

DEVELOPMENT OF AN ABBREVIATED JOB EVALUATION SCALE

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DECLARATION

I declare that this dissertation is my own unaided work, and that it has not been submitted to another university, or for any other degree.

Signed by candidate

16.10.87.

Date

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ABSTRACT

The aim of this study was to determine the value of individual job evaluation factors as predictors of the total value of jobs to develop an abbreviated job evaluation scale in a large assurer in South Africa. This would enable the streamlining of the organization's existing internally developed job evaluation system.

A total of thirteen jobs, evaluated by three raters at two committee meetings were analyzed using Kendall's coefficient of concordance (W) and Pearson's product-moment coefficient of correlation (r) to determine interrater reliability. A total sample of 282 jobs at middle management was drawn from the organization's bank of 1200 job evaluation records and 188 jobs were analyzed. Firstly the intensity of the correlation between the individual factor scores and total job scores was measured and, using the Pearson product-moment coefficient of correlation (r) it was found to be significant. Secondly, factor analysis determined three underlying factors in the system, *Effort*, *Skill* and *Responsibility*, which were used to form the basis for building a prediction model. Thirdly, stepwise regression, performed to determine at which point the addition of extra individual factor scores would not produce a significant difference to the coefficient of determination (R^2), isolated *Competence*, *Decision level* and *Interaction* as optimum combination. Using multiple linear regression and the aspects, identified above, total job scores were predicted using the balance of the sample of 94 jobs.

In cross-validating the results, using three and four factors, resulted in significant ($p < 0,01$) coefficients of determination (R^2) of 0,90 and 0,97 respectively in the prediction of total job scores.

The theoretical and practical implications of the findings are discussed. Suggestions for future research are offered.

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CHAPTER 1

DEFINITION OF FIELD OF STUDY

Job Evaluation: A Guide to Equity

Job evaluation - an organizational model to evaluate the complexity of all activities to be carried out in the achievement of corporate objectives - is a necessary system for medium-sized and large organizations for the following reasons according to Biesheuvel (1985):

- * To establish differential levels of grades for compensation planning, i.e. what should a particular job be paid relative to other jobs?
- * To establish relative differential levels of grades for manpower planning, i.e. the drawing of career paths from less complex to more complex jobs.
- * To establish the relative differential levels or grades for organization planning, i.e. reorganizing the organization structure or chart to meet projected future objectives.

Biesheuvel (1985) maintained that it is imperative that the job evaluation system ensures, as far as it is possible, satisfaction with salary. It should thus produce the highest possible level of pay satisfaction at the lowest possible cost.

According to Kruger (1975) the following critical characteristics need to be built into the system in order to achieve these important objectives:

- * The system should involve the people whose jobs are being evaluated, so that their perceptions can be taken into account. After all, it is their perceptions that may determine the

success or failure of the system.

- * Employees must be involved in the decision-making process and they must understand how jobs are evaluated. Thus the system must be understandable and the whole process of its use must be credible.
- * Given a sound system that is reliable and valid, the technical features of the plan are not as important as the way in which they are used and who is involved in the decision-making.

It is, therefore, clear that the system should be understood and accepted by both management and employees (Ivancevich & Glueck, 1986). If job evaluation is to be an aid to managers and to be used to maximize employee understanding and gain acceptance, then compensation officials, managers and job holders are to be included in the process of evaluation (Milkovich & Newman, 1984). The key organizational aspects to any job evaluation system are, therefore, to ensure:

- * Maximum satisfaction with the system.
- * That all parties involved in the process of evaluation are committed and satisfied.

The Value of a Job Evaluation System

Job evaluation is "more than a way to pay employees; it is in many ways an approach to management. But job evaluation is more than this: It is an approach to thinking about work and people's relationships to their organization." (Lawler, 1985, p.44) Managers view job evaluation as a part of the management process, as it helps to establish relationships within the organization (Schuster, 1985). Despite these views, management in many organizations still tends to be reluctant to use job evaluation effectively.

From an organizational viewpoint, job evaluation brings substantial

benefits, quite apart from its use for compensation purposes. The involvement of staff in the ongoing evaluation process tends to give them a "most valuable overview of the enterprise as a whole" (Biesheuvel, 1985, p.116).

Paterson (1972) outlined the following advantages of job evaluation to the organization:

- * It helps in reorganization exercises towards better structure of jobs.
- * It helps with selection, training and development of staff.
- * It clarifies differences between job evaluation and performance evaluation.

These advantages are still valid in today's organization.

Later Bartley (1981) listed some of these benefits:

- * It establishes clear differentials between jobs.
- * It is based on facts and principles that can be logically explained.
- * It takes the personal approach out of paying people.
- * Wages are assigned systematically to jobs.
- * It ensures uniformity in job titles.
- * Overlapping between jobs is eliminated.
- * It facilitates the development of motivation and morale.
- * It contributes to better communication between senior and subordinate.

From the employee's point of view Ivancevich and Glueck (1986) were of the opinion that a well-administered job evaluation system could also be used effectively as a basis for a merit or pay for performance programme. Along similar lines Milkovich and Newman (1984) felt that it may include aspects of measurement and negotiation simultaneously, the latter being an excellent example of

a personal development activity.

Bartley (1981) described the potential benefits to individual employees as follows:

- * It helps them to gain understanding of jobs to be performed.
- * It facilitates better understanding of differences between departments.
- * Minimum qualifications for entry into a job can be determined more easily.
- * Training of employees is facilitated.
- * It assists in achieving more objective understanding of jobs by the supervisor.

British and American companies have used the following reasons to justify a job evaluation system (People & Profits Fact Sheet 72, 1979):

- * Labour turnover has been reduced.
- * Output has increased.
- * Morale has improved.
- * The number of pay anomalies has been reduced.

It is clear that the benefits to management and employees are numerous. A hierarchical form of work organization with measurable job differentials will, according to Biesheuvel (1985), survive provided it, like all aspects of business, continuously adapts itself to rapidly changing circumstances.

Potential Problem Areas

Despite all the listed benefits of a job evaluation system, several objections have been raised. Biesheuvel (1985) reported that it could encourage or reinforce a bureaucratic style of management by laying

down rigid job patterns. This danger is greatest when the job evaluation system is based on a stereotyped, hierarchical organizational structure. If this is the case, then this potentially bureaucratic style will be reflected in the job descriptions and hence in the evaluation aspects, the criteria and definitions to be used. The resulting system would, however, not work very well for a more participative, flexible or a more imaginative organizational plan (Biesheuvel, 1985).

Conventional job evaluation can be viewed as a systemized decision process based on job content information. As with any repetitive decision process, one needs to be sure that the information on which decisions are based is both valid and reliable and also that the information collection process is as efficient as possible. One also needs to be sure that the decision process itself is reliable, which in this case means that the same set of job facts lead to the same decisions, and that the results are acceptable to all interested parties. Conventional job evaluation systems can be criticized on all these points (Risher, 1984).

The value of a job evaluation system is often determined by how easily it is learned by users, the time used and the degree of reliability (Biesheuvel, 1985). Very often, job evaluation systems require an extensive time commitment from various parties which could be perceived as being counterproductive (Ivancevich, and Glueck, 1986). This concern has particular relevance for this study.

In conclusion, it appears that problems such as low reliability and validity, as well as the inflexibility of job evaluation systems, may outweigh the benefits from such a system. However, it is possible to overcome these problems by means of updating, and ongoing research in this area.

Part of top management's role must be permitting employees to spend time on job evaluation in order to achieve an understanding of it and

to help make the process accurate (Schuster, 1985).

In organizations where the payroll costs are high, a job evaluation plan which causes inflation can lead to excessive human resource costs. An important aspect is that the financial cost of participation must not exceed the value, economic or otherwise, derived from participation. There is substantial cost involved in training employees to prepare them for participation in the system, but it would seem that this cost does not always exceed the values resulting from employee inputs, understanding and acceptance of the system. These values are, however, difficult to measure (Henderson & Clarke, 1981).

Some managers exert fairly intensive (sometimes unreasonable) pressure on the job evaluation process to influence and inflate the evaluation of an employee's job thus defeating the purpose of job evaluation. The end result often is that the system loses credibility and a new system is the answer. This loss of credibility may in turn result in morale problems. It can also, because of pressure on the system, lead to creating precedence (such as upgrading jobs that exist across the organization totally in isolation) which would cause further inflation to take place (Paterson, 1972). Job evaluation provides a procedure for the determination of just wages, but it does not necessarily provide a criterion of justice. Furthermore, it tends to focus on only the internal labour market contrary to beliefs that it relates to both the internal and external markets (Mahoney, 1975).

The evaluation methods are mostly based on job descriptions. The shortcoming of developing job profiles is that if individuals do not perform the same tasks then one runs the risk of working with a job profile that does not accurately describe the position of any individual in that job (Krzystofiak, Newman & Anderson, 1979). It could therefore easily become dated and requires ongoing administration to ensure higher accuracy. As a result, the process often becomes a reactive one, which discourages participation and any

form of proactivity. Henderson and Clarke (1981) refers to job evaluation as "busywork". Nevertheless, managements see the need for its existence.

Too often, custom made systems are employed which is not consistent with the organization's directions (Milkovich & Newman, 1984). This often results in inflexibility, should the company's markets, culture or climate change.

The Need for Reassessment

In the light of increasing pressures on the business environment in terms of stronger competition and other economic pressures, the focus of organizations is largely on issues such as productivity, streamlining of systems and abandoning of unnecessary work. Job evaluation, because of the essential role that it plays in any organization and the time demands it places on its managers, is one of many management systems coming under increased focus. Ways and means need to be found to streamline the evaluation process without loss of integrity of the system.

Several studies cited by Biesheuvel (1985) have already been undertaken in the area of simplified rating scales. The general consensus was that:

- * a limited number of aspects (this term refers to compensable factors or job dimensions used as basis for evaluation), used to determine the overall value of jobs, will provide a workable system.
- * the applicable aspects will vary from one system to another, depending on the demands of the organization.
- * the final number of aspects used must be sufficient to satisfy the desires of the organization.

Another important consideration according to Biesheuvel (1985) is to aim at the minimum number of aspects that will give the maximum prediction of the value of jobs in terms of their worth in the market place. This is critical as it will reduce the amount of manhours involved and thus the cost of the evaluation process. However, it should be noted that although the aspects can be reduced there could still be overlap between aspects, as human behaviour cannot be completely broken down into specific sections. Two aspects could, for instance, measure dimensions such as skill or responsibility, aspects that occur quite frequently in job evaluation systems.

The need for reassessment of traditional job evaluation systems is, therefore, called for in terms of organizational demands and forces. It points to requirements of functionality, job specificity and time consciousness.

The aim of this study is to determine the value of individual job evaluation aspects as predictors of the total value of jobs. It is hoped that these predictors can then be used to develop an abbreviated job evaluation scale in a large assurer in South Africa thus achieving the streamlining of the organization's existing internally developed job evaluation system. Whilst the system tends to have high credibility with senior management, an investigation, to establish the general feelings of middle management towards the organization's job evaluation system, revealed several conflicting views about its value in ensuring internal equity. Subsequent reorganizations and movement towards a higher degree of decentralization of traditional support functions, such as accounting and data processing, have tended to confirm these views and to exert stronger pressures on the system. Concerns have also been expressed about the cumbersome and time-consuming processes of the job evaluation system.

CHAPTER 2

REVIEW OF POINTS SYSTEM

Introduction

The grading of jobs used to be looked upon as a matter of common sense, or tradition, or expediency, or bargaining. Even today a reluctance on the part of many firms to apply a scientific approach to anything that has to do with people. It is almost accepted that people can, through economic and other pressures, accommodate themselves to circumstances. However, this is not an automatic process, it often causes severe pain for employees in organizations.

People are a resource in the running of an enterprise, and for most firms the major cost elements. Employees need to be convinced of management's sincerity in using a system such as job evaluation to bring about optimal equity in the compensation system. It is, as a result, very important that the system has face validity (Lawler, 1985).

Biesheuvel (1985) defined job evaluation as the process of analyzing and assessing the content of jobs, in order to place them in an acceptable rank order which can then be used as a basis for a remuneration system. It could, therefore, be concluded that job evaluation is simply a technique designed to assist in the structuring of jobs on a consistent and systematic basis. Bartley (1981) again referred to it as the act of determining the relative involvement of job aspects and for comparing those for compensation purposes. It is clear that there is a strong connection between job evaluation and compensation equity.

Biesheuvel (1985) emphasized that his definition makes an important distinction between the grading of jobs and the assignment of money

values to the resulting grades. There is, therefore, no essential connection between the grading and rate setting processes. The job evaluation process focuses entirely on internal relative values without regard to monetary considerations.

The process establishes what is in effect a hierarchy of jobs within an organization; typically it utilizes point values to indicate a job's relative value or position in the hierarchy (Risher, 1984). Effective job evaluation requires a system that can be applied to a wide range of jobs so as to accommodate all jobs within a particular organization (Schuster, 1985). For this reason, a company's job evaluation programme should ideally be custom made to ensure maximum flexibility and accommodation of its needs (Bartley, 1981).

The focus on internal equity is best served by keeping key jobs in the internal and external markets in line and a generally applicable system of job evaluation is essential for this purpose (Biesheuvel, 1985). Internal equity refers to the pay relationship among jobs within a single organization and focuses attention on employee acceptance of those relationships (Milkovich & Newman, 1984). Hopefully the outcome will be felt to be fair by all the parties concerned. The focus will, nevertheless, depend less on actual rates than on the parties' judgement that the differentials between grades are felt to be right. As a result, the concern of most employees will be with jobs about which they have some direct knowledge, rather than with the grade and pay hierarchy as a whole. Therefore, job evaluation is more concerned with the internal market than with the external market. Comments, such as, "things go better this way" would indicate the degree of acceptability of a particular job evaluation system (Biesheuvel, 1985).

Milkovich and Newman (1984) further maintained that together with job analysis, job evaluation is used to ensure that the job structure and pay differences are based upon the content and relative contributions of the work. Whether the relative worth of jobs should be determined

on the strength of job content only should be challenged, but it is in the nature of job evaluation methods to rely on the content of jobs (People & Profits Fact Sheet 72, 1979).

Development of a Job Evaluation System

In developing or adapting a job evaluation system for an organization, it is necessary to review existing job evaluation systems as well as the underlying design principles.

Existing Job Evaluation Systems/Methods

Many "ready-made" job evaluation systems are available in South Africa for use by organizations to evaluate their jobs. Some of the more widely used systems are:

- * Peromnes.
- * Castellion.
- * Hay-MSL.

Job evaluation techniques have remained relatively static since the post-World War II period because few managers outside the human resource or personnel functions were particularly concerned about them (Cortis, 1972).

Livy's (1975) opinion is that a job evaluation system must be "tailor-made" to the requirements of the individual organization. In a comprehensive study undertaken by Snelgar in 1980 in South Africa, the indications were that tailor-made systems are "superior" to ready-made system.

Whether a system is ready-made or tailor-made, it can basically be classified into two broad categories, namely quantitative and

qualitative systems. For the purpose of this study the quantitative techniques, and more specifically the points rating type systems, will be investigated. A rather extensive overview of other systems can be found in Biesheuvel (1985) and will therefore not be repeated here.

Quantitative Evaluation Methods

The quantitative methods and, more specifically the points rating methods, have grown to be the most popular in the South African environment. Only the underlying mechanics of the points rating system will be discussed in some detail for the purposes of comparison of the current job evaluation system with the more traditional procedures.

Points Rating Systems

Paterson (1972) summarized the method of establishing this kind of system (Figure 1):

- * A number of aspects, common to nearly all jobs in the organization, are selected. They are referred to as the compensable factors in the organization.
- * A steering committee is formed, who would then agree on the definitions for these aspects.
- * Aspects are assigned weightings to indicate their relative importance to the organization.
- * Aspects are divided into parts and allocated points in terms of the complexity levels of jobs.
- * Aspects are analyzed and awarded degree points.
- * During evaluation of individual jobs, points are allocated in terms of the predetermined method and scales.

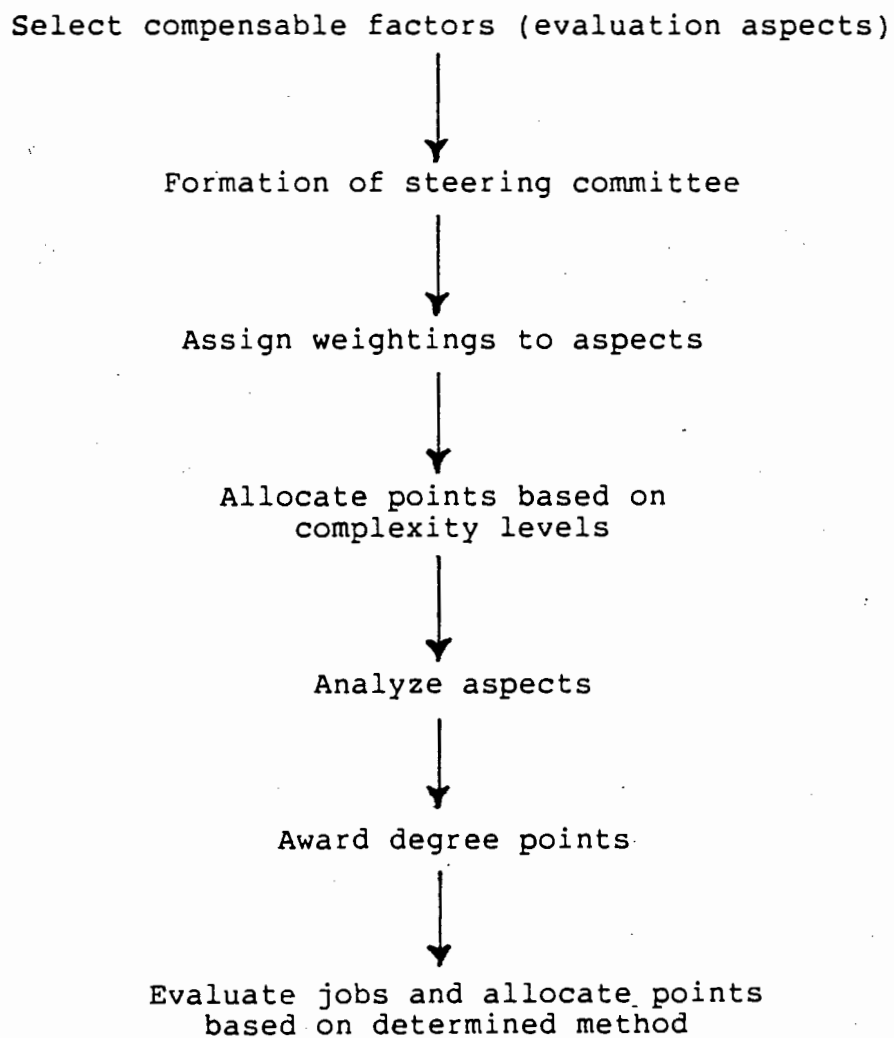


Figure 1. Stages in the Development of a Points Rating Job Evaluation System.

Lawler (1986) reported that it is the most popular job evaluation method: Of the companies using job evaluation, one out of every four uses this method. Over 95 per cent of the major US corporations use this system of evaluation.

The points rating system has several advantages and disadvantages over other methods in terms of its operational application.

Advantages. Bartley (1981) outlined the following advantages of the use of point factor evaluation systems:

- * Raters cannot have full knowledge of all jobs in an organization as is required by some other job evaluation systems. Taking into account that organizations usually use a pool of raters on a rotational basis, it is considered a very realistic method.
- * Once evaluation definitions have been written they could be used for a long time as organizational requirements do not change rapidly from year to year.
- * The process of evaluation is a systematic one. It can, therefore, be adapted without distorting the entire process.
- * It is relatively free of bias as independent and standard definitions are applicable to all jobs. As a result, there is little carry-over effect.
- * It is a good basis for comparison on specific aspects between jobs, for example working conditions. Entire jobs need not necessarily be evaluated.
- * All jobs are reviewed in the same way, thus the system is rather consistent.
- * If a job changes over time, it can be reevaluated by only looking at certain aspects and not the whole job.
- * By comparing jobs in terms of aspects, nearly all bias is removed, thus an individual employee's approach to work is not considered.

Point scales lend themselves well to job evaluation because the complexity level definitions are usually written in job terms applicable to the type of job being evaluated. This tends to result in closer agreement among raters (Otis & Leukart, 1954). Overall ratings arrived at are more reliable and valid as there is usually greater agreement and consistency among raters. Also, by presenting aspects along with their various degrees, the subjective nature of job evaluation is made more objective.

Furthermore, Ivancevich and Glueck (1986) felt that the points rating job evaluation system is more sophisticated than other systems and relatively easy to use. It is also easily interpreted and explained to staff. Lastly, the method has great flexibility to fit a wide range of jobs in an organization (Cascio, 1982).

In conclusion, Madigan (1985) stated that organizations are better able to consistently reflect differences in job characteristics on points rating systems than on other methods.

Disadvantages. Despite all the positive aspects of points rating systems, Bartley (1981) listed the following disadvantages of points rating job evaluation systems:

- * Due to the fact that aspects are fixed, it is assumed that all jobs in the organization are composed of those aspects.
- * Points for varying degrees of jobs are arbitrary only. Often no scientific explanation can be given for the establishment of these levels.
- * Upper limits tend to be established arbitrarily. There is more specific focus on the minimum limits for job grades.
- * Units (points) are created that are undefined.
- * Under the system, the job analysis tends to set the value of jobs rather than the job comparison.

According to Snelgar (1980), a points rating system is difficult to construct. There is subjectivity in the writing of complexity level and aspect definitions - it requires extensive skill. It is also very time-consuming (Ivancevich & Glueck, 1986) and a great deal of administrative detail is involved (Cascio, 1982).

Henrici (1980) outlined some potential problem areas in the design phase:

- * An insufficient range of aspects may not tie up with the range of levels in the organization.
- * Overgenerality: The descriptions of definitions of aspects and their respective levels of complexity are often so vague and broad that evaluators may experience and/or perceive a lack of guidance.

Lawler argued that "point factor systems were initially developed to be supportive of traditional bureaucratic management (1986, p. 44)". The first indication is in its starting point: A job description carefully prescribes a function and the incumbent can then be held accountable for it. It encourages control and lets individuals only do what the company wants them to do too. What is needed is a management approach under which people will focus on customer/client relationships and generally be involved in the business of which they are a part. Points rating systems are inconsistent with this new approach to management - they need to change their focus from what people are doing to what they can do.

Lawler (1986) went further by providing more specific indicators of his argument:

- * If job descriptions are tight, people are paid for what they do and if asked to do more, they demand reevaluation and upgrading.
- * This method sets the pecking order. It, therefore, makes it difficult to adapt to change and be fluid.

- * In today's competitive environment, emphasis need to be on growth, development and good performance rather than on performance only. The focus need to be on people rather than on jobs.
- * The system forces people to focus internally rather than on competition comparisons. It could, therefore, cause inflation internally.
- * The emphasis is on internal equity rather than rewarding external business equity and strategic advantage thinking. If there is a need to focus on the latter, a point factors rating will highlight this fact and cause dissension.
- * In view of the time involved in the process, it is very cumbersome to revise descriptions to adapt to changing situations.
- * Individuals know that big budgets and many subordinates control the score on the system - it could cause further inflation.
- * Managers may write flamboyant descriptions to create the impression that jobs are more complex than in reality in an attempt to try to "beat the system".
- * A points rating system is expensive and a tremendous producer of records, numbers and paperwork.
- * The system reinforces the notion that promotion is the only way to increase compensation.
- * It could lead to pay increases, not because a person is performing better, but because more responsibilities have been taken on.
- * Points are used for awarding certain perks. As it is already subjective and used for pay, it would make the final value of points even more crucial and important. It is also not designed for that purpose.

On balance, however, the points rating system still remains the most popular because of the advantages mentioned earlier. Of course, this does not remove the responsibility from the organization to remain flexible to cater for new developments and to reassess its job

evaluation system in the light of organizational developments or growth.

Evaluation Aspects

From the previous discussion it became clear that the key determinant in the points rating system is the selection of the evaluation aspects. The emphasis in this discussion will therefore shift from the description of the method to the evaluation aspects.

Many variations in the methods of selection of aspects to use in a particular system exist, but the procedure tends to be similar and the principle remains the same: Clusters of jobs are selected and key jobs are chosen from each for analysis and description. Data from these key jobs are then used for rating each job in the firm; they are essentially the benchmarks on which the accuracy of the whole plan will be based (Paterson, 1972).

The evaluation aspects (generally known as compensable factors) form the essence of the system. According to Milkovich and Newman (1984) they should possess the following characteristics:

- * They should be work related. The aspects must be derived from the actual work performed.
- * The aspects must be acceptable to all the parties involved in the evaluation process - managers and employees. All relevant parties' viewpoints must also be considered.
- * The aspects must be applicable to the organization. They must fit in with the culture and values of the organization, its business directions and nature of work.

Selection of Aspects

The choice of aspects is normally a subjective process which is dependent on the evaluator's reasoning about the significance of a job in terms of its value in the marketplace (Biesheuvel, 1985). The general rule is that if most employees are rated similar on a certain aspect it should be excluded (Bartley, 1981).

According to Bartley (1981), however, there are certain minimum requirements for aspects to be acceptable:

- * They must have a relationship with job difficulty or value.
- * In combination, they should correlate well with job difficulty.
- * They must be both observable and measurable.
- * The important elements of jobs must be measured by one or more aspects.
- * Two aspects should not essentially measure the same characteristic.

Lytle (cited by Thomason, 1974), Livy (1975) as well as Milkovich and Newman (1984) argued that, from the evidence of surveys, the aspects should be confined to *skill, effort, responsibility and working conditions*. They seem to be in agreement that aspects need to be subdivided to ensure a safer method of evaluation - the reason being that managers feel that their situation and circumstances are so "particular" that a more specific description of aspects would ensure a more accurate evaluation.

Henderson and Clarke (1981) reported that the same aspects appeared in all factor-related job evaluation methods designed in the last fifty years, namely *knowledge, supervision received and given, interpersonal contacts, scope and complexity and environmental conditions*. Ivancevich, and Glueck (1986) confirmed this view, but added that little scientific research had been done in the area of the selection of aspects.

Biesheuvel (1985) felt strongly that only aspects that matter from a compensation viewpoint should be included. If, for example, *decision-making* is an attribute that employers need and are prepared to pay for, it must form an important part of the process. Viteles (cited by Thomason, 1974) suggested that limiting the aspects to those which were both independent and capable of reliable judgement might improve the method.

Bartley (1981) argued that the following aspects should be used for administrative and managerial jobs:

- * *Knowledge/skills required.*
- * *Impact of duties.*
- * *Levels of decision-making.*
- * *Supervisory responsibilities of position.*
- * *Working conditions.*

The final test for selected aspects/compensable factors is whether the system will ensure a distribution of wage rates that is acceptable to those who are affected (Lytle cited by Thomason, 1974).

The Number of Aspects Required

A universal points rating scheme which can be applied successfully to a whole organization is likely to be elusive. As scores on individual aspects add up to give hundred per cent of the job, a large number of aspects would be needed not too large though as this would be cumbersome and lead to a co-variance problem. For example, an overlap between the aspects which will lead to some aspects being assessed twice leading to giving too much weight to that aspect (Paterson, 1972). On the other hand, too few aspects would lead to a loss of discriminative power. Different views are usually taken on the criteria to apply to select aspects (Livy, 1975).

Thomason (1974) stated very strongly that statistical job analysis, combined with psychological analysis of the incumbent in the respective job, showed that the most effective job and salary evaluation plan is one with relatively few job aspects. Factor analysis in job evaluation have led to the conclusion that approximately five mainheads are sufficient to give a result which is as valid as can be hoped for.

There is a difference in opinion as to how many aspects should ideally be used in a points rating job evaluation system. Certain views suggest that it should be confined to about six aspects (People & Profits Fact Sheet 72, 1979). Many systems use as many as ten aspects. Aspects should not overlap, but should distinguish clearly between jobs (Ivancevich & Glueck, 1986). Milkovich and Newman (1984) felt that in multifactor plans, three to five aspects would explain most of the variation in the job hierarchy.

There is a distinct move to systems using fewer aspects than the original points systems used to. The Castellion, Peromnes and Hay systems are good examples. The trend has been towards the ultimate development: A unidimensional measure that is found in the Jacques, Charles and Paterson methods (P-E Consulting Group, 1975). Biesheuvel (1985), however, wrote that the fact that individual variability of judgements will always play some part in the assessments is a good reason for using more than one aspect in job evaluation. Madigan (1985) supported this argument by reporting that several studies indicate that ten to twelve point plans could be simplified to two to five aspects, but not to a single aspect.

Thus limiting the aspects only may not be the answer. There is also a need to look at measurement of co-variance between timespan and other factors normally included in job evaluation (Thomason, 1974).

CHAPTER 3

ANALYSIS OF THE PROBLEM

Some important issues have been highlighted during the review of the points rating job evaluation system:

- The organization must express satisfaction with the system in order to ensure maximum commitment and its ultimate effective operation.
- Numerous benefits can be derived by the organization from a well-functioning job evaluation system.
- "Tailor-made" job evaluation systems appear to produce more acceptable results for organizations, as it can be adapted as needs arise.
- The points rating system has, despite the many advantages, on the one hand been criticized for the rigidity it imposes on organizations - it is based on job descriptions which could reinforce bureaucracy. On the other hand, criticism have been levelled at the overgenerality of aspects used for evaluation purposes.
- The cost of involvement of managers and employees in the job evaluation process has been debated by several writers - what are the benefits of extensive time-involvement in the process?
- Reliability of points rating systems is, according to research evidence, under suspicion.

Most of these issues could be related to the number of and the specific aspects used in a job evaluation system. Although no conclusive research evidence is available on these subjects, several suggestions have been made.

A critical assessment of the above issues suggests, however, that a delicate balance is needed between a system which is acceptable to

and cost effective to the organization on the one hand. On the other hand, the system must have a high face validity, and a carefully selected and reliable set of rater criteria.

In analyzing these issues, the attention will be paid to three areas. Firstly, the problems of reliability and human judgement associated with the points system will be explored. In the second instance the phenomenon of dominance of certain aspects in most job evaluation systems will be addressed and thirdly, a possible solution for these issues will be proposed.

Problems Associated with the Points System

The problem areas which have been researched extensively to date are reliability of job evaluation systems and the role in and influence of human judgements on job evaluation ratings.

Reliability of Job Evaluation Systems

"Job evaluation is not a science." (Henrici, 1980, p.45; Henderson & Clarke, 1981, p.143) It is a systematic application of judgement in the measurement of both solid and intangible facts - one that involves the making of many decisions based on human judgement (Henderson & Clarke, 1981). Specific criteria for evaluation of jobs are often arbitrary, often varying by employer and job family (Madigan, 1985).

The Committee on Occupational Classification and Analysis of the National Research Council formed in the United States, found that the reliability of job evaluation as a method for determining the worth of jobs has not yet been established. Specifically, all job evaluation methods were found to rely on subjective judgements. In conclusion, they reported that if this is so, all ratings of jobs in

organizations may be invalid (Doverspike, Carlisi, Barrett & Alexander, 1983).

Biesheuvel (1985), from personal experience, commented that individuals differ in their ability to analyze jobs for various reasons such as overrating, underrating and temperamental factors. Attempts have been made to keep such individuals off evaluation committees by selective processes, feedback and assessment. He also found it difficult to explain low consistency between individual aspect scores. He suggested that these questions need to be researched and that they cannot be answered from routine evaluation data.

Milkovich and Newman (1984) reported that the lack of consistency among evaluators rating individual compensable factors can be substantial. However, they added that overall evaluations, i.e. total point scores, tend to show less disagreement. Jones (1948) endorsed this view and commented further that agreement among raters is close even when ratings of employees, supervisors and personnel executives are compared. Cascio (1982) also stated that overall ratings are usually more reliable and valid as there is usually greater agreement and consistency among raters.

While an objective, almost mechanical process would be very desirable, there are few objective measures for most jobs (Risher, 1984). Burgess (1984) argued that no matter how hard an organization strives for objectivity in these matters, the subjective aspect cannot be eliminated.

The reliability of a measure refers to its consistency under different conditions that might introduce error. In job evaluation, the rater is a critical measurement condition (Madigan, 1985). Thus reliability refers to the consistency of the results produced by the method or the extent to which results are reproducible. It can be measured by interrater reliabilities - comparing rank ordering of

values of jobs produced by a number of analysts or the same analyst at different times, assuming that job content had not changed (Otis & Leukart, 1954). Total job score and rank order coefficients more typically range from 0,60 to 0,80. Individual aspect score reliabilities are often lower than those of total scores. Reliability estimates in the majority of studies cited by Madigan (1985) were interpreted as acceptable, but no empirical support for this conclusion has been provided.

Because of the many factors that influence judgements, such as knowledge of job, individual interpretations of job descriptions, bias, lack of experience, misinterpretations or imperfections of scales, it stands to reason that consistency is rarely perfect. Biesheuvel (1985) and Risher (1984) were of the opinion that decisions are based on the interpretation of a job description, often with little or no direct knowledge of a job; therefore, the process is highly dependent on the accuracy of the description. Ash (1948) in a study found a high degree of reliability among raters and concluded that such consistency of rating is a function of the aspect rated and the job information available.

Measurement of Reliability

In the case of "tailor-made" job evaluation systems, the reliability of the system is a critical issue. Biesheuvel (1985) believed that low reliability adversely affects validity, but that it does not follow that if reliability is high, the validity of the system will also be high. The test for a system will finally lie in whether it will grade jobs in accordance with acceptable market rates as determined by compensation surveys.

The focus of this study is not on validity. However, to determine the optimum combination of evaluation aspects to arrive at acceptable overall job scores, the reliability of the system is a key issue.

Because job evaluation relies so heavily on subjective judgements, the consistency of these judgements between raters is critical for the success of the system. Early studies during the 1940's (Lawshe & Satter, 1944; Lawshe, 1945; Lawshe & Maleski, 1946; Rogers, 1947; Viteles, 1947) consistently found high correlations for total point scores. However, studies since then (Doverspike, Carlisi, Barrett & Alexander, 1983; Doverspike & Barrett, 1984; Fraser, Cronshaw & Alexander, 1984; Gomez-Meija, Page & Tornow, 1982; Grams & Scwab, 1985; Madigan & Hoover, 1985; Smith & Hakel, 1979) have found that, while total point scores correlate strongly, different patterns of arriving at scores may prevail. The high correlation could therefore be spurious and a different combination of raters may arrive at different total scores.

Other methods of determining the reliability of job evaluation scores have been researched. Doverspike et al. (1983) conducted a study to reexamine the reliability of the point method of job evaluation in the context of generalizability theory. It was based on the analysis of variance (ANOVA) model rather than on the limited view of reliability as taken from classical test theory and as used in earlier studies of reliability. They argued that various sources of measurement error are ignored when calculating traditional reliability coefficients. Generalizability theory examines each potential source of error that may affect job ratings including the different patterns of individual aspect scores that add to the total point score. It is possible to determine the generalizability of a set of job evaluation ratings, obtained under certain conditions, to a specified universe of ratings defined in terms of specific facets or combinations of facets. In the abovementioned study it was found that the generalizability of job evaluation ratings can be related back to a universe of ratings defined by three facets, viz. jobs, scales and raters. Raters and scales served as facets of generalization or the sources of variation that affected the measurement of job evaluation points in the study and over which generalization is important. They found adequate levels of

reliability using ten raters. The reliability dropped only slightly when the number of raters were reduced. It was also found that variance was due to scales and jobs (and their interaction) rather than raters.

Doverspike et al. (1983) nevertheless concluded that the external validity of these results was still an issue.

In a study similar to the above, but in a field setting, it was found that 96 per cent of the explainable variance and 87 per cent of the total variance was due to aspects, jobs and aspects by job interaction. The remaining variance was attributable to raters and rater interaction. The conclusion arrived at by Fraser, Cronshaw and Alexander (1984) was that the points rating method of job evaluation can exhibit a high agreement between raters combined with high discrimination between aspects and jobs.

The most significant observation in terms of these findings is that, in addition to high reliability which could be attributed to raters, variance in scores could be traced back to the interaction of aspects and job content. The latter could be attribute to process issues such as the nature of presentations and documentation and the evaluation process, an issue which needs careful management and control. It further emphasizes the importance of careful selection of aspects.

Grams and Schwab (1985) wrote that bias would exist in the job evaluation system if there were questions over interrater reliability. Interrater reliability refers to the correlation of grades predicted from job descriptions by two independent raters using the laid down guidelines of the system (Gomez-Meija, Page & Tornow, 1982).

Biesheuvel (1985) quoted a study in which he calculated the interrater reliabilities (on individual aspects and total scores) of routine South African Breweries job evaluation committees. This was

done with the primary aim to address the concerns arising from the correlations of total scores only. The composition of committees varied from job to job. He used Kendall's W coefficient of concordance (Siegel, 1956) to measure the relationship between the rankings made by several judges of a number of jobs. The results indicated significant correlations in respect of total scores, in excess of 0,90, but not consistently significant for all individual aspect scores. It confirmed concerns expressed by Doverspike et al. (1983) that care needs to be taken in the comparison of total scores only.

A study by Smith and Hakel (1979), using Pearson's product-moment coefficient of correlation and by pairing rater scores, found an overall reliability coefficient of 0,63 on all individual and total scores.

It is quite clear that no conclusive empirical evidence is available on the reliability of job evaluation systems. While the generalizability theory studies (Doverspike et al., 1983; Fraser et al., 1984) suggest that little variance in scores could be attributed to raters, but rather to other facets of the job evaluation process, findings from other studies showed conflicting results.

While measurements of interrater reliability have been interpreted as acceptable (Doverspike et al., 1983), conflicting results such as those already mentioned throw doubt on these interpretations.

A further implication of the inconsistent reliability results is that a large number of evaluation aspects could compound the problem. It could create further opportunity for statistical error to occur in spite of careful control. This further emphasizes the advantage of reducing the number of aspects (People & Profits Fact Sheet 73, 1979).

Error in Judgement

Even if statistically reliable results are produced, error and bias in human judgement cannot be completely eliminated (Otis & Leukart, 1954). The translation from descriptive information to comparative data is the essence of job evaluation, and while many approaches have been designed to systemize this process, it is inherently subjective. This is not to argue that subjective judgement is to be avoided or that it can be eliminated. The purpose of job evaluation, after all, is to compare disparate positions and to determine their relative value within an organization (Risher, 1984).

Some of the more specific problems/pitfalls relating to the issue of judgement are:

- * Risher (1984) commented that raters' perspective of jobs are influenced by their training, background and experience, as well as their current position in the organization. Experience and training in job evaluation improves reliability. But even when reliability is high by normal research standards, the remaining judgemental discrepancies can mean a difference of two or three salary grades.
- * Smith and Hakel (1979) suggested that it is likely that incumbents and possibly supervisors will exaggerate job element scores to make the job appear more important than what it really is. Thus, incumbents and supervisors will have a tendency to inflate their job element scores relative to data from job analysts. This may be especially true for ego involved or socially desirable elements, such as accountability. These problems could often be traced back to application problems, such as inadequate rules and the fact that people are people (Henrici, 1980).
- * It could happen that raters have some idea of what the job under evaluation is being paid in the market and, particularly if the job is more complex, there is a tendency to deal with job

description data accordingly. The intrinsic meaning of aspects, as defined, would be virtually irrelevant even though judgements would be expressed semantically in terms of definitions. The effect of this would show up as lack of differentiation in the magnitudes of intercorrelations among the scores of the concepts involved in the job analysis. If such an intercorrelation matrix would be subjected to factor analysis, the variance would be accounted for by one general factor, assuming that the intercorrelations were uniformly high (Biesheuvel, 1985).

- * Pitfalls usually occur in two extremes - members who overrated almost all jobs and those who underrated almost all jobs (Henderson & Clarke, 1981). Barry and Tsui (1986) referred to leniency versus harshness.
- * What is actually achieved in a particular situation may depend as much on the persuasiveness of the associated discussions as upon the intrinsic qualities of the job evaluation programme itself (People & Profits Fact Sheet 73, 1979).
- * Familiarity affects job evaluation ratings in a positive manner, but the extent of rater bias depends on the type of job being evaluated. It is suggested that the familiarity level of analysts be kept constant when doing job descriptions rather than through personal work experience. The factors which tend to bias job evaluation are usually of a more personal nature, involving boasting and protection of one's self-interest. It is argued that outside analysts would not be swayed by these factors and would provide a better source for objective analysis and evaluation (Smith & Hakel, 1979).
- * Prien and Saleh (1963) concluded in a study that even when using outside consultants, the tenure and performance level of the incumbent effects job evaluation ratings.
- * The amount of information could have a consistent effect on the results. Hahn (1985) reported findings of a study where subjects who were presented with greater amounts of information were generally more reliable and accurate. Results on Hahn's study of accuracy of ratings showed variation.

- * Milkovich and Newman (1984) held the opinion that more consistent evaluation occurs among evaluators who are most familiar with the jobs.

Schwab and Heneman (1986) reported studies which indicated that job evaluation results accounted for 75 per cent or more of the variance in existing pay rates. However, two characteristics are present that are questionable, firstly evaluators made independent ratings which are being assessed for reliability and secondly evaluators assessed only a single source of information, i.e. written job descriptions. A recent survey by Schwab and Heneman (1986) indicated that evaluators use more information than only job descriptions. Both the volume of information and the rating process could influence rating errors. Problems in consensus process lead to job evaluation ratings that are different from those obtained via an independent rating process. They found in their study that a high level of reliability occurred between two experimental groups and on the same level as for previous studies dealing with individual rater reliability. The influence of human judgement in a points rating systems is minimized. As rating scales are developed, every effort is made to provide the rater with aids to enhance decision making, e.g. aspects are carefully designed. This does not mean, however, that subjectivity is not eliminated (Snelgar, 1980).

Committee System

The committee system forms an integral part of the job evaluation process in most organizations and should be considered within the context of judgement error.

Judgements made by committees are mainly subjective, despite detailed definitions and examples that may be provided during the process. It may be argued that the use of points and scores create an air of numerical precision which the process does not possess. This

precision could have been true if the scores were the outcome of the application of an objective standard. However, it cannot be, as different evaluators tend to give different scores on different aspects. Instead the process merely gives subjective judgements a quantitative expression which is easier to handle and which helps combine assessments on different aspects. It does contribute to the achievement of consensus. Measurements of committee reliability can be obtained and the statistical significance of such judgements can be precisely stated by means of reliability coefficients and standard deviations (Biesheuvel, 1985).

Biesheuvel (1985) reported one of his earlier studies where he found a high agreement between the ratings of different raters. There were few disagreements on grades. It indicated how accuracy can be improved through feedback and training. The close agreement between total scores must be looked at with some suspicion, in view of the score variations between raters in respect of some sub-scores making up the total. There were different profiles emerging. Therefore, the fact that individual variability of judgements will always play some part in assessments is further justification for using more than one aspect in job evaluation. The risk of under- or over-evaluation is reduced when random or constant judgemental error variance can be spread over a number of aspects, as well as over a number of judges. Hahn (1985), however, contradicts these ideas and maintained that training has little effect on job ratings.

Because of the rarity of consistency of individual ratings, committee discussions are an indispensable element in the evaluation process, according to Biesheuvel (1985). It is a reasonable assumption that because of this procedure, consensus will come closer to a reliable assessment of job requirements than any individual's score by itself. There is a potential danger though, according to Snelgar (1980), that committee members' scores could be influenced by their expectation of where the job is to fit into the hierarchical order.

Trathner and Kubis (cited in Paterson, 1972) confirmed in a study that committees were more consistent in their ratings than job analysts on their own, by reason of the latter group's close contact with the job. They, as a result, have a better awareness of and are affected by variations in importance of different aspects. They are also more liable to be biased by experience than members of committee who see only the written descriptions.

The use of committees for evaluations seems inevitable. It is recommended, for the reasons stated above, to not only use one personnel expert, but rather a team to achieve a broader perspective. Line managers would have a better knowledge than staff managers, but may present a narrow perspective. The answer seems to be a team of line managers and personnel experts which would offer in-depth job knowledge as well as the advantage of both staff and operational viewpoints. While the disconcerting risk in human judgements remains, there is little doubt that the benefits of a team approach far outweigh its disadvantages (Henderson & Clarke, 1981).

Despite the benefits of the committee system there are according to Schwab and Heneman (1986) several problem areas in this regard:

- * Two committees can produce different results, because of inter alia their unique composition of personalities.
- * Apart from inordinate time used, committees can be affected by not only internal pressures, but also the material on which they base their grading (Paterson, 1972).
- * As technologies change, markets alter with them and the time-wasting on committee work is consequently increased.
- * A consensus rating process raises several potential problems not applicable when independent ratings are obtained. These include difference in hierarchical power among members, coalition formation, conformity pressures, and "groupthink". Such problems may lead to job evaluation ratings that are different to those obtained via an independent rating process.

Using revolving membership, so that employees are not included only for evaluations of jobs in which they are most interested, could be a solution for some of the problems highlighted above.

For the purpose of the present study the main aim will not be to reduce the evaluation aspects by means of a factor analysis, but rather to achieve a breakdown of the contribution of each aspect to determine those aspects which can be used to reliably predict total job scores. It is, therefore, important to obtain careful measurements of rater reliability on individual aspects to determine the extent to which raters agree in their ratings on such selected aspects.

Controls for Bias

The procedure of job evaluation should be structured to include controls designed to minimize biases and errors of judgement. A summary of such controls presented by Thomason (1974) are:

- * Raters should be trained to develop common conceptions of the standards to be applied.
- * Raters should be selected for their competence in judging.
- * The number of raters per job should not exceed fifteen, but not be less than six.
- * The final ratings should be derived by simple averaging and not by discussion, unless there is reason to believe that expert raters can produce "better" judgements.
- * Familiarity with the job can be controlled by appointing raters from all areas with jobs to be evaluated or from areas where their job familiarity will be equal for the panel.
- * Job descriptions should be of equal length for all jobs. Linked to the aspect of familiarity, the longer and more detailed job descriptions are, the higher are likely to be the evaluations.
- * Jobs for rating should be presented in a manner which (a)

provides a cross section of the whole range; (b) avoids "anchorages" which are distant in value from the set of jobs presented and (c) particularly avoids large gaps between job values which raters will tend to bridge.

These proposals will probably reduce bias and error in judgement and is as "rational" as job evaluation methods themselves purport to be.

Dominance of Aspects

On several occasions the question of the predictive value of certain aspects has arisen as well as which particular combination of aspects would reflect the true value of jobs to the organization.

There is no prescribed formula available which can help in the ranking of the importance of individual aspects. According to Livy (1975), the ranking of aspects indicates their relative importance, but does not give any indication of their absolute values. However, aspects are weighted according to their relative importance, since they are not identical in their contribution to job performance and compensatory adjustment must be made.

Several debates have arisen as to whether individual aspects can be viewed as independent predictors of overall job value. Or does their going through the committee system of gaining consensus result in a "groupthink" which in turn results in the clustering of aspects due to some underlying broader factors?

It is debatable whether an individual aspect can be viewed as representative of the overall job value. Similarly, it may well be that the close link between job gradings and existing pay structures is due to some element common to all aspects or to some of them. Belcher (cited in Paterson, 1972) reported that Lawshe and his associates at Purdue University, who have studied job evaluation

extensively, mainly on the NEMA system, concluded, on the basis of factorial analysis (Thurstone centroid), that *skill* accounted for 77.5 per cent to 99 per cent of the distribution of the job certainly a substantial portion of the overall job value. Lawshe and Satter (cited in Paterson, 1972) found that *skill demands* and *job characteristics (conditions)* would give the same answer as the eleven aspects of the NEMA system. Subsequent researchers increased the minimum number of aspects in the NEMA system to five - *skill demand, supervisory demand, responsibility, conditions and danger* (Paterson, 1972). Paterson (1972) went further by citing a study by Stieber who found that *pre-employment training, employment training and experience and mental skill* were so highly inter-correlated that they could be taken as a measure of the same thing.

This underlines the point that a few evaluation aspects can form the basis for a workable system and is particularly relevant to this study, as it shows that the use of fewer aspects in the evaluation process can produce accurate results.

According to Biesheuvel (1985) the construct validity of a job evaluation system can be tested by subjecting the correlation matrix of individual aspect scores to cluster analysis, using the Beta coefficients (coefficients of belonging). He cautioned that the use of data available from routine job evaluation, which is designed for a different reason than to conduct an experiment, could defeat this objective, but would not be completely invalid.

It seems to be clear from the overview thusfar that certain aspects appear to be more dominant in the explanation of the variance of total job scores than others. However, there is little consensus on what these aspects should be.

The major aspects in the Castellion system are *responsibility* and *effort*, while the Paterson system is built around

decision-making. A close relationship has also been found between *responsibility* and *accountability* (Biesheuvel, 1985).

The essence of this study will be to assess the individual contribution of each aspect to the overall job evaluation and to decide on a cut-off point where a particular aspect fails to contribute significantly to the variance on the total job score. Biesheuvel (1985) maintained that the system is not important, because the grading outcome generally appears to be very much the same. It is more important to establish whether a method of job evaluation has been found useful in an organization and how it is managed and controlled.

Proposed Solution: An Abbreviated Scale

The subject of abbreviated job evaluation scales was quite popular during the 1940's. In South Africa, more extensive research on the subject took place in the post World War II period. More recently, a similar study was again undertaken (Snelgar, 1982).

Reasons and Motivation

"As there are many factors involved in a job evaluation system, the number of discretionary judgements involved in determining a job's relative value can be quite large" (Risher, 1984, p. 57). Furthermore, there is considerable opportunity for statistical error to occur in spite of careful control.

According to Viteles (1941) job evaluation ignores the "law of parsimony" in using too many aspects, which led to methods, especially analytical methods, being subjected to too close scrutiny.

Research in the area of simplified scales, as reported by Biesheuvel

(1985) indicated in summary that:

- * a limited number of aspects will provide a workable system.
- * the applicable aspects vary from one system to another.
- * it is important to have sufficient aspects to satisfy the desires of an organization.

In business, the usefulness of a job evaluation system is often determined by the time used, how easily it is learned by users and the degree of reliability regularly achieved by assessors. Satisfaction by both staff and management is important (Biesheuvel, 1985). If misunderstandings are to be avoided, the scheme must be as simple as possible so that all concerned will interpret it the same manner (People & Profits Fact Sheet 72, 1979).

There is no concrete evidence of exactly the number of aspects to be used. The problem of co-variance or overlap of aspects is difficult to deal with. The general aim is to achieve the minimum number of aspects which will predict the maximum value of the job in terms of what is demanded in the market. This will limit the length of the evaluation process. However, Biesheuvel emphasized that even with a few aspects there is still a possibility of an overlap, as human behaviour is too complex to be merely broken down into separate compartments (Biesheuvel, 1985).

Viteles (cited by Snelgar, 1980) suggested that more than a few aspects would be ideal, but less than ten. He felt strongly that it should really be not be more than five. In another study two aspects resulted in the same total job scores as a classification based on eleven aspects (Lawshe & Satter cited by Snelgar, 1980). Lawshe (cited by Snelgar, 1980) also reported a study where a scale of three or four aspects yielded practically identical results to a more complex system. What is clear, is that there is no guarantee that more evaluation aspects would necessarily result in more accurate ratings.

There is, therefore, sufficient evidence to suggest that abbreviated job evaluation scales could achieve very significant results with major savings in the areas of training, time spent on the process and gaining understanding of management and the work force generally.

Advantages

Apart from the benefits of an abbreviated scale mentioned above, there are also other reasons for exploring this route further.

Snelgar (1980) quoted a study done during the 1940's by Lawshe where the aim was to arrive at an abbreviated scale. In these instances, the process involved assisted greatly in determining the relative value of each aspect in the job evaluation system. It also achieved a reduction in the potential for subjective judgement, an issue covered extensively earlier.

A study done during the same period by Lawshe and Maleski (1946) pursued an abbreviated scale which included only four aspects and highlighted other benefits of shorter systems over more lengthy systems:

- * more reliable on total scores.
- * more reliable on each aspect.
- * more reliable on skill aspects.

Similar studies done by Roberts (1947) and Chesler (1948) confirmed the above results. Biesheuvel's (1985) opinion was that the saving of time by making the assessment procedure as short as possible is almost the most important consideration.

In the Castellion system, some aspects were originally included, but later dropped as it was found that they did not contribute more than that which is already covered by other aspects. A significant

reduction in evaluation time was achieved by reducing the number of aspects on this system without loss of evaluation power (Biesheuvel, 1985).

Disadvantages

The primary danger in the design and use of abbreviated scales is that it may cause overgenerality which may lack in guidance to evaluators (Henrici, 1980). Aspects may be defined so broadly that jobs are evaluated in very general terms without sufficient attention to detail.

Paterson's (1972) opinion was that research during the 1940's has shown that, although the use of different systems (in terms of the number of aspects) may show a high correlation on total scores, the final grading of the jobs may be different. Gray and Jones (cited by Paterson, 1972) found in a study of a long versus an abbreviated method that if a three aspect scale was employed, 62 per cent of all jobs would remain in the same grade, 37,2 per cent would be displaced by one grade and 0,8 per cent displaced by two grades. Care has to be taken to find the most appropriate aspects to use in an abbreviated scale. These could not be decided on haphazardly and without doing a scientific analysis of the entire system.

In the light of the demands on the organization to simplify systems and save costs, it was considered worth the effort to undertake the suggested intensive analysis to determine the most important aspects to develop an abbreviated scale.

CHAPTER 4

METHODOLOGY

Prior to outlining the details of the research methodology it is necessary to provide a brief outline of the organization where this study was undertaken.

The Research Environment

The organization, one of the largest life insurers in the country is one of the major financial institutions in South Africa. The organization employs in excess of 9000 people with some 3500 of them situated at the head office. About one hundred and thirty branch offices are spread widely across the country and fall under nine regional offices for decentralized control purpose. The organization is comprised of 36 divisions, each responsible for a specific function, for example Pensions, Personnel, Actuarial, Client Services.

Employees are graded on a job evaluation system, resulting in eighteen individual grades, which are classified in eight status levels (Figure 2). Levels of salaries and fringe benefits are directly linked to these grades and status levels.

Current Job Evaluation System

The organization's job evaluation system was developed by an external consultant during the mid-seventies. The points rating system includes six evaluation aspects which were specifically developed for the needs of the organization.

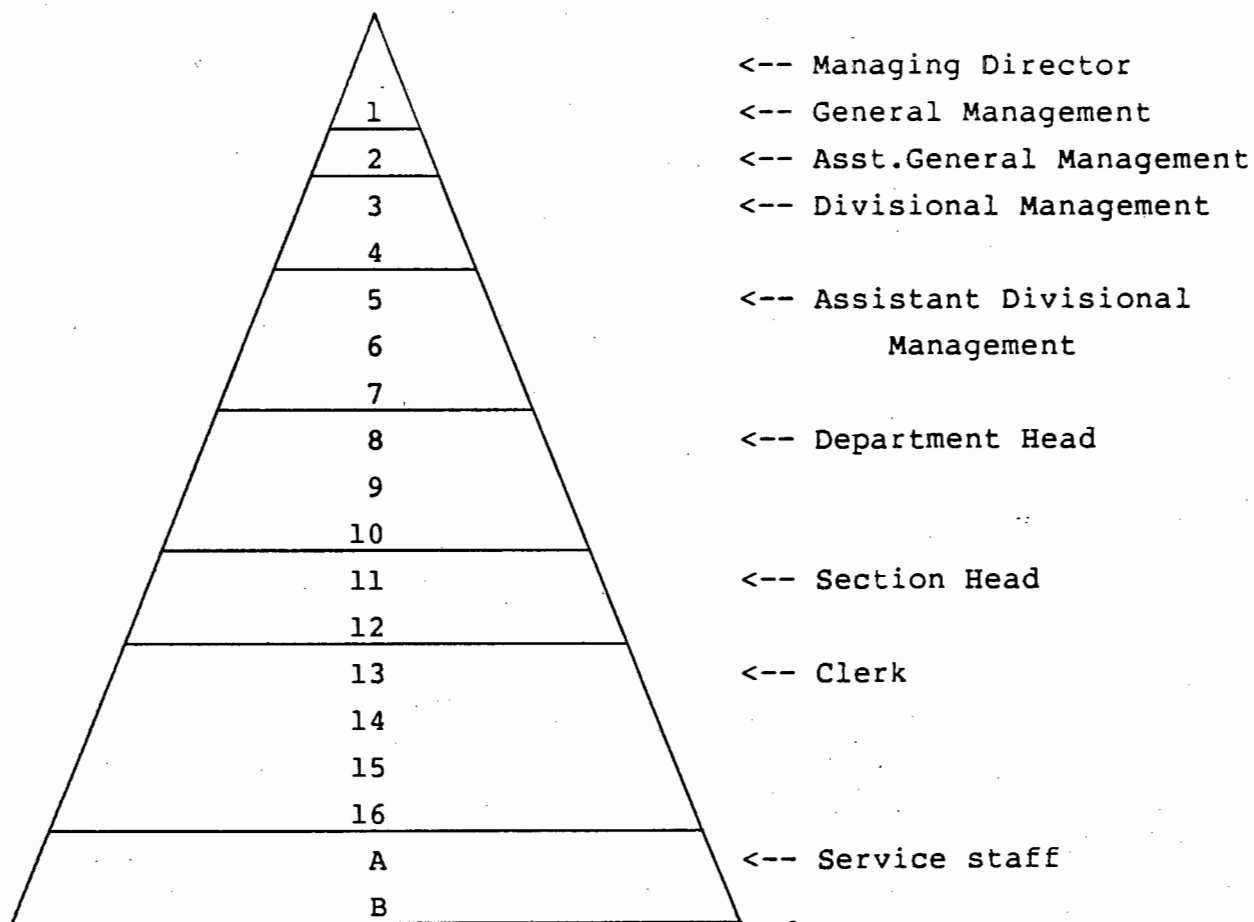


Figure 2. Job Grades and Status Levels.

During the implementation of this system, the main reasons for the development of the system were stated by Kruger (1975) as:

- * To establish differential levels of grades for compensation planning to determine what a particular job should be paid relative to other jobs in the organization.
- * To establish relative differential levels of grades for manpower planning to enable to draw career paths for individuals from less complex to more complex jobs.
- * To establish relative differential levels or grades for organization planning to be able to, for example, reorganize the organization structure or chart to meet projected future objectives.

Job Evaluation Aspects

Six evaluation aspects, namely *Data Handling, Competence, Decision level, Interaction, Enterprise and Accountability*, are used for the evaluation of all jobs in this organization. These aspects are grouped, in pairs of two, into three broad categories of job input, job process and job output aspects. These broad categories are referred to as Competence, Problem Solving and Accountability. A summary of the aspects can be found in Table 1. A more detailed description of each aspect can be found in Appendix A.

Points per aspect are calculated based on percentages allocated to different levels of complexity of a job. These allocations are arrived at from examples provided at each complexity level in the job description - generally known as a Management Function Guide (MFG). The points calculation basis/matrix is set out in Appendix B. To illustrate the calculation basis, the following example, using the Decision level aspect, is cited:

Table 1. Description of Aspects in the Job Evaluation System.

Broad category	Individual aspects	Description
Competence	Data Handling (Aspect 1)	The complexity of numerical, verbal or written data to be grasped or used in order to make decisions.
	Competence (Aspect 2)	The complexity of education, job knowledge, skills training and total work experience essential in performing the job.
Problem solving	Decision level (Aspect 3)	The complexity of decision making in performing the job.
	Interaction (Aspect 4)	Complexity of interaction inside and outside the organization required in performing the job.
Accountability	Enterprise (Aspect 5)	The complexity of opportunities to increase the effectiveness of job changes that would hamper effectiveness.
	Accountability (Aspect 6)	The complexity of consequences, in terms of wasted resources, resulting from poor performance in the job.

Percentages allocated per category:

Complexity level	B	20%
	C	50%
	D	30%

Points read off points matrix (Appendix B):

Level B	20%	5,0 points
C	50%	30,0 points
D	30%	<u>33,3</u> points
Total points		<u>68,3</u> points for Decision level

Total points per aspect are then added up to provide a total points score for the job. The grading of the job is then read off the grade range schedule, set out in Appendix C. For example, a total points score of 325,0 points would result in a job grading of 9.

As further illustration, an actual example of a completed points summary sheet can be found in Appendix D.

Job Evaluation Process

The following steps are followed in the evaluation of all jobs within the organization:

- * A job description - generally known as a Management Function Guide (MFG) - is drawn up by the incumbent in consultation with his immediate senior. An example of a completed MFG can be found in Appendix E. This serves as the basis for the evaluation of the job at the Main Monitoring Committee (consisting of managers from different divisions, at least one status level above the level of the job being evaluated) meetings. This committee is chaired by the Personnel Manager.
- * The MFG is submitted to the Job Design Counsellor for clarification and approval of the standard of the document.

- * The job is initially evaluated by an intermediate committee (known as the Core Committee), consisting of five rotating personnel specialists. A rating score is arrived at and relevant concerns and/or comments about the job in hand or the broader organization structure are tabled and recorded. Should a job be rated less than 20 percentage points above the minimum points for a particular grade, this committee would recommend the evaluation of the job at the grade below until the job has "grown" sufficiently (been in existence for a period of time) to be evaluated at the higher grade.
- * The MFG, together with the Core Committee ratings and the scores of one or two comparable jobs in the organization, are distributed to the members of the Main Monitoring Committee.
- * Committee members rate the job independently according to the guidelines in their possession.
- * The Main Committee meeting. The immediate senior to the job addresses the meeting on the background to the need for the evaluation of the job and the organization structure and answers questions raised by the committee members. Thereafter the senior leaves the meeting, the committee members reassess their scores in the light of the information provided by the senior and, finally compare individual ratings to arrive at consensus on individual aspect scores and the total score. Should the final score fall within less than 20 percentage points above the minimum points for a particular grade, the supersenior to the job under discussion has the discretion as to whether he/she wishes to have the job evaluated at that grade or at one grade lower.
- * The Job Design Counsellor informs the senior of the final rating and grade and updates the computer records.

Concerns about the system

As stated earlier, Lawler's (1986) opinion was that a system where

there is a strong emphasis on job descriptions tends to encourage control. It also allows individuals only to do what the company wants them to do.

An investigation was undertaken five years ago, to establish the general feeling of middle managers in the organization (grades 3 - 7) towards its job evaluation system. The most significant perceptions, derived from the survey, could be summarized as follows:

Strengths of the system were that it:

- ensured equity in remuneration;
- improved understanding of jobs;
- facilitated and structured career pathing for individuals;
- improved morale of staff;
- enabled managers to have the positions and status of all staff, including specialist staff appraised. During the first few years after introduction of the system, the focus was purely on managerial jobs.

Weaknesses of the system were:

- manipulation of the system to obtain the desired results was taking place;
- committee members did not have a full appreciation of the jobs being evaluated and the functions affecting it;
- it was seen as a time-consuming process;
- insufficient knowledge of staff (generally in the organization) existed about the system. As a result of the training required by individuals, it contributed to the time spent on the evaluation process;
- it was seen as rigid. The evaluation aspects were fixed and allowed little scope for "special circumstances";
- eloquent speakers could "sell" jobs well and ensure higher gradings;

- the system was seen as subjective. The perceptions of the committee members to a large degree determined the final rating;
- jobs were "padded" to obtain higher ratings.

It is quite clear that, in spite of the possible shortcomings of this investigation namely that it was sent to a small sample only and that the design of the questionnaire could have been better, the strong expressed perceptions about the organization's job evaluation system cannot be ignored. Although some views supported the system, many concerns were also raised about the process of evaluation.

Since the aforementioned investigation five years ago, which underlines the need for this study, other factors have also emerged. These are listed below:

- A more competitive environment in the life assurance industry as a whole, required a higher internal degree of specialization, resulting in the creation of several new jobs. This gave rise to an increase in the number of evaluations required.
- The decentralization of certain functions in the organization, such as accounting and data processing, to individual corporate divisions further caused an increase in the demand for evaluations of newly created positions.
- Slower growth in the life assurance industry gave rise to a stronger focus on expenditure levels, as well as many investigations into systems and outdated procedures.

At a recent conference of the personnel management team the subject of job evaluation was a discussion item and emerged as a key result area for the Personnel Division for the new financial year. Apart from the aforementioned concerns about the system, the following additional factors were raised pertaining to the organization's job evaluation system:

- * The perception of the evaluation committees that it is a forum where submitted scores are "almost always reduced/cut". As a result, there is an increasing tendency from line managers to inflate the value of jobs to compensate for this "approach".
- * Because of the lengthy job descriptions and the process of evaluation (on average a total period of three months from the date of starting the MFG to final evaluation date), the process has turned into a reactive one. As a result it almost discourages participation. Proactive investigations by the Personnel Division in cooperation with line managers into organization structures in divisions is mostly discouraged because of the time involved.
- * Since the appointment of a new managing director some two years ago, the organization's culture/climate has undergone certain changes. This strong organizational influence has encouraged the development of independent cultures in different corporate divisions. The question has been raised whether the organizational structure and the job evaluation system are still appropriate and whether they encourage the right behaviours to support this new culture.
- * An internal study three years ago found a correlation of 0,98 between the scores and job grading of the Core Committee and those of the Main Monitoring Committee. A number of pertinent questions were raised such as whether there is a need for two committees and whether it is cost effective. Another issue is whether the use of two committees is not aggravating the time problem already experienced.
- * Because of the unique nature of the job description (MFG) for job evaluation purposes, it cannot readily be used by other areas, such as the recruitment and selection and personnel development departments in the Personnel Division. Therefore, there is an additional time effort impact on users in line departments, because of duplication of job descriptions.
- * As a fair degree of expertise is required to do job descriptions, regular training and individual consultation

sessions need to be held at intervals to train line managers in the techniques of writing job descriptions to conform with committee requirements. The concern expressed was whether this training approach was in fact addressing the problem or the symptoms of another problem, i.e. the job evaluation system itself.

- * New committee members experience a relatively lengthy learning curve before they develop an acceptable level of expertise in the system.
- * There is an increasing tendency to acknowledge the skills people bring to jobs, as opposed to focussing purely on the job content.

At the aforementioned conference it was deemed necessary to:

- adapt the system to focus the evaluation aspects on organizational values in order to make them true compensable factors;
- critically evaluate the job evaluation process in terms of its reliability and the committee system;
- consider limiting the evaluation aspects in an attempt to shorten the process;
- change the focus from what people are doing to what they can do - a skills-based job evaluation system.

In conclusion, Schuster (1985) maintained that the repair of an existing plan is a social and political process as well as a technical challenge. Possible ways of tackling this problem are to:

- * compare some jobs with jobs outside the organization to measure their relationship to the market;
- * consider critically whether the aspects that are used at present are in fact the ones that are compensable;
- * audit submitted documents.

Organizational growth cycle

The redesign of organizational systems needs to be considered very carefully in terms of the organization's readiness for change at a particular stage of its growth. The redesign of a system as integral a part of management style and organizational culture as job evaluation must be dealt with with care and only after proper consideration of all issues. For this reason it is necessary to assess the needs for change to the job evaluation system in the context of organizational growth and readiness.

Greiner (1972) proposed that growing organizations and their various components move through five distinct phases of development. Each phase contains a relatively calm period which he refers to as an "evolutionary phase". Each phase is ended by a management crisis, marked by a substantial amount of turmoil. These periods of organizational crisis he termed "revolutions".

He argued that since each phase is strongly influenced by the previous one, a knowledge of the organization's history can aid management in determining its future. He also believed that the future of an organization is determined less by outside forces, such as market conditions, than by past decisions.

The five phases of evolution and revolution in organizational growth are:

- * Creativity followed by a crisis of leadership.
- * Direction followed by a crisis of autonomy.
- * Delegation followed by a crisis of control.
- * Coordination followed by a crisis of red tape.
- * Collaboration followed by a crisis of "?".

According to Gathercole (1986), who recently recommended proposals on a remuneration structure for the organization under analysis, and in

terms of Table 2, the organization appears to be in the process of moving from phase two, growth through direction, into phase three, growth through delegation. She observed that the organization as a whole, is probably experiencing a crisis of autonomy with certain of its business units and functional divisions still being in phase two while others have possibly already progressed into phase three.

The characteristics of phase two, direction, outlined by Greiner (1972), include:

- * A functional organizational structure separating manufacturing or product development from marketing activities, with more specialized job assignments.
- * Accounting systems for inventory and purchasing.
- * Incentives, budgets and work standards.
- * More formal and impersonal communication which a hierarchy of titles and positions is likely to build.
- * A comprehensive job evaluation and MBO type system to delineate individual positions and responsibilities within the organizational hierarchy.
- * More of the responsibility for instituting direction is taken by top management while lower-level managers are treated more as functional specialists than as autonomous decision-making managers.

According to Greiner (1972) the resolution of the autonomy crisis is generally through top management relinquishing some of their authority and installing a certain degree of power equalization. The difficulty, however, arises in getting top management to give up sufficient responsibility and in encouraging lower-level managers to make decisions for themselves.

The third evolutionary period, growth through delegation, evolves from the successful application of a decentralized organization structure exhibiting the following characteristics:

Table 2. Organization Practices during Evolution in the Five Phases of Growth.

Category	Growth phase				
	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
	Creativity	Direction	Delegation	Coordination	Collaboration
Management focus	Make and sell	Efficiency of operation	Expansion of market	Consolidation of organization	Problem solving and innovation
Organization structure	Informal	Centralized and functional	Decentralized and geographical	Line-staff and product groups	Matrix of teams
Top management style	Individualistic & entrepreneurial	Directive	Delegative	Watchdog	Participative
Control system	Market results	Standards and cost centres	Reports and profit centres	Plans & investment centres	Mutual goal setting
Management reward emphasis	Ownership	Salary & merit increases	Individual bonus & incentives	Profit-sharing & stock options	Team bonus

(Adapted from Greiner, 1972).

- * Much greater responsibility is given to functional divisions and regions.
- * Profit centres and bonuses are used to stimulate motivation.
- * Top executives move towards managing by exception.
- * New developments and acquisitions are made on a decentralized basis.
- * Communication from the top is less frequent.

As mentioned previously, the organization tends to be moving from the phase of growth through direction to that of growth through delegation. Gathercole (1986) listed the following arguments to prove her point:

- * Information systems have become more and more sophisticated.
- * A number of revised or new products have been introduced to enhance the organization's markets.
- * While the organization structure is still largely centralized, more functions are now being decentralized, such as computers, accounting and marketing.
- * The top management style is still very much directive.

The main strength is that the top management appears committed to move into the phase of delegation, as evidenced by its strategies. There is also a greater demand for more responsibility and control at the middle management levels and pressure is building for further decentralization. However, there still appears to prevail a fair perception of autocracy in the organization. Decision-making is not yet readily pushed down the organization and accepted by middle managers.

Changes to the job evaluation system that may potentially be introduced to the organization, will have to be dealt with within the context of this model and according to organization development principles. The characteristics of phase three, as outlined by Greiner (1972), are of particular relevance in that the focus, as far

as the middle management (grades 5 to 10) is concerned, will be, to a large extent, on making independent decisions, using initiative and interacting more independently and at a higher level than at present. This would, by implication, imply the need for higher qualification and competence levels with respect to this managerial group.

It is of critical importance that corporate systems, and more specifically personnel systems, focus on these critical issues - they need to be supportive of the values that are reinforced at senior management level. Job evaluation, and the aspects used in the system, can make a major contribution to ensure reinforcement and focus during the process of reorganization and assessment of new and existing jobs.

Formulation of the Research Question

A total of 1200 jobs have been evaluated by the organization over the last ten years. As discussed earlier, there is a strong focus on the streamlining of systems and reduction of costs generally, hence the focus on the job evaluation system. It was decided to undertake a study to determine the interrelationships between data to determine the basis for the development of an abbreviated job evaluation scale.

After careful investigation and a literature study, the following research question was generated:

"Are any aspects in the organization's job evaluation system more dominant in determining the overall value of jobs than others and can they form the basis of an abbreviated job evaluation scale?"

Pilot Study

In order to answer this question, a pilot study was undertaken as an

internal organizational assignment by Badenhorst (1985). He recorded the following significant findings.

Linear relationships existed between individual aspects and the respective total job scores. Certain aspects showed a higher correlation to total scores than others. Refer Table 3 for the correlation matrix.

The three aspects that showed the highest correlation with total scores, represented by the groups of input, process and output factors, as outlined in the discussion of the organization's job evaluation system above, were *Competence*, *Decision level* and *Enterprise*. The relatively low correlations between the *Interaction* and *Accountability* aspects and total scores were attributable to uncertainty about the precise nature of the job requirements that often existed at job evaluation meetings. The coefficient of determination (R^2) to predict job scores from correlations between individual aspects and total job scores indicated that the addition of any more aspects to those of *Competence*, *Decision level* and *Enterprise* would not have resulted in a more significant increase in correlation to total score. The comparison of predicted grades with actual grades showed an overall 87,5 per cent accuracy level.

The areas where deviations of more than 20 points in the predictions of total job scores were found, showed that these jobs required "special skills", such as actuarial qualifications and computer skills and that these jobs should have been excluded to make the sample more homogeneous. Nevertheless, the results were found to be acceptable, considering that only 16 per cent of all jobs evaluated in the organization in one status level only, had been included in the pilot study. It was deemed necessary to evaluate the job evaluation system on a more organised basis using a bigger sample. It could also serve the useful purpose of verifying the results of the pilot study.

Table 3. Correlation Matrix of all Aspects: Pilot Study.

ASPECTS	1	2	3	4	5	6	7
1 Data Handling							
2 Competence	0,72 ***						
3 Decision-level	0,53 ***	0,39 ***					
4 Interaction	0,24 *	0,41 ***	0,12				
5 Enterprise	0,44 ***	0,43 ***	0,43 ***	0,48 **			
6 Accountability	0,34 ***	0,27 **	0,38 ***	0,21 *	0,42 ***		
7 Total scores	0,73 ***	0,74 ***	0,74 ***	0,61 ***	0,77 ***	0,59 ***	

** p < 0,01

*** p < 0,001

Sample

Biesheuvel (1985) suggested that, in order to obtain homogeneity of samples, attention should be given to selection of jobs based on functional areas. He also added that a heterogeneous sample tends to give better intercorrelation of aspect scores.

In compiling the sample from the universe of jobs, the following factors, which could have introduced extraneous variables to the study, had to be considered:

- * Several status levels exist in the organization and jobs at each level are evaluated by a particular committee from differing status levels. Differing styles of evaluation may exist at these respective committees.
- * Four major corporate areas exist in the organization, each with its own culture, management style and procedures, an aspect which could have an effect on the perception of the values of jobs.
- * Two accepted and distinct categories of jobs exist in the organization, namely managerial (where subordinates are supervised) and specialist (technocrat type) jobs.
- * The job evaluation system had been in operation for some fifteen years. However, the definition of aspects and complexity levels have been changed and "refined" over years with a major change taking place in 1977.
- * Because of the hierarchical structure in the organization, decreasing numbers of evaluated jobs occur higher up in the overall structure.

Snelgar (1983) suggested that in order to narrow the margin for prestige, ability and content differences, jobs should be drawn from the same level in the organization across a narrow band. For this reason and those outlined above, the following sample was drawn:

Jobs at Department Head level (Grades 8,9, and 10) were selected for the study. A distinction was made between managerial and specialist jobs in the research design (to be referred to later). This particular group of jobs was selected because of the possible sample size - a total of 282 jobs (142 managerial and 142 specialists jobs) were available.

Data Analysis

As was noted before, Biesheuvel (1985) maintained that individuals differ considerably in their ability to analyze job requirements and score them with reference to aspect scales. It was, therefore, necessary to obtain a measurement of the degree of reliability of scores included in the sample of jobs in order to reach conclusions on the predictive value of individual aspects.

Individual committee member scores for a total of thirteen jobs, evaluated by two committees during the last six months were available for this analysis. The jobs included in the sample were evaluated by differently composed evaluation committees at different time intervals. Although this is a relatively small sample, it was considered to be sufficient to obtain a reasonable indication of interrater reliability. It is accepted that, to obtain a more scientifically acceptable measurement of reliability, data from routine evaluations (as used in this study) should ideally not be used. However, facilities were not available to gather data in another way. By also collecting data on larger numbers, the theoretical overall reliability of ratings would probably turn out higher, but the practical limitations of this study and available facilities prevented the collection of a bigger sample of individual ratings.

Kendall's W coefficient of concordance was calculated per committee for individual ratings on each aspect, total scores and job grades, according to the method suggested by Biesheuvel (1985).

Estimates of interrater reliability were also obtained from product-moment correlation coefficients between raters' aspect and total job scores, using the method suggested by Madigan (1985).

In order to gain a general impression of the co-variance which may exist between the comparative values of the various aspects, it was deemed advisable to depict the observations graphically. This was done in the light of concerns expressed earlier that care has to be taken to purely draw conclusions from correlational studies without a careful inspection of the data depicted graphically. Biesheuvel (1985) also commented that one can expect a higher intercorrelation between aspects if the job group is more heterogeneous. To measure the intensity of the correlation between individual aspect scores and total job scores, two thirds of the total sample of jobs (188) were selected on a random stratified sampling basis to represent both managerial and specialist jobs. The Pearson product-moment correlation coefficient was calculated similar to a study undertaken by Cortis (1972).

This would then have enabled the construction of a correlation matrix which could, apart from calculating the required correlation coefficients, also highlight the intercorrelation of individual aspects.

Doverspike, et al. (1984) cautioned against the use of this approach as the sampling error for the correlation coefficient is rather large and the correlation may be affected by scale variance. As a result, the careful investigation of reliability was undertaken to consider the implications of this warning carefully.

Factor analysis was performed to determine whether groups of individual aspects were related and loaded on underlying factors and to what extent such results would confirm the findings of other statistical methods in this study to assist in the development of an abbreviated rating scale.

A stepwise multiple regression was performed to ascertain at which point the addition of another aspect would produce an insignificant difference to the multiple correlation coefficient. This process would provide guidelines to determine how many aspects could, with a reasonable degree of certainty, be used to predict total job scores. In the regression equation, the independent variables were individual aspect scores. The dependent variable Y, was total job scores.

Grade was considered by Gomez-Meija et al. (1982) to be a more acceptable dependent variable, as it relates better to external criteria. In this job evaluation system, the final job grade is determined directly from a standardized table (Appendix C). Management discretion is also exercised in cases where the final points are not sufficiently (20 percentage points) placed inside a particular grade. For these reasons a more exact measurement which would also explain a bigger portion of the total variance was required. The concern of this study was rather the determination of final point scores than external equity of grades.

In cross-validating the results to assess the validity of the results, an additional 94 jobs were analyzed by means of the combination of aspects which discriminate significantly. The regression coefficients obtained from the first sample (188 jobs) was applied against the data of the additional group of jobs to obtain predicted values of total scores. This equation should have accounted best for every bump and wiggle (including sampling error) in the data (Howell, 1987).

CHAPTER 5

RESULTS AND DISCUSSION

The statistical analyses performed were divided into three sections. The first major area consisted of analyses relevant to the establishment of the reliability of job evaluation ratings. The second major area involved the study of the correlation between aspects and total scores, including factor analytic and stepwise regression methods to determine the aspects with the strongest discriminate value. The third category consisted of cross-validation of the above on another sample.

Reliability of Ratings

According to Madigan (1985) job evaluation techniques could be an appropriate means to operationalize the equity issue in organizations only if they produce valid measures of job worth. This aspect is a more critical issue in the case of a "tailor-made" job evaluation system, as no ready external verification framework for job grades is available. This could result in a low reliability which adversely affects validity. Should the job evaluation system produce inconsistent results, it could not be considered to be a sound basis for comparison of jobs to the external market.

The measures in job evaluation reflect the relative importance of all job worth aspects with the potential for measurement contamination always present. The rater is a critical measurement condition (Madigan, 1985) and reliability refers to the consistency of these measures produced by the method or the extent to which results are reproducible. This is best determined by interrater reliability.

The preconsensus ratings (ratings before negotiation/committee

meetings) for seven jobs in Committee A and six jobs in Committee B, consisting of three members each, were analyzed by calculating the coefficient of concordance for each committee. These results are presented in Table 4.

There was a higher measure of agreement among total point scores. W with respect to total points was 0,95 and 0,97 for the two committees respectively ($p < 0,01$).

The close agreement between total point scores should, however, be looked upon with some suspicion, in view of the score variations between raters on some of the individual aspects. Doverspike et al. (1983) also cautioned against the comparison of total scores only. All coefficients of concordance for individual aspects, total scores and job grades equalled or exceeded 0,80 and were significant at 0,01 level, except *Decision level* for Committee 2 where W was 0,75 and significant at 0,05 level.

An inspection of the coefficients of concordance pointed to some degree of inconsistency between the two sets of committee scores. For example, on *Decision level*, Committee B produced a coefficient of concordance of 0,75 as opposed to Committee A's 0,94. With respect to *Enterprise*, Committee A had a coefficient of 0,84 and Committee B 0,97. This inconsistency in coefficients is of some concern in the light of the purpose of the study, namely to ultimately develop an abbreviated job evaluation scale.

The different rating patterns could possibly be attributed to the relatively small size of the two committees - if ratings of one rater were out of pattern with the two other raters it would impact drastically on the coefficient of concordance. There is perhaps a positive element in these inconsistent coefficients of concordance in that management and, in particular, workers can be assured that attention and time is devoted to attain consensus scores at committee meetings. Furthermore, the high level of significance of the findings

Table 4. Coefficients of Concordance.

Evaluation aspects	Committee A (7 jobs)			Committee B (6 jobs)		
	W	S		W	S	
Data handling	,98	247,5	**	,92	145,5	**
Competence	,96	243,0	**	,83	131,5	**
Decision level	,94	237,5	**	,75	118,0	*
Interaction	,88	221,0	**	,80	126,0	**
Enterprise	,84	212,0	**	,97	153,5	**
Accountability	,95	243,5	**	,83	130,0	**
TOTAL POINTS	,95	233,7	**	,97	153,5	**
JOB GRADES	,81	204,0	**	,80	125,5	**

* p < 0,05

** p < 0,01

outweigh the potential problem areas as far as the differences are concerned.

Because of the high interrater reliability on individual aspects, total point scores and job grades, all ratings were analyzed in terms of the more rigorous test recommended by Biesheuvel (1985). Thereby interrater reliability was assessed between pairs of raters. Pairs were formed by grouping each committee member independently with each other committee member, thereby forming three pairs in each committee of three members. For example, in Committee A there were pairs A (members 1 and 2), B (members 1 and 3) and C (members 2 and 3).

The Pearson product-moment correlation coefficients (r) for pairs of raters are presented in Table 5. Inspection of this table showed that almost all other correlation coefficients were significant (between $p < 0,001$ and $p < 0,05$). Only ratings for two pairs in Committee A *Data Handling* and for two pairs each on *Accountability* and *Decision level* and one pair on *Interaction* in Committee B were insignificant.

The low reliability on *Data Handling* could be attributed to its low numerical weighting in the system. It is weighted at 1 : 2 in relation to *Competence* and *Accountability*, at 1 : 3 to *Interaction* and *Enterprise* and at 1 : 4 to *Decision level*. This issue could have a psychological impact on raters during the evaluation process in that relatively little time may be spent on the refinement of these scores because of their low numerical value. Any results with regard to *Data Handling* should therefore be treated with caution. Consideration should be given to either exclude this aspect from the new abbreviated scale or if it is included, to reassess the reliability on this aspect at a later stage.

No ready explanation could be found for the inconsistencies on *Decision level* and *Interaction*. However, the fact that the highest degree of inconsistency between the two committees on

Table 5. Reliability of Points Ratings of Aspects made by Pairs of Raters.

Pairs of raters	Committee A			Committee B		
	A	B	C	D	E	F
Data handling	,61	,61	,99 ***	,92 **	,90 *	,92 **
Competence	,99 ***	,99 ***	,99 ***	,91 *	,94 **	,84 *
Decision level	,97 ***	,99 ***	,99 ***	,85 *	,78	,56
Interaction	,99 ***	,93 **	,97 ***	,68	,94 **	,87 *
Enterprise	,96 ***	,99 ***	,95 **	,95 **	,98 ***	,98 ***
Accountability	,98 ***	,99 ***	,98 ***	,95 **	,77	,78
TOTAL SCORES	,99 ***	,99 ***	,99 ***	,96 **	,99 ***	,96 **
JOB GRADE	,97 ***	,97 ***	1,00 ***	,95 **	1,00 ***	,95 **

* $p < 0,05$

** $p < 0,01$

*** $p < 0,001$

coefficients of concordance was also on *Decision level* and to a lesser extent on *Accountability* poses some warning in terms of the inclusion of this aspect in an abbreviated job evaluation scale.

The intercorrelations on preconsensus total point scores for pairs of raters, for Committee A ($r = 0,99$ $p < 0,001$) and for Committee B between $0,96$ ($p < 0,01$) and $0,99$ ($p < 0,001$), were higher than studies reported by Biesheuvel (1985) and Smith and Hakel (1979). In the latter study an overall interrater reliability coefficient of $0,63$ was reported. The similar findings with respect to coefficient of concordance summarised in Table 4, $0,95$ and $0,97$ ($p < 0,01$) for the two committees respectively, verified the high correlations for pairs of raters. The high correlations was a positive observation in terms of the evaluation system and may be attributable to the fact that raters have been well trained in using the job evaluation system. Through feedback, the quality of raters also tended to be high which made such high correlations on total scores possible. This was further underlined by the overall job worth score interrater correlation coefficients (Pearson's product-moment), based on the paired method suggested by Madigan (1985). Summarised in Table 6 are the correlations between individuals' overall scores with each other and with final committee scores. All r 's were equal or higher than $0,94$ and significant at $0,01$ level. They were also higher than the correlations in the Madigan (1985) study, which ranged between $0,72$ and $0,98$.

In most job evaluation systems, total job scores are converted to a classification of job grades. As was reported in Table 5, interrater reliability on job grades in this study was satisfactory, ranging between $0,95$ ($p < 0,01$) and $1,00$ ($p < 0,001$). This indicated a remarkably high level of agreement among two groups. It is often believed that the degree of agreement on grade is the final test for any job evaluation system's reliability.

As far as the role of the committee system in the reliability of the

Table 6. Overall Job Worth Score Interrater Reliability Coefficients.

Committee A				Committee B			
Rater 1	2	3	Committee	Rater 1	2	3	Committee
1	,96 ***	,98 ***	,98 ***	1	,96 **	,98 **	,97 **
2		,98 ***	,98 ***	2		,95 **	,94 **
3			,99 ***	3			,96 **
Committee				Committee			

** p < 0,01

*** p < 0,001

system is concerned, Trathner and Kubis (cited in Paterson, 1972), and Snelgar (1980) all held the opinion that consensus will come closer to a reliable assessment of job requirements than any individual's score by itself. This view is confirmed by Lawshe and Wilson (cited in Madigan, 1985) who maintained that the use of rater panels should reduce inconsistency. It is a reasonable assumption that the significant reliability measures reported in this study can, therefore, only be higher as a result of the use of the committee system currently in use. A further prerequisite, to address the issue of familiarity with jobs and its effect on final scores, would be to ensure a mix between raters who are familiar with the job content and raters who are not. A further safeguard (People and Profits Fact Sheet 73, 1979) to reduce the opportunity for statistical error is to reduce the number of aspects.

However, it cannot be concluded that the relatively low reliability on the part of some aspects, such as *Data Handling*, is acceptable, as the implications thereof go beyond reliability coefficients to estimates of impact on pay or status level classification decisions. Acceptable error limits will have to be established in grade ranges to ensure the highest possible accuracy.

Biesheuvel (1985) considered the degree of reliability regularly achieved by assessors to be a critical factor in determining the usefulness of a job evaluation system. Based on these findings, the reliability of this job evaluation system is considered to be at an acceptable level, despite Snelgar's (1980) caution that point systems are probably unreliable.

In conclusion, it is felt that despite its time-consuming nature, the committee evaluation process currently in use in the organization is reliable. However, the aim of this study was the development of an abbreviated scale. It should therefore be noted that reliability will have to be reassessed once the decision on which aspects are to be retained in the new abbreviated scale, has been made.

Correlation between aspects

The primary purpose of this study was the identification of discriminating aspects in order to develop the abbreviated scale. It was an effort to reduce the number of aspects by means of redesign or revision of the aspects. As historical data was available for the analysis, the calculation of intercorrelations between aspects and total scores was possible.

The Pearson product-moment correlation matrix appears in Table 7. This table showed r for individual aspects and total job scores for 188 jobs. Significant correlations (between $p < 0,00$ and $p < 0,01$) were observed with regard to all aspects except *Interaction* and *Data Handling* which did not correlate significantly at 0,12.

The low and insignificant correlation of 0,12 between *Data Handling* and *Interaction* is to be expected, because these two aspects measure very different dimensions of jobs. *Data Handling* has an administrative focus, while *Interaction* has an interpersonal focus. This is further supported by the fact that managerial and specialist jobs were included in the sample. As far as the latter is concerned, the emphasis is generally more on the *Data Handling* aspect, while managerial jobs generally have a stronger focus on *Interaction*.

The highly significant correlation coefficients between aspects need some attention. Schumann, Bouwer, and Schoeman (1978) posed a word of warning about the nature of the association between variables. They suggested that four possible explanations exist for these correlations, namely:

- * Changes in the one variable are the direct result of changes in the other variable, in spite of the fact that this may not be the only reason.
- * The two variables could influence each other.

Table 7. Correlation Matrix of all Aspects in Sample Group.

ASPECTS	1	2	3	4	5	6	7
1 Data Handling							
2 Competence	0,63 ***						
3 Decision-level	0,40 ***	0,26 **					
4 Interaction	0,12	0,24 **	0,25 **				
5 Enterprise	0,27 ***	0,39 ***	0,46 ***	0,63 ***			
6 Accountability	0,31 ***	0,23 **	0,50 ***	0,36 ***	0,47 ***		
7 Total scores	0,57 ***	0,60 ***	0,73 ***	0,69 ***	0,81 ***	0,67 ***	

** p < 0,01.

*** p < 0,001

- * The two variables may correlate, because each one is influenced by one or more other factors.
- * The two variables may be coincidentally correlated. It could be attributed to the fact that:

- (a) a sample from the universe is used or
- (b) a false correlation exists.

Schumann et al.'s (1978) last two explanations, namely that two variables may correlate because they may be influenced by other factors and that two variables may be coincidentally correlated, are particularly relevant. Job evaluation aspects are determined in such a way that certain portions of the jobs are considered individually. It could be expected, therefore, that aspects may correlate because they are influenced by other factors. Also, as stated above, all aspects should contribute to the determination of total job score. This may not necessarily be so, as there may be other underlying factors which play a role in the determination of job evaluation scores.

Another explanation for the significant correlations may stem from the fact that the sample in this study was from the same status level, relatively large and heterogeneous. It included specialist jobs and managerial ones.

It is perhaps more important to consider the implication of the significant correlations rather than to speculate on the reasons for it. The aim of this study is to reduce the aspects involved in the job evaluation system. The high correlations between aspects and between aspects and total scores can therefore imply that a reduction in the number of aspects need not reduce the value of the job evaluation system. However, further analysis of the data is necessary before any final decisions in this regard can be taken.

Factor analysis

Factor analysis was performed to shed further light on the correlation between the aspects in this study.

The results of the factor analysis before varimax rotation (based on the sample of 188 jobs) in Table 8 reflected one dominant factor with all aspects, except *Data Handling*, loading strongest on it. The percentage of total variance explained by the five factors extracted was 95,28 (the total of percentage common variances per Table 8). These findings were similar to those of Lawshe and his associates, referred to by Paterson (1972), where the results of a factor analysis indicated that the skill factors accounted for 77,5 per cent to 99,0 per cent of the total variance. He also concluded that it may well be that the close link between job gradings and existing pay structures was due to some element common to all the aspects or to some of them. It could be attributed to the consensus thinking process during committee meetings. This was also borne out by the high correlations in Table 7. The communalities (derived from squared multiple correlations) in this factor matrix were all in excess of 0,90, which indicated that the individual aspects were not highly unique.

This scale was not considered factorially pure or sound as individual aspects loaded relatively strongly on more than one factor, for example *Interaction* loaded positively on factor 1 (0,63) and on factor 2 (0,54). As a result, factor analysis using the principle factors method followed by a varimax rotation, with the numbers of factors set at three, was done. The results are reported in Table 9.

According to Guion (1965) the total variance of an aspect is a function of the variance it shares in common with all other aspects in the system plus the variance due to unique characteristics of the aspect not included in other aspects. Communalities in the three factor matrix were reduced in relation to the original factor

Table 8. Factor Analysis (Five Factors).

Aspects	Factors					h ²
	1	2	3	4	5	
Data handling	0,64	<u>-0,64</u>	0,01	0,04	-0,30	0,93
Competence	<u>0,65</u>	-0,54	-0,38	0,06	0,23	0,92
Decision level	<u>0,70</u>	0,01	0,54	-0,43	-0,03	0,97
Interaction	<u>0,63</u>	0,54	-0,43	-0,01	-0,34	0,98
Enterprise	<u>0,79</u>	0,35	-0,21	-0,15	0,30	0,91
Accountability	<u>0,70</u>	0,22	0,42	0,52	0,05	0,99
% common variance	47,53	19,64	14,08	8,13	5,90	

Table 9. Varimax Rotated Factor Analysis (Three Factors).

Aspects	Factors			h ²
	1	2	3	
Data handling	-0,02	<u>-0,86</u>	0,32	0,84
Competence	0,25	<u>-0,90</u>	-0,03	0,87
Decision level	0,12	-0,21	<u>0,85</u>	0,78
Interaction	<u>0,92</u>	-0,04	0,12	0,86
Enterprise	<u>0,78</u>	-0,22	0,36	0,80
Accountability	0,31	-0,08	<u>0,79</u>	0,72
% of common variance	27,22	27,44	26,59	

analysis to between 0,72 *Accountability* and 0,87 *Competence*. This could be attributed to the fact that only 81,25 per cent (total percentage of common variance per Table 9) of the total variance is explained by the three factor matrix. Again percentages are acceptable in the light of a study by Lawshe and associates, cited by Paterson (1972), where between 77,5 and 99,0 per cent common variance occurred. There is therefore not excessive danger that the exclusion of certain aspects would impact too drastically on the explanation of the overall variance of jobs, but need to be confirmed by further analysis, such as the stepwise multiple regression.

Three clear factors could be distinguished. *Interaction* and *Enterprise* had strong positive loadings, 0,92 and 0,78 respectively, on the first factor. Strong negative loadings of two aspects occurred on factor two. *Data Handling* had a loading of -0,86 and *Competence* -0,89. *Decision level* and *Accountability* loaded positively (0,85 and 0,79) on factor three.

The three factors which were identified are:

Effort (Factor 1)

The close relationship between the aspects of *Interaction* and *Enterprise* could be related to an Effort factor, often referred to in other systems. This explains the initiative or *Enterprise* which the Department Head in the organization under study, has to show. He should also involve himself in a high level of liaison with other parties, because of the high levels of specialization and decentralization in the organization. This explains the high loading of *Interaction* on this factor.

Skill (Factor 2)

The two aspects of *Data Handling* and *Competence* make up

the job input aspects (as stated in the systems design). It was reduced to the underlying factor of Skill. Relationships exist between the complexity of data used in a job and the expertise (in terms of experience and qualifications) an incumbent brings to a job. The inclusion of *Data Handling* in this factor should however be treated with caution, in view of the low reliability achieved by pairs of raters.

Responsibility (Factor 3)

The close relationship between *Decision level* and *Accountability* refer to a more common description of Responsibility. This is defined as the authority to make decisions and be accountable for their outcomes both of which imply a certain level of responsibility. The low reliabilities of both aspects when rated by pairs should be considered in further analysis of the data.

The factors identified are considered to be appropriate in terms of research into the selection of job evaluation aspects. Lytle (cited by Thomason, 1974), Livy (1975) and Milkovich and Newman (1984) reported that, from the evidence of surveys, the aspects should be confined to *skill, effort, responsibility and working conditions*.

The factors identified in this study, however, are not considered to be the revised evaluation aspects. They are merely the underlying factors which would be measured, in part, by the abbreviated job evaluation scale developed from the aspects which loaded the strongest on these factors. Caution would nevertheless have to be exercised in defining exactly what is measured by the respective aspects of the abbreviated job evaluation system, if it is to be compared to other systems used elsewhere. Biesheuvel (1985) indicated that the major criterion for comparison to other systems has recently become simplicity of application and consistency of classification.

On the basis of the factor analysis, it seemed as if both these criteria may be met in the present research design.

Stepwise Multiple Regression

In view of the fact that the aim of this study was not to pool variables but rather to assess the individual contribution of each variable, a stepwise multiple regression was performed. These results are presented in Table 10. It reports the individual aspect scores statistically selected as predictors with their respective weights in the order in which they entered the equation.

The increase in R up to the inclusion of three aspects is high and becomes marginal (an increase in R of 0,02 only) with the inclusion of the fourth aspect. It could be argued that the increase in R was significant up to step three in the stepwise multiple regression, where *Enterprise*, *Decision level* and *Competence* were included in the regression equation, and that the consideration of the next step in the stepwise multiple regressions would not be necessary. The inclusion of *Competence*, *Decision level* and *Enterprise* in step three in the regression equation resulted in a multiple correlation coefficient of 0,95. By including *Competence*, *Decision level* and *Interaction* in step four in the equation the multiple correlation coefficient increased to 0,96, a marginally higher multiple correlation coefficient based on three aspects. The replacement of *Enterprise* by *Interaction* in the three aspect equation resulted in a higher R is a phenomenon that cannot be readily explained. The fact that these two aspects could replace each other in the regression equation and result in very similar R's could possibly be related to the results of the factor analysis where *Interaction* and *Enterprise* loaded strongest on the factor Effort. The lower loading of *Enterprise* compared to *Interaction* may offer one explanation.

Table 10. Aspect Scores and Weights found by Stepwise Multiple Regression to Predict Job Evaluation Points.

Aspects selected as predictors		Regression statistics		
		R at each step of the equation	r of predictor with total points	B weight ¹
Aspect 5	Enterprise	0,81	0,81	0,96
Aspect 5	Enterprise	0,91		
3	Decision level		0,73	1,10
Aspect 5	Enterprise	0,95		
3	Decision level			
2	Competence		0,60	1,34
Aspect 3	Decision level	0,96		
2	Competence			
4	Interaction		0,69	0,97
Aspect 3	Decision level	0,98		
2	Competence			
4	Interaction			
5	Enterprise			
Aspect 3	Decision level	0,99		
2	Competence			
4	Interaction			
5	Enterprise			
6	Accountability		0,67	1,08

¹ Weights given are for equation at six steps, constant at that step was 9,172.

It should however be noted that *Enterprise* seems to be a rather valuable aspect of the job evaluation system in view of $R = 0,81$ in the first step of the equation. At this stage preference is given to exclude this aspect from the abbreviated job evaluation scale and to base the system on the *Competence*, *Decision level* and *Interaction* aspects of the system. Should there however be any dispute about the grading of a particular job, *Enterprise* may be incorporated as a fourth aspect. The multiple correlation coefficient would then increase to 0,98 (step five in the equation, Table 10).

The decision to limit the prediction aspects to *Competence*, *Decision level* and *Interaction* is further supported by the findings of the factor analysis in that *Competence* loaded on the Skill factor, *Decision level* loaded on the Responsibility factor and *Interaction* loaded on the Effort factor. By using fewer aspects in the determination of total job scores, all the existing aspects will be represented in the light of the determined factor loadings.

On the basis of the findings of both the factor analysis and the stepwise multiple regression the abbreviated job evaluation scale will include the *Competence*, *Decision level* and *Interaction* aspects, with *Enterprise* as an alternative in case of doubt. This decision is further supported by the analysis of reliability. The coefficient of concordance for Committee B on *Decision level* was only significant at the 0,05 level which may imply that committee members may need additional training in this area. A similar trend was observed in the analysis of reliability of ratings made by pairs.

During the discussion of the points rating system, it became clear that there is no prescribed formula available which can help in the ranking of the importance of individual aspects. Livy (1975) felt that the ranking of aspects indicates their relative importance, but does not give any indication of their absolute values. Despite the fact that several debates have arisen as to whether individual

aspects can be viewed as independent predictors of overall job value, several studies reported earlier in this study indicated that a few evaluation aspects can form the basis for a workable system. From the preceding analysis it is evident that individual aspects can potentially be viewed as predictors of total job scores, but that to a limited extent. If this argument is to be applied to this study, only 65,61 per cent (R^2 or $0,81^2$) of the overall variance in total scores can be associated with the variance in *Enterprise*, the aspect with the highest correlation with total score. That would not have been an acceptable coefficient of determination.

Cross-validation

Multiple linear regression. Once the aspects with the highest predictive value were determined, the validity of the results had to be assessed for an additional 94 jobs in the sample. The aim was to apply the regression coefficients from the stepwise multiple regression, based on the aspects *Competence*, *Decision level* and *Interaction*, to a multiple linear regression equation to predict total job scores for a cross-validation (Howell, 1987) sample of 94 jobs. This would enable the validation of the extent to which total job scores could be predicted accurately.

The formula for the cross-validation of predicted total job scores with actual total job scores was (Kerlinger, 1981):

$$R_{Y^*Y} = \frac{N(\sum Y^*Y) - (\sum Y^*)(\sum Y)}{\sqrt{N(\sum Y^{*2}) - (\sum Y^*)^2} \cdot \sqrt{N(\sum Y^2) - (\sum Y)^2}}$$

where: N = number of jobs (94).
 Y^* = predicted total job scores.
 Y = actual total job scores.

A summary of the cross-validation results are presented in Table 11.

Table 11. Cross-Validation Results.

Aspects included	Multiple correlation coefficient (R)	Coefficient of determination (R ²)
Competence Decision level Interaction	0,9475 **	0,90 **
Competence Decision level Interaction Enterprise	0,9853 **	0,97 **

** p < 0,01.

The multiple correlation coefficient of Y and Y^* derived from the regression equation (including *Competence*, *Decision level* and *Interaction*) was 0,9475 ($p < 0,01$), representing an acceptable level of cross-validation. In comparison, a regression equation including *Competence*, *Decision level*, *Interaction* and *Enterprise* resulted in a R of 0,9853 ($p < 0,01$).

The fact that R increased by 0,0378 to 0,9853 with the inclusion of the fourth aspect, *Enterprise*, in the regression equation could possibly be considered insignificant, but should not be completely disregarded as it added a further 0,07 to R^2 . However, it is debatable whether or not the explanation of an additional seven per cent in the variance of actual scores is worth the additional effort. The use of four, as opposed to three, aspects in the evaluation process could make a substantial difference in the time involvement in the system. This is, however, a management perspective. From the employees' point of view, seven per cent less predictive value maybe considered substantial. As was suggested earlier, should a dispute arise, the fourth aspect, namely *Enterprise*, could be used to add to the accuracy of final job scores.

Hit rate. Gomez-Mejia et al. (1982) did a study, using a standardized job analysis instrument and a similar research design with cross-validation, to compare the relative accuracy and practical utility of seven different job evaluation approaches. They referred to the concept of a hit rate - the percentage correspondence between a job's predicted and assigned grade. Operationally, they considered a position to be a hit if it was classified by an abbreviated system within one grade lower or one grade higher than the actual job grade. Gomez-Mejia et al. used Pearson's product-moment correlation coefficients (r) to indicate the extent to which grade predictions and actual job grades were distributed in a similar pattern.

The hit rate (in terms of the definition by Gomez-Mejia et al., 1982) using *Competence*, *Decision level* and *Interaction* achieved

in this study was highly significant ($p < 0,01$). Job grades were determined in the usual way (with reference to the scales in Appendix C), but ignoring the cut-off point of 20 per cent as explained in the methodology. The hit rate, i.e. grades predicted within one grade above or below the actual grades, was 100 per cent. The percentage of cases for whom the estimated and actual grades were identical, using the same criteria, was 81,91 per cent ($r = 0,87$).

Should the cut-off point of 20 per cent be taken into account in the determination of job grades, the hit rate remained at 100 per cent, whilst the percentage of cases for which the estimated and actual grades were identical reduced only slightly to 80,85 per cent ($r = 0,86$). Marginally better results were achieved when four aspects, namely *Competence*, *Decision level*, *Interaction* and *Enterprise*, were used in the regression equation. The hit rate remained at 100 per cent, while the percentage for which the estimated and actual grades were identical improved slightly. By excluding the 20 per cent cut-off point, accuracy increased to 89,36 per cent ($r = 0,91$) and by including the 20 per cent cut-off the accuracy improved to 81,91 per cent ($r = 0,86$).

The above results are highly significant, compared to the study by Gomez-Meija, Page and Tornow (cited by Gomez-Meija et al., 1982). They reported correlation coefficients ranging between 0,80 and 0,62 for the estimated and the actual grades using nine different systems. Hit rates from their cross-validation ranged from 73 to 49 per cent for the nine systems. The percentages of cases where the estimated and actual grades were identical, were substantially lower compared with this study, between 18 and 32 per cent compared with more than 80 per cent in this study.

Of particular interest was their results with respect to two multiple regression methods. r 's of 0,62 and 0,76 were reported for these two methods respectively, while the hit rates were 49 and 66 per cent respectively.

In comparison to a study reported by Paterson (1972), where a three aspect abbreviated scale resulted in 62 per cent of jobs remaining in the same grade, 37,2 per cent being displaced one grade and 0,8 per cent displaced two grades, this study found a far higher level of accuracy in grade predictions using three aspects.

One factor that affected the accuracy of grade predictions in this study, was the cut-off point of 20 per cent currently in use in determining final gradings. When this practice was applied in the prediction of job grades in this study, the use of four aspects improved the prediction of grades by only 1,06 per cent to 81,91 per cent in comparison to the three aspect model. This confirmed the view that the notion to explain an additional seven per cent of the variance of actual scores is debatable.

The coefficient of determination (0,90), derived from predictions using three aspects, is as highly significant ($p < 0,01$). The fact that 90 per cent of the variance in actual scores can be associated with or "determined by" the variance in predicted scores is a significant result.

Inspection of the predicted total job scores, using *Competence*, *Decision level* and *Interaction* in the regression equation, showed that 34 per cent of all jobs had a points deviation of up to five points from actual scores and a 30 per cent deviation of between five and ten points. The balance of predicted job scores showed a descending pattern in the deviation percentage to 12 per cent for deviations with scores in excess of 20 points. The alternative regression equation, which included *Competence*, *Decision level*, *Interaction* and *Enterprise*, revealed a more favourable deviation pattern. 62 per cent of predicted job scores deviated by up to five points down to 1 per cent of predicted scores which deviated by more than 20 points.

These points deviation patterns are not considered unacceptable. In

the final analysis, measures, such as narrower ranges can be built into the abbreviated job evaluation scale to control these potential deviations and to be able to determine job grades as accurately as possible.

Conclusion

In conclusion, this research showed that an abbreviated job evaluation scale can be developed from historical job evaluation data available in an organization. Higher levels of reliability were reported in this study than elsewhere. A significant coefficient of determination (0,90) was arrived at between predicted and actual total job scores, based on cross-validation of test results from an analysis of 188 jobs evaluated over the last ten years in the organization under study. The aspects of *Competence*, *Decision level* and *Interaction* formed the basis for the prediction model.

The most important conclusion is that three underlying factors are present in the six aspects currently being used for evaluation purposes. These factors, deduced as Effort, Skill and Responsibility, conform not only with previous research done in this area, but also with the aspects of other "ready made" system currently in use in South Africa. As a result, a higher degree of compatibility with other systems would prevail, which can only facilitate comparisons of jobs to such systems.

The fact that more than one aspect measured the same underlying factor, indicated that the abbreviated scale would alleviate duplication of the measurement of the same characteristic, thereby avoiding overlap and measurement contamination. It could be argued that the exclusion from the evaluation documentation of information on aspects not included in the cross-validation could have an influence on the final rating of the job. This argument was, however,

addressed by the relatively high communality values arrived at in the factor analysis, namely that individual aspects were not found to be absolutely unique.

Substantial time savings in terms of preparation of documents and evaluation of jobs can also be achieved.

This research contributes to research on job evaluation systems in the following respects:

- * Significant levels of interrater reliability can be achieved on a "tailor-made" points rating evaluation system. A contributory factor could be extensive training on the system, as well as regular feedback to raters and selectivity in respect of raters.
- * The committee system is perceived to be important contributory factor to reliability, as borne out by the factor analysis. Nevertheless, careful controls for bias and other checks need to be built into the system and managed carefully to achieve this result.
- * A significantly accurate prediction model can be developed based on historical job evaluation data.

A key consideration in the study was whether the aspects, *Competence*, *Decision level* and *Interaction*, would be perceived as equitable, understandable and efficient by those individuals directly affected by the decisions made through the system. As a result, the implications of this study needed to be evaluated in terms of organizational and employee needs and perspectives.

CHAPTER 6

IMPLICATIONS OF THIS STUDY

Lawler's (1985) opinion was that job evaluation should be looked upon as more than a basis to compensate employees, but that it is in many ways the expression of an approach to managing people. It is therefore an integral part of the management process in that it assists in establishing relationships (Schuster, 1985).

The key issues therefore are to ensure maximum satisfaction with the job evaluation system and to ensure that all parties involved in the process are committed. These issues are even more focussed during the redesign of a system.

Implications for the Organization

The aspects used in the job evaluation system must satisfy the needs of the organization. In the case of the organization under study, the findings of this research could be considered relevant on the following grounds:

Cost savings. An important consideration for any organization would be the potential savings in time and cost that could be achieved through the use of an abbreviated job evaluation scale. This is particularly relevant for the organization under study in the light of the need for cost savings and streamlining of systems.

An annual saving in preparation and evaluation time of some R57 845 could be achieved by the organization under study using an abbreviated scale, based on the following calculations:

(a) Assumptions:

Number of jobs evaluated per annum	120
Number of committee members per committee	6
Evaluation time per job (core + main committees)	2 hour (1x2)
Preparation time per job (core + main committees)	2 hour (1x2)
Average annual total remuneration cost (direct and indirect) of committee members	R70 000
Working hours per annum (22 days x 8 hours per day x 11 months)	1 936

(b) Evaluation cost savings:

Some overhead time (presentation of job descriptions by senior at the evaluation committee, questioning of the senior by committee members and assessment of introductory information in the MFG), assumed to be 33 1/3% of total time, is involved in the current and will still apply to an abbreviated system. The total time involvement cannot, therefore, purely be halved because of the fact that half of the aspects are used, but it is assumed that one half of the balance of the time could be reduced to achieve the following cost savings:

$$\begin{aligned}
 &= 33 \frac{1}{3}\% \text{ of } \left\{ \left(\frac{\text{remuneration}}{\text{working hours}} \right) \times (\text{evaluation} + \text{preparation time}) \right\} \times \{ \text{no. of jobs} \} \times \{ \text{no. of members} \} \\
 &= 33 \frac{1}{3}\% \text{ of } \left\{ \left(\frac{70\,000}{1\,936} \right) \times (4) \right\} \times \{ 120 \} \times \{ 6 \} \\
 &= (33.33/100) \times 104\,132,22 \\
 &= R34\,707,27
 \end{aligned}$$

(c) Preparation of MFG's (job description) cost savings:

Should the preparation time be reduced in the same percentage proportion as and based on the same assumptions as above, the following savings could be achieved:

Seniors and superseniors spend a total of 2 days on the preparation of an MFG for evaluation purposes.

$$\begin{aligned}
 &= 33 \frac{1}{3}\% \text{ of } \{(\text{remuneration})/(\text{working hours})\} \times \{\text{preparation hours}\} \times \{\text{no. of jobs}\} \\
 &= 33 \frac{1}{3}\% \text{ of } \{(70\ 000)/(1936)\} \times \{16\} \times \{120\} \\
 &= (33.33/100) \times 69\ 421,49 \\
 &= R23\ 138,18
 \end{aligned}$$

Biesheuvel (1985) wrote that a significant reduction in evaluation time was achieved in using the Castellion system by reducing the number of factors without loss of evaluation power.

These savings could be considered significant in the light of the fact that it is almost equivalent to the total annual remuneration cost of an Assistant Divisional Manager (a representative member on evaluation committees) in the organization.

Organizational objectives. The finally selected aspects are considered relevant in the light of the organizational mission and objectives. The use of the three aspects could contribute in the following way in focussing on important organizational objectives:

- Competence - focus on expertise and skills are important for the higher specialization level jobs. This could contribute to professionalism and development of staff.
- Decision level - focus on delegating decision-making to lower levels of management in the organization which would facilitate the movement of the organization to the third evolutionary phase (growth through delegation), as suggested by Greiner (1972).
- Interaction - focus on effective and meaningful communication in the organization. Upward and sideways communication is encouraged, as suggested by Greiner (1972) to be moving the

organization towards phase three, delegation.

Implementation. The fact that research was based on historical data, which implies that major modifications to the system and the processes currently in use are not required to achieve a more cost effective result. Such changes could only streamline the system even further, but care has to be taken that controls are not weakened in the process. An abbreviated job evaluation scale may cause overgenerality which may lack in guidance to evaluators (Henrici, 1980). Care has to be taken to maintain the same standards as far as training of evaluators in particular is concerned.

Job evaluation inflation. Another benefit of the abbreviated scale and consequent shorter documentation would be less of a danger of inflation because of lengthy documentation, a factor, according to Thomason (1974), that is likely to lead to higher evaluations. The issue of job evaluation inflation is a specific concern in the organization at present.

Training and Education. It would facilitate training of users generally on the system, as fewer aspects need to be explained. This, therefore, could enable the trainer to provide more in-depth training on the three aspects to be used in the same training time as before. As stated above, the training of committee members need to receive the same attention, if not more than at present, because of the trends detected from reliability measures (*Decision level* in particular).

Proactive application. Because of the potential time-savings, the system could be used more proactively than at present. Job audits by the personnel function could more realistically be performed, an area which had been neglected grossly up to now largely because of the amount of time involved by both administrators and users.

The organization would have to ensure that careful controls are exercised in the system and, in particular, as far as the drafting of

job descriptions are concerned, as the potential for error is amplified by the fact that less information will be provided to base evaluations on and fewer aspects will be in use, thereby requiring accuracy of initial data. The possibility of manipulation of the system, by "loading" the aspects, could, if not managed properly, increase. At the same time, it could be a benefit in that less information would keep the focus during evaluation on the total job and its requirements and focus only on those aspects that are truly compensable factors.

A useful control measure would be to revise the grade ranges. Narrower grade ranges would address the issue of hit rates discussed earlier. To ensure that the ± 20 per cent of jobs misplaced by one grade be evaluated as accurately as possible, a similar cut-off point of 20 per cent at the upper level (as is the practice with the lower level) may have to be introduced to ensure higher confidence levels. Should final ratings fall within these upper and lower areas, additional aspects, which would be excluded from the abbreviated scale, may have to be used again to "fine tune" scores.

It is appreciated that the abbreviated scale cannot address all the concerns expressed about the system. Certain additional changes need to be made to ensure a higher level of overall satisfaction with the job evaluation system. The abbreviated scale could, however, go a long way to addressing the most urgent issues, namely that of correct focus and time involvement.

Since the introduction of or amendment to a job evaluation system will bring about change, it is advisable to view its implementation as an organization development exercise (Otis, and Leukart, 1954). Particular care needs to be taken regarding perceptions, expectations and revised procedures in implementing the revised system.

As the development and possible implementation of the abbreviated job evaluation scale is a major departure from the existing system, as

only one half of existing aspects would be included, careful follow-up procedures need to be instituted. It is felt that one year after implementation, careful validation of results need to be undertaken to ensure protect the integrity of the system.

Implications for Workers

The implications and impact of this study on employees in the organization must be considered very carefully. Employees may inevitably ask: How will we benefit from an abbreviated evaluation scale or will we lose in the process?

It is felt that the following benefits for workers could be derived from the revised system:

Knowledge. Employees could learn the system more quickly as fewer aspects need to be mastered. This would give them better insight into their jobs and the job evaluation system generally, an area largely confined to management in the past. It should therefore provide a better cost-benefit ratio in respect of workers. The cost of participation in terms of time and money could be easier justified by the benefits arrived from their participation in the system. Concerns had been expressed about this aspect in the past and centered around the amount of time involve in the completion of job descriptions.

Time. In cases where employees request the evaluation of their jobs in terms of their own perceptions, the process should be a quicker one. The lengthy and drawn out process currently in use had caused a lot of dissension amongst workers in the past. The financial and other benefits from the upgrading of jobs would accrue quicker than had been the case in the past.

Reduced subjectivity. The potential for subjective judgement is reduced as less aspects are being assessed. The fact that fewer

aspects would be used would reduce the degree of subjective judgements about jobs and, ultimately, workers' compensation levels. This potential benefit would be very dependent on the accuracy of job descriptions and may therefore have a potential negative effect on workers and their compensation levels.

At the same time, the fact that fewer aspects are used may affect the face validity of the job evaluation system from a worker perspective -are all the relevant factors and aspects taken into account in the evaluation of jobs?

Accuracy of ratings. Should the revised grade ranges be introduced, the interests of employees would be protected even further. This issue, together with the lower levels of subjective judgement, should enhance the overall credibility of the organization's job evaluation system.

Reward. The focus on truly compensable factors, as discussed under organizational benefits, should also benefit employees as it would ensure focus on the issues that need attention, i.e. compensable factors. The added benefit for workers would also be that their attention is, in the process, focussed on organizational objectives and behaviours which support these objectives would be compensated.

It could be argued that, in terms of the research, only 90 per cent of the actual total grade points could be explained by the three aspects used, may cause dissension among workers. However, the controls to be built into the system by the organization should address this area. This would also aid in protecting the face validity of the system.

Possibly the biggest benefit to employees is the reduction in subjective judgement.

It could therefore be concluded that an abbreviated job evaluation

scale could have benefits not only to the organization, but also for workers generally. An important requirement would be the careful management of the system to ensure its integrity and acceptability to both parties.

Needs for Future Research

Some areas requiring further research emerged:

- The practical application of the abbreviated job evaluation scale and its correlation with results obtained using the current system. This would satisfy the concern of the possible degree of error variance due to the use of less information for evaluation purposes - the omission of information on the aspects excluded from the prediction model.
- Some areas relating to reliability are still unanswered, for example the specific effect of the committee system. Another aspect of job evaluation system reliability which needs further investigation, is the effect of time on levels of ratings. This would answer some concerns about the whole job evaluation inflation issue.
- The development of dominant aspects over time - what factors could this be attributed to? Is organization culture a contributory factor in the process of determining the "real" compensable factors? Are these inherent in the design of the system or to the evaluation processes followed?

The final test to any job evaluation system will still lie in its acceptability to the organization and ultimate cost efficiency.

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APPENDIX A. DESCRIPTION OF ASPECTS

ASPECT 1 : DATA HANDLINGDEFINITION:

The complexity of data used in performing the job. The nature of numerical, verbal or written data to be used or grasped in order to make decisions, or which is required to be used in communicating decisions made.

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLES</u>	<u>POINTS</u>
A	The use of <u>simple data</u> , verbal and non-verbal, the use of names and numbers, taking simple orders and instructions.	Sorting of documents, simple filing.	0 3 6
B	The use of <u>standard data</u> , documents and instructions, and performing simple arithmetic. Understanding and using simple technical terms.	Doing basic calculations; completing standardised forms and documents; recording simple information and data.	7 10 14
C	The use of <u>more variable data</u> and more complex calculations. Selective use of printouts, general administrative documents and correspondence, and manuals. Occasional minor changes in information and regulations.	Analysing, extracting and interpreting fairly routine data and information eg. balancing accounts and returns, compiling turnover figures and making use of administrative manuals.	15 20 25
D	The <u>identification of expected changes and variations</u> in data which require particular attention to technological detail and/or precise analysis of information and statistics.	Identifying and determining particular trends relating to figures, information, behaviour and systems; assessing the feasibility of developing and establishing new projects for departmental use; analysing and interpreting the significance of given statistical information.	26 32 39
E	The identification of <u>unexpected deviations</u> from normal practices and trends. The use of mathematical statistics to identify problems. Having insight into various scientific and professional concepts covering a number of specialised fields of work.	Controlling and evaluating the viability of Divisional systems, schemes and projects; developing the basis for the design of new Divisional projects, systems and procedures; evaluating the effectiveness of Divisional and project performance.	40 48 56
F	The identification of data relevant to <u>advanced professional and management practices</u> and/or data related to complex developments abstracted from scientific and professional sources.	Developing and controlling long term plans, projections and forecasts necessary for Corporate strategy; the assessment and evaluation of Corporate objectives.	57 66 76
G	Identification of scientific data requiring a sound comprehension and insight into <u>complicated theories, models, principles and practices</u> for efficient growth of the Organisation as a whole.	The integration of political, economic and financial forecasts to formulate Corporate strategy.	77 88

ASPECT 2 : COMPETENCEDEFINITION:

The complexity of education, job knowledge, skills training, and total work experience essential in performing the job, i.e. the minimum period of experience required within and outside the Organisation.

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLES</u>	<u>POINTS</u>
A	<u>Primary education</u> plus on job instruction (usually up to 18 months) to perform manual, semi-skilled operations, routine procedures and to understand verbal instructions.	Cleaning, Messenger duties, Gardening.	0 3 7
B	<u>Secondary education</u> plus on job instruction (usually up to 3 years) to perform machine, clerical or technical operative procedures.	Copy typing, keeping records, collating and dispatching materials; routine office administration; general operating of machines; performing simple skilled functions.	8 12 18
C	<u>Post matric education</u> (eg. 1 to 3 year diploma) plus up to 5 years practical experience in the job to perform a variety of technological, supervisory, administrative and office procedures.	Supervising skilled, technical and/or clerical staff; controlling and monitoring work flow; carrying out specialist jobs under close supervision.	19 27 37
D	<u>University education</u> or equivalent (up to 4 years) plus development and experience in the job (between 4 and 8 years). To perform broadly defined Supervisory or Specialist functions.	Managing skilled, Specialist or Supervisory staff in a number of sections within a department. Specialists working on tasks/projects and who require prompting and guidance from Superiors.	38 50 64
E	<u>Post graduate education</u> or equivalent professional registration (approximately 6 years) plus in depth development, practice and expertise (between 8 and 12 years).	Seasoned professionals (Specialists and Managers) involved in self-initiated work requiring minimal guidance.	65 82 102
F	<u>Professional qualifications</u> (up to 8 years) plus in depth business success record (between 12 and 16 years) required for policy formulation and/or Board procedures.	Setting long-range objectives; formulating strategy and playing a steering role in the implementation thereof; integrating and co-ordinating functions and objectives of various Divisions.	103 125 150
G	<u>Professional qualifications, authoritative executive background</u> plus indepth top-level exposure to various economic sectors over an extensive period.	Integrating professional practices and developments world-wide.	151 175

ASPECT 3 : DECISION MAKING

DEFINITION: Decision-making involves solving problems by identifying possible alternative actions and evaluating which is best.

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLE</u>	<u>POINTS</u>
A	<u>Reflex</u> decision making. Obvious clues signal the existence of a problem and a routine solution is applied. The decision is self-implemented and alternatives practically do not exist.	Manual and semi-skilled functions eg. cleaning, filing, sorting, coding and storing.	0 6 13
B	<u>Simple</u> decision making. A variety of problems with standard recurring solutions. Clues are clearly perceptible and prescribed solutions are applied. Decisions are mostly self-implemented.	Decision making is based on past experience eg. spotting errors, updating records, issuing stocks, coding data.	14 25 37
C	<u>Variable</u> decision making. Clues inadequate and the problem occurs periodically. Best solution is selected by co-ordinating data received from a number of sources within and outside the department. Decision sometimes self-implemented or with the aid of skilled fellow workers, delegated to sub-ordinates or recommended.	Training and supervising skilled subordinates; organising workflow; prioritising activities; evaluating effectiveness of work performance; handing out of pattern complaints and queries.	38 60 83
D	<u>Reasoned</u> decision making. Clues less obvious and may be misinterpreted if no critical analysis is performed to reveal cause. The best solution is reasoned out from policy directives or the <u>unique characteristics</u> of the problem. Decisions are implemented aided by Specialist/Supervisory colleagues or delegated to Specialist subordinates or recommended.	Evaluating the effectiveness of departmental systems, trends and methods; Specialists receiving projects and deciding how to tackle on own.	84 111 140
E	<u>Creative</u> decision-making. Clues vague. Extensive analytical thought required to resolve abstract problems which haven't been anticipated. Existing policies/forward plans provide almost no guidelines. Decision mostly delegated to Specialist/Supervisory subordinates or recommended. Information can't be readily verified - hence risk attached to every probable solution.	Analysing business trends in order to formulate economic and financial forecasts. Formulating Divisional policy and strategies developing bases for new systems eg. Computer, Financial, Manpower.	141 175 213
F	<u>Developmental</u> decision making. Clues rest on assumption about the consequences of projected change. Research used to identify the problem. The solution developed and integrated inside/outside the Organisation. Decisions mostly the outcome of team effort and are delegated to Senior Management for implementation.	Review and appraise, at Corporate level, the Organisation's market position - evaluating economic and financial factors and competitor strategy. e.g. Long range plans for product development.	214 254 297
G	<u>Directive</u> decision making. Long term reviewing of the Organisation's needs. Formulation of new policies, strategies, objectives. Clues are abstract. Solutions formulated by own creative thinking and conceptualisation.	Senior Management at this level determine the major functional directions of the Organisation and set overall objectives which meet Board policies.	298 348

ASPECT 4 : INTERACTIONDEFINITION:

The complexity of interaction inside and outside the organisation necessary to perform a job. Interaction covers the degree of influence in motivation, persuading and convincing of subordinates, colleagues, seniors, clients, representatives, executives and opinion leaders to achieve work objectives.

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLES</u>	<u>POINTS</u>
A	Contact with semi-skilled fellow workers and immediate supervisor. <u>Receiving instructions or orders and replying to simple questions.</u>	Carrying out job instructions eg. cleaner, messenger, kitchen assistant, mail sorter.	0 14 28
B	Contact with semi-skilled subordinates or skilled fellow workers and immediate supervisor. <u>Conveying or enforcing prescribed rules, predetermined decisions, regulations, and reacting to requests for basic information usually contained in records or files.</u>	Responding and attending to requests for information eg. clerk, security guard, foreman, parking attendant.	29 44 58
C	Interaction with skilled colleagues and subordinates, supervisory colleagues and immediate senior; personal contact with individual clients or representatives from other Organisations. <u>Supervising, determining or interpreting information to and from others.</u>	Handling out of pattern queries from clients and other members of the Organisation, as well as allocating and monitoring the work of subordinates within sections.	59 75 94
D	Daily interaction with supervisory subordinates, colleagues, middle and senior Management; frequent contact with major clients or members from other Organisations. <u>Involves urging, persuading or selling.</u>	Building relationships, influencing staff with regard to services or products; selling system changes, procedures and products.	95 114 136
E	<u>Consulting with and advising subordinate Managers, Senior Management colleagues and individual executives both inside and outside the Organisation.</u>	Advising General Management on Divisional and strategic practices and policies; consulting with outside experts in a direction giving capacity.	137 159 184
F	<u>High-level negotiations</u> which could include executive directors inside and outside the organisation, national opinion leaders, central government officials and/or subordinate senior managers.	Formulators of policy.	185 210 238
G	Interaction at first executive levels on a national basis regarding problems affecting the overall efficiency and profitability of the total Organisation.	Executive Director, Company Chairman.	239 268

ASPECT 5 : ENTERPRISEDEFINITION:

Enterprise is the degree of scope for creativity and innovation provided in the job to enhance effective job performance and/or reduce negative impact. NB. It is the scope inherent in the job and not a measure of an individual's performance.

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLE</u>	<u>POINTS</u>
A	Scope for enterprise is limited to making obvious improvements in manual activities or preventing clearly perceptible mistakes in own job.	Tea attendant, cleaner, gardener, messenger.	0 9 18
B	Scope for enterprise is limited to practical changes (positive or negative) in the effectiveness of methods used by the job holder or the section.	Clerk, typist, receptionist section leader.	20 34 48
C	Scope for enterprise is limited to making an immediate impact (positive or negative) on the behaviour and/or work procedures of skilled workers, colleagues, clients or end-users.	Section Heads controlling staff, Admin. Head, Junior Specialist.	50 67 84
D	Scope for enterprise has a positive or negative impact, which is not immediately or directly perceived on the behaviour and effectiveness of clients, end-users, one or more departments (within one or more Divisions).	Department Head controlling staff, Specialist, ADM.	86 106 126
E	Enterprise has a positive or negative medium to long-term impact on the less tangible aspects of the patterns of consumer behaviour or of the functions of one or more Divisions or Regions.	ADM, Senior, Specialists, DM.	128 151 174
F	Scope for enterprise has a long-term impact on the overall effectiveness of the co-ordination between Corporate Divisions, and/or the development of policy innovations to anticipate or counteract changes in unpredictable economic and socio-political climates.	Divisional and General Management.	176 203 228
G	Scope for enterprise at this level affects the survival of the Corporate group, and may have country-wide influence and could effect the National economy.	General Management, and higher.	230 265

ASPECT 6 : ACCOUNTABILITYDEFINITION:

Accountability is the answerability for consequences of an action within the scope of the job which may affect the manpower, market, materials, methods or the management of the Organisation i.e. "what actions affect what results and to what extent in the job?"

<u>LEVEL</u>	<u>DESCRIPTION</u>	<u>EXAMPLES</u>	<u>POINTS</u>
A	The incumbent is closely supervised and is answerable for actions involving little cost but which may cause irritation and a waste of time up to one or two hours. Works under close supervision and/or checks.	Filing, sorting post, coding, typing, collating, cleaning.	5 3 7
B	The incumbent is generally supervised and is answerable for actions which, if incorrectly performed, may cause extra work for himself or for others in the section - wasting up to one or two days.	Data extractions, completion of administrative forms, secretarial duties.	8 12 18
C	The incumbent is generally guided by his immediate Senior and is answerable for actions which, if incorrectly performed, may cause ill feeling and wasted time in the department - up to one or two weeks.	Meeting deadlines, calculating numerical quotations, supervising skilled staff, controlling resources.	19 27 37
D	The incumbent is nominally guided by Seniors, and is answerable for actions which, if incorrectly performed, may have a significant impact within and outside the department - harm takes up to one or two months to overcome.	Specialists and/or Senior supervisory staff; control of budgets, projects or people.	38 50 64
E	The incumbent works within broad policy directives, and is answerable for actions which severely affect people inside and outside a Division, other resources and the Organisation's image. Corrective action takes up to six months and involves senior management and major changes.	Implementing and monitoring Divisional policies and strategies, eg. product marketing, client servicing, controlling staff at Management level.	65 82 102
F	The incumbent works in consultation with General Management, and is answerable for actions which could have a drastic long-term effect on profit expectations and the quality of human resources. The after-effects may take a full financial year or more to counteract.	Formulating policy; pro-active response to business trends; determining strategy to counter successful competitors; business and strategic planning.	103 125 150
G	The incumbent determines leadership style of the Organisation and is answerable for its survival and long-term strategy. Poor performance threatens the corporate organisation's capacity for survival and requires long-term strategic reorganisation and/or legislative action to protect the national interest.	Determining Management style and philosophy; building of Corporate image within the Industry and the National economy.	151 175

APPENDIX B. POINTS CALCULATION MATRIX

	LEVEL	5A	10A	15A	20A	25A	30A	35A	40A	45A	50A	55A	60A	65A	70A	75A	80A	85A	90A	95A	100A	POINTS		
DATA HANDLING	A	0,7	0,3	0,5	0,6	0,8	0,9	1,1	1,2	1,4	1,5	1,7	1,8	2	2,1	2,3	2,4	2,6	2,7	2,9	3	0	1	6
	B	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	7	10	14
	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	15	20	24
	D	1,6	3,2	4,8	6,4	8	9,6	11,2	12,8	14,4	16	17,6	19,2	20,8	22,4	24	25,6	27,2	28,8	30,4	32	26	32	38
	E	2,4	4,8	7,2	9,6	12	14,4	16,8	19,2	21,6	24	26,4	28,8	31,2	33,6	36	38,4	40,8	43,2	45,6	48	40	48	56
	F	3,3	6,6	9,9	13,2	16,5	19,8	23,1	26,4	29,7	33	36,3	39,6	42,9	46,2	49,5	52,8	56,1	59,4	62,7	66	57	66	75
	G	4,4	8,8	13,2	17,6	22	26,4	30,8	35,2	39,6	44	48,4	52,8	57,2	61,6	66	70,4	74,8	79,2	83,6	88	77	88	100
COMPETENCE	A	0,2	0,3	0,5	0,6	0,8	0,9	1,1	1,2	1,4	1,5	1,7	1,8	2	2,1	2,3	2,4	2,6	2,7	2,9	3	0	1	3
	B	0,6	1,2	1,8	2,4	3	3,6	4,2	4,8	5,4	6	6,6	7,2	7,8	8,4	9	9,6	10,2	10,8	11,4	12	8	12	16
	C	1,4	2,7	4,1	5,4	6,8	8,1	9,5	10,8	12,2	13,5	14,9	16,2	17,6	18,9	20,3	21,6	23	24,3	25,7	27	19	27	37
	D	2,5	5	7,5	10	12,5	15	17,5	20	22,5	25	27,5	30	32,5	35	37,5	40	42,5	45	47,5	50	38	50	64
	E	4,1	8,2	12,3	16,4	20,5	24,6	28,7	32,8	36,9	41	45,1	49,2	53,3	57,4	61,5	65,6	69,7	73,8	77,9	82	65	82	102
	F	6,3	12,5	18,8	25	31,3	37,5	43,8	50	56,3	62,5	68,8	75	81,3	87,5	93,8	100	106,3	112,5	118,8	125	103	125	150
	G	8,8	17,5	26,3	35	43,8	52,5	61,3	70	78,8	87,5	96,3	105	113,8	122,5	131,3	140	148,6	157,5	166,3	175	151	175	200
DECISION LEVEL	A	0,3	0,6	0,9	1,2	1,5	1,8	2,1	2,4	2,7	3	3,3	3,6	3,9	4,2	4,5	4,8	5,1	5,4	5,7	6	0	6	11
	B	1,3	2,5	3,8	5	6,3	7,5	8,8	10	11,3	12,5	13,8	15	16,3	17,5	18,8	20	21,3	22,5	23,8	25	16	25	37
	C	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	48	60	81
	D	5,6	11,1	16,7	22,2	27,8	33,3	38,9	44,4	50	55,5	61,1	66,6	72,2	77,7	83,3	88,8	94,4	99,9	105,5	111	86	111	140
	E	8,8	17,5	26,3	35	43,8	52,5	61,3	70	78,8	87,5	96,3	105	113,8	122,5	131,3	140	148,8	157,5	166,3	175	141	175	213
	F	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3	127	139,7	152,4	165,1	177,8	190,5	203,2	215,9	228,6	241,3	254	214	254	297
	G	17,4	34,8	52,2	69,6	87	104,4	121,8	139,2	156,6	174	191,4	208,8	226,2	243,6	261	278,4	295,8	313,2	330,6	348	288	348	400
INTERACTION	A	0,7	1,4	2,1	2,8	3,5	4,2	4,9	5,6	6,3	7	7,7	8,4	9,1	9,8	10,5	11,2	11,9	12,6	13,3	14	0	14	24
	B	2,2	4,4	6,6	8,8	11	13,2	15,4	17,6	19,8	22	24,2	26,4	28,6	30,8	33	35,2	37,4	39,6	41,8	44	20	44	74
	C	3,8	7,5	11,3	15	18,8	22,5	26,3	30	33,8	37,5	41,3	45	48,8	52,5	56,3	60	63,8	67,5	71,3	75	50	75	120
	D	5,7	11,4	17,1	22,8	28,5	34,2	39,9	45,6	51,3	57	62,7	68,4	74,1	79,8	85,5	91,2	96,9	102,6	108,3	114	95	114	174
	E	8	15,9	23,9	31,8	39,8	47,7	55,7	63,6	71,6	79,5	87,5	95,4	103,4	111,3	119,3	127,2	135,2	143,1	151,1	159	137	159	246
	F	10,5	21	31,5	42	52,5	63	73,5	84	94,5	105	115,5	126	136,5	147	157,5	168	178,5	189	199,5	210	175	210	297
	G	13,4	26,8	40,2	53,6	67	80,4	93,8	107,2	120,6	134	147,4	160,8	174,2	187,6	201	214,4	227,8	241,2	254,6	268	210	268	360
ENTERPRISE	A	0,5	0,9	1,4	1,8	2,3	2,7	3,2	3,6	4,1	4,5	5	5,4	5,9	6,3	6,8	7,2	7,7	8,1	8,6	9	0	9	14
	B	1,7	3,4	5,1	6,8	8,5	10,2	11,9	13,6	15,3	17	18,7	20,4	22,1	23,8	25,5	27,2	28,9	30,6	32,3	34	20	34	64
	C	3,4	6,7	10,1	13,4	16,8	20,1	23,5	26,8	30,2	33,5	36,9	40,2	43,6	46,9	50,3	53,6	57	60,3	63,7	67	50	67	120
	D	5,3	10,6	15,9	21,2	26,5	31,8	37,1	42,4	47,7	53	58,3	63,6	68,9	74,2	79,5	84,8	90,1	95,4	100,7	106	86	106	174
	E	7,6	15,1	22,7	30,2	37,8	45,3	52,9	60,4	68	75,5	83,1	90,6	98,2	105,7	113,3	120,8	128,4	135,9	143,5	151	137	151	246
	F	10,2	20,3	30,5	40,6	50,8	60,9	71,1	81,2	91,4	101,5	111,7	121,8	132	142,1	152,3	162,4	172,6	182,7	192,9	203	175	203	297
	G	13,3	26,5	39,8	53	66,3	79,5	92,8	106	119,3	132,5	145,8	159	172,3	185,5	198,8	212	225,3	238,5	251,8	265	210	265	360
ACCOUNTABILITY	A	0,2	0,3	0,5	0,6	0,8	0,9	1,1	1,2	1,4	1,5	1,7	1,8	2	2,1	2,3	2,4	2,6	2,7	2,9	3	0	3	7
	B	0,6	1,2	1,8	2,4	3	3,6	4,2	4,8	5,4	6	6,6	7,2	7,8	8,4	9	9,6	10,2	10,8	11,4	12	8	12	16
	C	1,4	2,7	4,1	5,4	6,8	8,1	9,5	10,8	12,2	13,5	14,9	16,2	17,6	18,9	20,3	21,6	23	24,3	25,7	27	19	27	37
	D	2,5	5	7,5	10	12,5	15	17,5	20	22,5	25	27,5	30	32,5	35	37,5	40	42,5	45	47,5	50	38	50	64
	E	4,1	8,2	12,3	16,4	20,5	24,6	28,7	32,8	36,9	41	45,1	49,2	53,3	57,4	61,5	65,6	69,7	73,8	77,9	82	65	82	102
	F	6,3	12,5	18,8	25	31,3	37,5	43,8	50	56,3	62,5	68,8	75	81,3	87,5	93,8	100	106,3	112,5	118,8	125	103	125	150
	G	8,8	17,5	26,3	35	43,8	52,5	61,3	70	78,8	87,5	96,3	105	113,8	122,5	131,3	140	148,8	157,5	166,3	175	151	175	200

APPENDIX C. GRADE RANGES

Grade	Points		20% cut-off point
	From	To	
1	1 116	1 309	1 154
2	952	1 115	984
3	810	951	838
4	685	809	709
5	581	684	602
6	493	380	510
7	419	492	433
8	355	418	367
9	305	354	315
10	261	304	269
11	223	260	230
12	190	222	196
13	161	189	166
14	136	160	141
15	115	135	119
16	96	114	100

APPENDIX E. EXAMPLE MANAGEMENT FUNCTION GUIDE

NAME OF PRESENT TITLE: Department Head DATE
 JOB HOLDER: Investments Control PREPARED: 29.02.84

SENIOR: D.J. Davidson TITLE: Manager JOB DESCRIPTION
 Investments Investments PREPARED BY:
 Control Control J.H. van den
 Berg

APPROVED BY (SNR):
 D.J. Davidson

DIVISION: Investments DEPARTMENT: Investments Control

JOB EVALUATION RATING: 9 DATE WHEN LAST EVALUATED: Oct. 1979

1. PRIMARY FUNCTION: (i.e. Brief undetailed summary, outlining why the job exists in the Society).

The efficient administration of all equities and fixed interest investments relating to the implementation of investments decisions; the safe custody and control of scrip; and the receipt and distribution of investment income.

2. RELATIONSHIPS OF THE JOB:

A. SUBORDINATES: (Immediate)

<u>JOB TITLES</u>	<u>NUMBER</u>	<u>GRADE</u>
1. Section Head (deals)	1	11
2. Section Head (Scrip)	1	11
3. Section Head (Income)	1	11
4.		
5.		
6.		

- B. SIGNIFICANT OTHER INTERNAL RELATIONSHIPS: Indicate purpose and frequency of contact (if any) by Job Holder with any other sections, departments or divisions within the Society.

<u>LEVEL</u>	<u>FREQUENCY</u>	<u>PURPOSE</u>
Manager Fixed Interest Investments	Daily	Information on deals
Portfolio Managers and Analysts	Weekly	
Manager Investments Systems	Daily	Application to computer systems
Manager Linked Business	Monthly	In respect of takeovers
Audit Inspector	Quarterly	Scrip analysis
Share trader	Daily	All transactions (equities) confirmation to pay out cash

- C. SIGNIFICANT EXTERNAL RELATIONSHIPS: Indicate purpose and frequency of contact by Job Holder with outside organizations, Policyholders, Suppliers, etc.

External Auditors	Annually	Audit inspections
Brokers & Discount Houses	Weekly	Confirmation of deals
Transfer secretaries	Weekly	

-
3. RESOURCES UNDER CONTROL OF JOB HOLDER: If nature of job does not involve control of any specific resources, ignore this section.

- A. TOTAL NUMBER OF EMPLOYEES SUPERVISED DIRECTLY AND INDIRECTLY BY JOB HOLDER :

14

- B. FINANCIAL RESOURCES ALLOCATED DIRECTLY OR INDIRECTLY TO THE JOB HOLDER: e.g. the total value of the budget allocated for operational purposes.

To operate within budget constraints.

4. List concisely not more than ten of the most important primary duties and responsibilities, which take up the greatest proportion of the Job Holder's working time in accomplishing the job. Indicate at what stage the work is required and precisely what the Job Holder does in order to complete his or her part of the work, identifying the specific purpose of each duty.

A. MOST IMPORTANT DUTIES AND RESPONSIBILITIES:

(If space does not permit, type on separate schedule).

1. Supervises purchases and sales of part 1 assets for management/Exco/Board on investment decisions.
2. Ensure settlement of all deals.
3. Ensures that all asset movements are reflected on the DC accounting system by sending through the correct coding instructions.
4. Supervises daily estimates on current account balances.
5. Ensures that proxy forms are correctly sent off in time and that Pensions Managers are informed.
6. Ensures that safe custody of scrip in the Division and the control of movement in scrip.
7. Conducts periodic audits of scrip.
8. Controls valuation of portfolios on take-overs.
9. Monitors investment income.
10. Ensures correct analysis of amounts received and being held in suspense accounts.
11. Attends to the Society's Trustee Duties which involve checking companies actions as prescribed by the Trustees.

- B. ADDITIONAL DUTIES AND RESPONSIBILITIES OF JOB: If applicable, list any important additional assigned duties and/or responsibilities which the Job Holder may be required to perform only periodically or occasionally (e.g. representation on committees).

Refer FAS handbook for guidelines.

ASPECT 1: DATA HANDLING

DEFINITION: The complexity of data used in performing this job.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
C	50	<ul style="list-style-type: none"> - Communicating basic calculation methods for all types of investments. Understanding of all stamp duty requirements for registration and transfer of scrip.
D	50	<ul style="list-style-type: none"> - Understanding valuations on assets, Society's accounting systems and application of cash to various accounts. - Interpreting and applying accounting principles for reflecting share exchanges initiated through mergers and acquisitions in Society's books. - Interpreting and implementing new market events, e.g. Rights Issues, share splits, etc.

ASPECT 2: COMPETENCE

DEFINITION: The complexity of education, job knowledge, skills training and total work experience essential in performing this job.

N.B.: Specify entry qualifications required for the job, e.g. academic qualifications, practical work experience, special skills.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
D	100	<ul style="list-style-type: none"> - In depth knowledge of JSE regulations governing settlement of deals. - In depth knowledge on investments & accounting. - Organising all daily and weekly tasks in order to meet deadlines on market commitments and Board work. - In depth knowledge of work procedures in order to see that portfolio management decisions are implemented. - Commerce degree plus 2 to 5 years on-the-job or related experience.

ASPECT 3: DECISION LEVEL

DEFINITION: The complexity of decision-making in performing this job.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
C	70	<ul style="list-style-type: none"> - Provide recommendations to management regarding both investment matters per se and work methods and their modification to meet current requirements. - Determine and extract pertinent data on current investments for conveying to management or Board. - Reviewing events in the market in order to compile schedule detailing amounts and dates. - Ensure that all investment income is received and applied.
D	30	<ul style="list-style-type: none"> - Effective control and monitoring of all investment scrip. - Ensure immediate action on outstanding amounts and their placing at call. - Ensure that all deals are settled within the time constraints which involves sometimes "out of pattern" arrangements.

ASPECT 4: INTERACTION

DEFINITION: The complexity of interaction inside and outside the organization required in performing this job.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
C	60	<ul style="list-style-type: none"> - Regular communication with managers, subordinates and colleagues, to ensure that all deals are settled, scrip is registered and income is received. - Liaison with managers/brokers of other institutions on settlement of deals, registration of scrip and payment of income.
D	40	<ul style="list-style-type: none"> - Regular communication with senior management in Investments & Accounting Divisions to obtain decisions taken to be implemented into the systems. - Communication with portfolio management of decisions required of our overseas agents (Standard Chartered Bank, London, & Wells Fargo Bank, San Francisco.)

ASPECT 5: ENTERPRISE

DEFINITION: The complexity level of the scope for enterprise in this job.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
C	60	<ul style="list-style-type: none"> - Maintaining cordial an cooperative relations with Brokers, Bankers, Transfer Secretaries and Attorneys. - Compiling data/information to assist Portfolio Managers in making decisions.
D	40	<ul style="list-style-type: none"> - Monitor and improve work procedures in line with demands made, efficiency of through-put and requirements of end-users. - Using initiative to meet market commitments when normal lead time not available. - Develop new documents and review existing documents in order to improve information sent through to management.

ASPECT 6: ACCOUNTABILITY

DEFINITION: The complexity of consequences, in terms of wasted resources, resulting from poor performance in this job.

<u>LEVEL</u>	<u>%</u>	<u>EXAMPLES</u>
C	60	<ul style="list-style-type: none"> - Deadlines in providing information to management. - Ensure that correct information is provided to management for decisions on market deals. - Mistakes in conveying details for settlement of deals can damage Old Mutual's image with other institutions. - Data errors result in incorrect accounting records and hence portfolios.
D	40	<ul style="list-style-type: none"> - Ensuring maintenance of records to meet audit requirements. - Effecting most profitable utilization of "free cash" and ensuring income is timeously banked. - Ensure that future commitments are correctly filed and brought to the attention of portfolio management for decisions so that relevant action can be taken.

APPENDIX F. EXAMPLES OF POINT SCORES GIVEN FOR FIVE (OUT OF A
TOTAL OF THIRTEEN) JOBS BY MEMBERS OF TWO COMMITTEES.

Jobs	Individual scores			Consensus scores
	by three raters			
JOB 1				
Data handling	15,0	17,5	18,5	15,0
Competence	18,0	23,4	19,5	18,0
Decision level	46,0	44,3	49,4	46,0
Interaction	72,7	68,8	64,2	72,7
Enterprise	70,9	70,9	70,9	70,9
Accountability	23,0	23,0	29,7	23,0
TOTAL POINTS	245,6	247,9	252,2	245,6
GRADE	11	11	11	11
JOB 2				
Data handling	50,1	50,1	50,1	50,1
Competence	82,0	82,0	82,0	82,0
Decision level	149,4	155,8	162,2	149,4
Interaction	108,2	106,2	119,1	119,2
Enterprise	128,5	128,5	151,0	137,5
Accountability	66,0	72,4	82,0	66,0
TOTAL POINTS	584,2	595,0	646,4	604,1
GRADE	5	5	5	5
JOB 3				
Data handling	21,8	16,2	20,0	20,6
Competence	30,1	19,5	38,5	18,0
Decision level	65,1	46,0	60,0	60,0
Interaction	62,6	59,5	59,5	59,5
Enterprise	69,0	61,0	70,9	50,5
Accountability	33,9	36,2	33,9	27,0
TOTAL POINTS	282,5	238,4	282,8	235,6
GRADE	10	11	10	11
JOB 4				
Data handling	25,0	29,0	27,4	27,4
Competence	50,0	50,0	50,0	50,0
Decision level	85,5	66,7	85,5	76,9
Interaction	82,8	78,9	90,6	82,8
Enterprise	107,0	94,3	102,7	102,7
Accountability	50,0	50,0	50,0	50,0
TOTAL POINTS	400,3	368,9	406,2	389,8
GRADE	8	8	8	8
JOB 5				
Data handling	50,1	50,1	50,1	50,1
Competence	82,0	82,0	82,0	82,0
Decision level	149,4	155,8	162,2	149,4
Interaction	108,2	106,2	119,1	119,1
Enterprise	128,5	128,5	151,0	137,5
Accountability	66,0	72,4	82,0	66,0
TOTAL POINTS	584,2	595,0	646,4	604,1
GRADE	5	5	5	5