JOB EVALUATION: AN OUTLINE OF THE CASTELLION METHOD

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Poswaardering word, volgens die skrywer, die algemeenste gebruik vir die doel van salarisadministrasie. Poswaardering maak graderings van poste moontlik op grond van die verskillende eise wat die verskillende poste aan die besetters daarvan stel. Die verskillende eise wat poste stel word gewoonlik gemeet in terme van een of meer veranderlikes, en aangesien hulle (die veranderlikes) konseptueel aansienlik verskil van een waarderingsisteem tot 'n ander, bespreek die skrywer 'n oorspronklik Suid-Afrikaanse metode van poswaardering, die "Castellion System".

1. Job evaluation is used for a number of purposes: salary administration, including the allocation of fringe benefits and conditions of service; to set guidelines for routes of promotion; and to provide information for organizational decisions. Of these, salary administration is the most common, and this paper will confine itself to this subject.

2. Job evaluation established grades on the basis of differential demands jobs make upon their incumbents. It also established equivalences between functionally different jobs which should be in the same grades because of similarity of demands. It does not determine the salary scales set for each grade. These are fixed by means of salary surveys in accordance with the market values commanded by the jobs in each grade.

3. Differential job demands are generally measured in terms of one or more variables. These differ considerably in kind and concept from one job evaluation system to another and it is the purpose of this paper to discuss a method which has its origins in South Africa. It has become generally known as the Castellion System, because it was developed in the S.A. Breweries Group, and used in the salary surveys by that name pioneered by that Corporation. It is still, albeit in a modified form, used in the Peromnes Salary Survey, with which the Castellion Survey was eventually merged. Its origins must, however, be traced right back to the NIPR, where its basic concepts were first put forward and the initial research to test their usefulness was undertaken by the writer and Dr. Lucien Cortis.[1] NIPR noted that all jobs, from highest to lowest levels, and regardless of their functional content, involved effort of some sort, responsibilities, and some competence or other.

Effort is seen as the outcome of complexity of decision making, and the time stress subject to which decisions have to be made, i.e. ppressure of work. Physical effort is not included in this assessment, mainly because it is not a general factor, but also because it ranks very low in our society's values system, and is replaced by machine power as soon as it is economic to do so. From the basic wage for purely manual work, compensation advances to the extent that decisions have to be taken, and it can in fact be shown that even the most lowly jobs involve some elementary decision, or choices, which form the base line for the compensation system.*

The second variable, Responsibility, breaks down into two sub-factors, Controls and Checks, and Consequence of Error. The burden imposed by a job depends considerably on the extent to which its responsibilities can be delegated, or decisions can be referred to higher authority, and also on the loss that will be suffered or the blame that will be incurred if one's decisions turn out to be wrong. This concept of responsibility is rather different from the way it is used in conventional evaluation systems, as responsibility for tools, materials, finance or people, responsibilities which are largely descriptive and not common to all jobs.

* A company may wish to recognise hard physical labour in its compensation system, on ethical grounds or for reasons of expediency. It may not be able to hire men with the necessary strength, staying power and motivation at the wage corresponding to the lowest evaluation grade. This need can be met by paying a special allowance. The same procedure can be followed for jobs involving danger, or a threat to health, or which are unpleasant in other ways. This safeguards the universality of the system and the maintenance of basic differentials. This is preferable to using different sets of factors for different job domains, which would disturb comparability.

The third variable, Competence, refers to the qualifications and experience that are deemed necessary for acceptable performance of the job. It could be argued that both are implicit in complexity of decision making, in that it is not possible to do so effectively without the necessary qualifications and experience. So much significance is attached to these two job requirements by managements that it is inadvisable to omit them, even if there is an overlap with decision making. As we shall see, however, the overlap is slight. Complexity of decisions may or may not depend on particular qualifications and when it does, this must be recognised as an additional job requirement which will ultimately be reflected in the compensation to be attached to the job. Experience would appear to be related to the "know-how", wisdom, an additional element in decision making apart from complexity.

4, The measurement of the sub-factors is done by means of scales, which indicate the points to be awarded for defined levels at which the factor can be observed to be operating according to the description and analysis of the job. In the case of Time Stress and Experience, coefficients are used, which weight the Decision Making and Qualifications scores respectively.

By adding the sub-factor scores and products, the total points value for the job is obtained. Grades are empirically established by means of cut-offs on the distribution of points resulting from the application of this system.

The range runs from 4 to 1 248 points, and it is divided into 15 grades, from labourer to top executive, with some further differentiation right at the top based on additional considerations which are unique to the most senior executive posts. Here special characteristics concerning the man, the company and the market place can influence compensation, and the grade itself is no longer a sufficient guide. It is the particular merit of this system, through its use of universal psychological factors, that it measures the value of all jobs by means of a common set of yardsticks. In view of the importance that is attached by all employees, regardless of level, to equitable differntials, it is important that these should be consistently determined.

5. The validity of the system rests primarily on its demonstrated practical usefulness. It has operated satisfactorily in a large and diversified corporation. The Castellion grades also relate consistently to market values. Some scientific backing is, however, desirable. Can it be shown that the same result cannot be obtained by means of a simpler system, using fewer factors? Is the system not too complicated for practical use, as assessments have to be made by managers and supervisors without technical qualification in the use of personnel techniques?

6. The first question can legitimately be asked in view of the popularity of Paterson's Decision Band System,[2] at present being used by a number of large enterprises in South Africa. This system would at first sight appear to rely on decision making only; but the resulting grades are very broad, and additional factors have to be used to establish sub-grades, necessary for proper salary differentiation.

7. To test the independence of the sub-factors used in the Castellion System, the factor scores for two samples of jobs were inter-correlated. Sample A was heterogeneous, contained a large number of professional, managerial and supervisory positions and ranged from top executive to routine clerical jobs.

Sample B was homogeneous, containing only technical and manual jobs in the production department of a brewery. These data were abstracted from tables published by Cortis.[3].

8. From Table A it will be seen that the sub-factors intercorrelated very highly in the former group. As all but one correlated at or above .90 with the total score, it follows that any one sub-factor (except Qualifications) would have been sufficient to determine the job grades.

Table B shows much lower correlations and greater factorial independence for the homogenuous sample. This is in accordance with expectation. All sub-factors have a positive relationship with job progression. If this progression ranges all the way from the highest to the lowest jobs, relatively minor differences in factor involvement in jobs located in adjoining grades will be outweighed by the overall trend to move upwards together. In the homogeneous sample, limited to a narrower range of grades, specific job differences in respect of the sub-factors are more likely to show up and reduce both inter-correlations and correlation with grade points. This is why the Paterson system can manage with one classifying concept for its overall scheme of decision bands, but has to resort to additional factors for closer discrimination within certain of the lower bands. Even at the higher levels, one doubts whether the bands allow sufficiently for job diversity. The decision-making process cannot be broken down exclusively in the hierachical form postulated by Paterson. The time stress factor must be separately considered. Jobs equivalent in complexity of decisionmaking (e.g. staff jobs) can differ very materically in this respect from line jobs and as this affects the demands made by the jobs, it should affect compensation and therefore grade. It also makes sense that more should be paid for a job which differs from another in respect of consequences of error, though alike in other respects. Responsibility is clearly

greater.* Differentials are most important in adjoining job grades, where the influence of factor specificity is greatest, and it is for this reason that the Castellion/Peromnes systems are preferred, even though by using only the factor which carries the heaviest weight (Effort, because of its score range) the majority of jobs would be correctly placed. This does not minimise the importance of other sub-factors which will reduce misplacements to a minimum.

9. The case for the relative independence of sub-factors is further strenghtened by the results of an exercise reported in Table C. Here only one job has been evaluated, but by 31 assessors. The factors are still positively related, but the specificity is now at a more desirable level. Effort still makes the greatest contribution, because it has been more heavily weighted, as it should be. What is true for this particular job — personnel selection officer — may not hold for others, because some jobs may be equally loaded with the three factors. This does not affect the validity of the demonstration of relative independence.

10. It could be contended that, as the participants in this experiment were post-graduate students in a personnel management diploma course, the lower correlations could simply be due to error.

Table D gives the ranges of individual assessments and their medians, and a comparison with the criterion scores and grade. Though the extent of error is considerable and must have affected the correlations, the group trend approximates to the correct grade, and the result provides some support for the view that the sub-factors are sufficiently independent to warrant inclusion in the system.

11. The experiment also indicates that given some theoretical background, and training, with feedback on performance (which these students did not have as this was their first attempt at evaluation), it should be possible for a reasonably intelligent line manager to reach an acceptable standard of competence in the application of the system.

12. One further question needs to be answered: Is this kind of job evaluation system applicable to a less structured and less hierarchical kind of work organization?

The majority of companies operating in South Africa conform to the hierarchical organizational pattern, and the question is therefore more of theoretical than of practical importance. Nevertheless, to be universally applicable, the system should be capable of dealing with an enterprise in which jobs are not narrowly defined, cover a broad band of diverse activities, or where work is organized on a project basis, to which employees variously contribute according to their competence and experience. This organizational flexibility does not, however, affect compensation. The individual's salary is most unlikely to vary from project to project, and proper differentials will still have to be maintained in accordance with the contribution he is required to make. Task descriptions will be needed which will inevitably be more complex than the orthodox job description. There is no reason why the Castellion factors should not be used to evaluate task diffentials.

The Paterson system, on the other hand, would face a problem, for its differentiating principle depends on a succession of decision making levels (policy, programming, interpretive, routine, automatic and defined) which correspond to a hierarchical organizational structure from top through senior and middle management to skilled, semi-skilled and unskilled grades. One doubts whether this scheme really accords with the prevalent authority structure in most enterprises. Policy decisions are not only taken at the top, but it would certainly be difficult to reconcile it with the project type of organization which Galbraith[4] has designated as the "technostructure" in which decisions emerge from task committees drawn from a large group which "extends from the most senior officials of the corporation to where it meets, at the outer perimeter, the white-and-blue-collar workers whose function is to conform more or less mechanically to instruction or routine".

REFERENCES:

1 S. Biesheuvel, "Outline of a psychological job evaluation system". Unpublished memorandum, National Institute for Personnel Research, Johannesburg, 1962.

3 T.T. Paterson, "Job Evaluation", Volumes I and II, Business Books Ltd., Londen 1974.

3 L.E. Cortis, "Psychological factors in job evaluation", S.A. Journal of Psychology, 2, 1972, pp. 55-66.

4 J.K. Galbraith, "The New Industrial State", Second Revised Edition, André Deutsch Ltd., London, 1972, pp. 70-71.

TABLE A: Relationship between job evaluation sub-factors and total grade points score. (Cortis).

Sample: 67 Jobs, type and level heterogeneous.

Assessors: various.

Sub-factors	1	2	3	4	5	6
1. Decision Making	—					
2. Pressure of Work	.94	—				
3. Controls Checks	.97	.98	—			
4. Consequence of Error	.91	.90	.89	—		
5. Qualifications	.72	.66	.68	.64	—	
6. Experience	.85	.83	.82	.81	.78	—
GRADE POINTS SCORE	.98	.94	.95	.91	.72	.90

* Pilots in South African Airways receive basic pay according to their grade as captain, first officer etc., regardless of whether they fly a Boeing 707, 737 or 747, which they may do interchangeably. But they receive a flight pay allowance in accordance with a formula which takes inter-alia weight and speed of aircraft flown into account, indirectly therefore compensation for additional responsibility involved in flying the various types.

TABLE B. Relationship between job evaluation sub-factors and total grade points score. (Cortis).

Sample: 93 manual/technical jobs

Assessors: 6 managers (consensus scores).

Sub-factors	1	2	3	4	5	6
1. Decision Making	—					
2. Pressure of work	.30	—				
3. Controls and Checks	.89	.30	—			
4. Consequence of Error	.65	.47	.64	—		
5. Qualifications	.81	.26	.81	.59	—	
6. Experience	.87	.31	.86	.61	.78	—
Grade points score	.93	.39	.89	.72	.89	.87

TABLE C. Relationship between factors and total points score (Rho).

Job: Personnel Officer.

Assessors: 31 HDPM students.

	Effort	Responsibility	Competence	Total Points Score
Effort				
Responsibility	30			
Competence	19	37		
Total Points Score	82	64	45	

TABLE D. Score Ranges and Medians for Factors and Sub-Factors.

Job: Personnel Officer.

Assessors: 31 HDPM students.

Factors and sub-factors	MAX score	RANGES for job	MEDIANS for job	CRITERION scores	CRITERION grade Points range
Decision Making	200	53–168	98	108	
Effort	600	125–504	250	254	
Controls and checks	112	36-76	58	72	
Consequence of error	128	30–108	56	57	
Responsibility	240	81–164	114	129	
Qualifications	68	35–60	48	42	
Competence	408	105–180	144	126	
Total grade Points score	1248	341-812	505	509	G 452–534

Note: Fourteen out of 31 assessors placed the job within the correct grade.
The criterion score was calculated by the author. The grade was calculated by a job evaluation committee at S.A.B. at the time the appointment was made.