands. In this example this boils down to the relative values of B and C in Factors 6 and 10 (for all other factors the two jobs have the same demand levels).

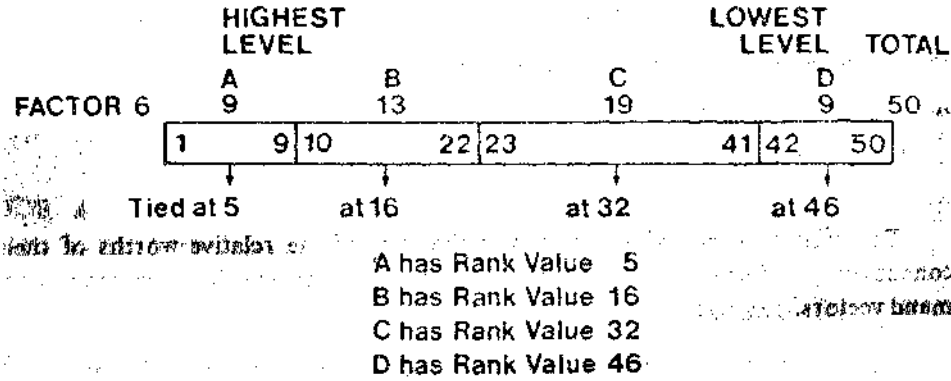
To determine these relative values we, or the computer, must first look down the matrix to find the distribution of the, say, 50 jobs over the four demand levels for each factor.

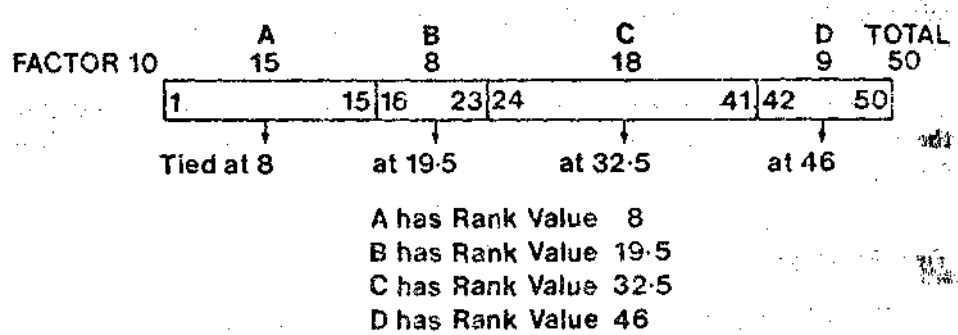
Tied Rankings

The following distributions are taken from an actual application :

	FACTOR 6	FACTOR 10
Total As	9	15
Total Bs	13	8
TotalCs	19	18
Total Ds	9	9
	50	50

Assessors are not able to evaluate the demand levels more accurately than placing jobs in one of the four categories. Hence it is permissible to regard the As, Bs, Cs and Ds of the factor as four sets of tied ranking ; and the rank value of each tied ranking is the mid-point, as illustrated in figure 1. A third factor, Factor 8, has been included to provide further illustrations of the relationships between the distribution ofjobs and rank values.





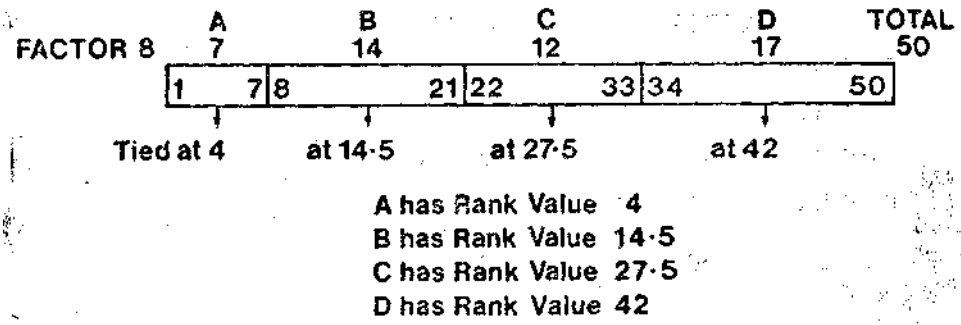


Figure 1 Distribution of 50 jobs over demand levels

The rank values of the levels of demand in the three example factors are therefore :

	A	B	C	D	
	γ	A	B	C	D
Factor	6	5	16	32	6
Factor	10	8	19.5	32.5	46
Factor	8	4	14.5	27.5	42

(low numbers of course indicate higher ranks).

These rank values are then «standardized». Space does not permit a description of this statistical process which has only a marginal effect on the relative values of ranks.

Demand Rank Order

The standardized rank values are substituted in each alpha job demand vector and added to give the total job demand rank value for each job - and thus the demand rank order of jobs. We must not forget the approximations - the tied rankings - on which the calculations are based.

The rank values are only to be used to place jobs in a rank order of demand, accepting the approximations - nothing more.

Returning to our example (and using non - standardized values) :

Job 1 had a «B» for Factor 6 and a «C» for Factor 10 =
= 16+32.5=48.5

Job 2 had a «C» for Factor 6 and a «B» for Factor 10 =
= 32+19.5=51.5

so Job 1 has a higher rank and a higher worth.

Significance of **the** method

The significance of this new analytical ranking method is that all the values employed are rank values and are determined solely by the distribution over the demand levels of the jobs which we are evaluating. We are thus dealing only in the relative worth of jobs, which is all that job evaluation can be about. The pitfails of the «points game» are avoided.

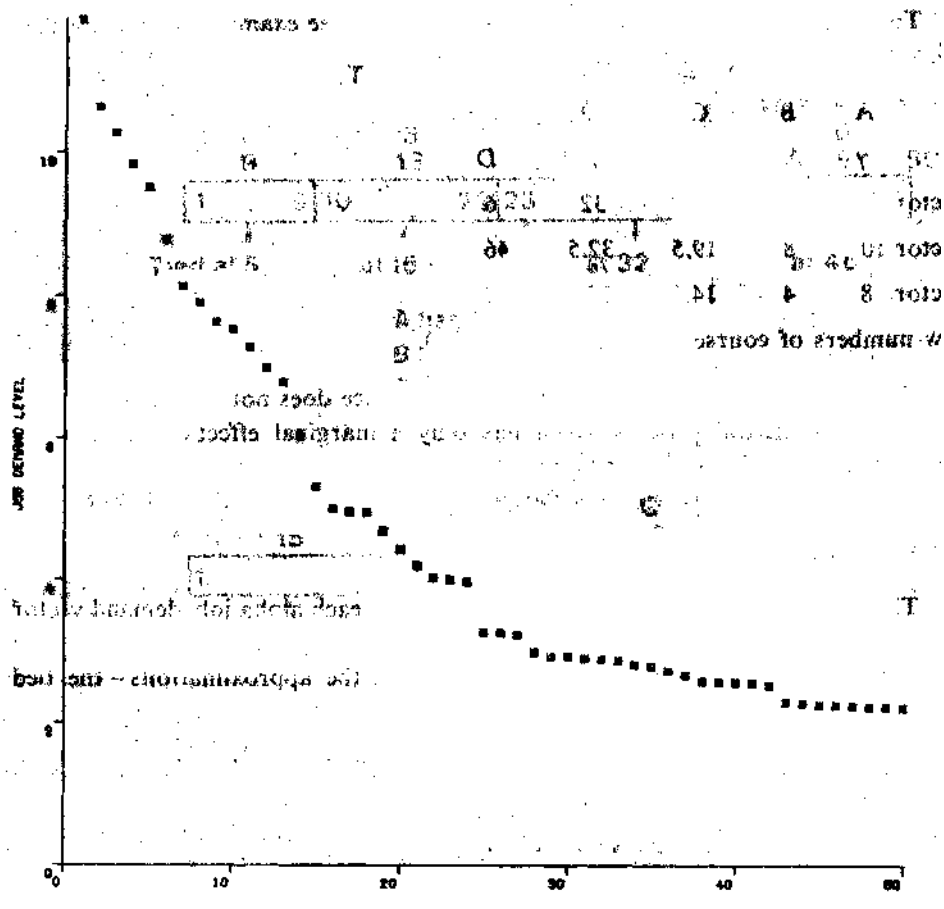
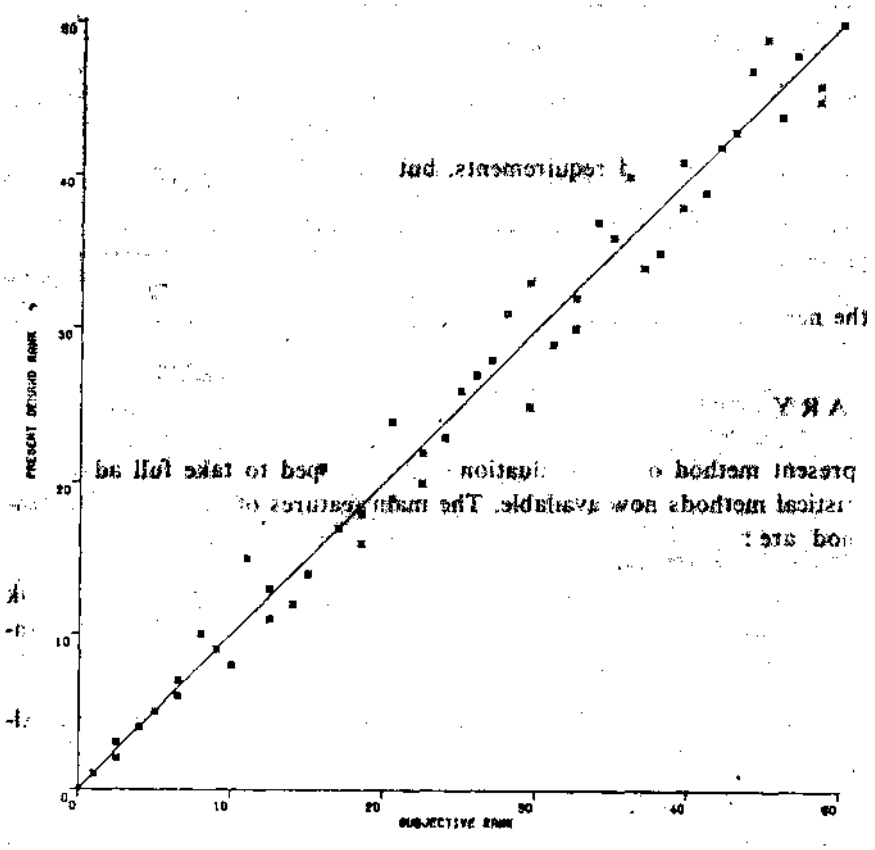


Figure 2. Demand rank plotted against demand level.

Interpretation by Computer

It will be appreciated that the calculation of rank values, the standardizing and addition of standardized rank values and the preparation of the demand rank order are carried out by the computer. On the ground, the next event after the input of the job demand vectors, is the receipt of the print - out giving the demand rank order. This description of the statistical interpretation has been included to explain how a demand rank order is produced, from alpha gradings and the interpretation of the distribution of demands only.

To enable further understanding of the distributions, certain correlations are carried out regarding the affect of ranking on comparative differentials. An



Ficure 3. Correlating subjective and demand ranks

example output is presented in figures 2 and 3 which involve a set of 50 jobs taken from an actual industrial application.

The method is a radical departure from the «points game» and requires a radical change in thinking. Also, many people who could see the fallacies of the points methods and the desirability of eliminating the assumptions and the subjective weightigs, have asked, «Yes, but how» ? They were, rightly, ve weightings, have asked, «Yes, but how» c They were, rightly, not content to accept a black box, without explanation.

USE OF RESULTS IN PAY STRUCTURING

The demand rank order is subsequently used in pay structuring. It has been stressed that too much significance should not be attached to the sizes of the gaps

between jobs. Given the approximations inherent in all job evaluation it is unwise to look for «natural breaks» where grade lines can be drawn.

Furthermore such natural breaks may not be compatible with the overiding considerations which will determine grade boundaries. These will vary with the company's circumstances and requirements, but will include :

(i) the need to provide appropriate promotion ladders for the various employee groups ;

(ii) the need to provide adequate flexibility in the employment of employees.

SUMMARY

The present method of job evaluation was developed to take full advantage of the statistical methods now available. The main features of this analytical ranking method are :

1. It is recognised that all job evaluation can do is to place jobs in a rank order of demand ; that is all «relative worth» can mean ; and that this involves inescapable approximations.

2. No assumptions are made about the relative values of demand levels. Alpha grades are employed.

3. All the values used are rank values and are determined solely by the distribution over the demand levels of the jobs being evaluated. There are no subjective «factor weights».

4. The whole style of the method, throughout, is to foster objectivity.

5. It meets the criteria of being participative, comprehensible and equitable through the involvement of employees in job analysis, and by achieving an informed consensus on the relative worth of jobs.

6. It is adaptable to different job populations - managerial, technical, clerical and manual.

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