

## **Competency based career ladders for project managers in a large research & development organisation**

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### **Abstract**

Implementation of a fair compensation policy for employees in a large organisation necessitates the categorisation of all employees into pay bands or levels. The authors conducted a qualitative multiple-case study of various operating units within the same organisation employing multiple sources of evidence to determine an optimal way of recognising and rewarding the career growth of project managers. Employee loyalty and career decisions are influenced by motivational theory, the need for career growth, career growth assessments, organisational culture, and organisational structure within the context of a knowledge worker R&D environment. A key research finding was that the organisation should resist generalisation or standardisation of career ladder instruments across various fields and that specialisation is required to adequately differentiate between pay-grade levels of employees. Career ladder instruments for project managers, scientist and engineers require different competency metrics and different scales are required to determine market related salaries across various application areas.

**Keywords:** Project management, Job assessments, Career growth, Career ladder,  
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### **Introduction and background**

Large competitive knowledge organisations need an instrument to assess the knowledge, skills, and contributions of individual employees to enable equitable reward and recognition practises. A career ladder instrument can be used to address the need for recognition and growth from both the employees' and the organisation's point of view. However, two issues arise: the career

ladder needs to be transparent, equitable and fair from the employees' point of view (Pienaar & Bester, 2006) but has to effectively discriminate between the value of different employees to the organisation. A formally adopted career ladder is such a measuring instrument and is used by knowledge organisations to recognise career growth and allocate individuals to applicable pay grade levels (Spyridakos, Siskos, Yannacopoulos and Skouris 2001).

A leading scientific and technology R&D organisation in South Africa implemented a career ladder assessment process for professional staff. The organisation uses two types of approaches:

- *Fixed jobs.* The job remains the same irrespective of the individual's skills, experience, competency and growth. A job description includes the roles, responsibilities and accountabilities expected from the person appointed to the job. In the organisation most administrative type positions are fixed jobs including those of secretaries, financial clerks and senior management.
- *Career ladder jobs.* The job is determined by the individual's skills, experience and competency. The job size can be grown over time and a competency based career ladder instrument is used to measure various metrics that provide an indication of employee worth to the organisation. Typically professional staff responsible for research and technology development activities are measured using career ladders.

The project management career ladder distinguishes between candidate project managers, project managers, senior project managers and principal project managers. Project managers are assessed according to various metrics namely professional qualifications, project management specific qualifications, project management experience, leadership, proficiency in project management skills, size of project managers' portfolio, stakeholder interaction, risk or impact associated with portfolio and the contribution the project manager makes to the project management knowledgebase in the organisation.

### **Research objective**

The objective of the research was to determine whether a formal project management specific career ladder is necessary and adds value in a large research and development organisation.

In order to address the research problem effectively, the following hypotheses were put forward:

- *Hypothesis 1:* A fixed job approach provides very little opportunity for career growth of project managers within a research and development organisation.
- *Hypothesis 2:* Career ladder instruments can be used effectively by managers to motivate project managers to perform within their environments.

- *Hypothesis 3:* A competency based project management specific career ladder measures consistent pay grade levels for individuals in comparison with the job based approach.
- *Hypothesis 4:* The competency drivers for project managers within a research and development organisation which should be measured with a project management (PM) specific career ladder instrument include (a) Domain/Application knowledge, (b) PM training and skills, (c) PM experience, (d) Leadership, (e) Level of responsibility and accountability, (f) Level of stakeholder interaction and (g) Contribution to the PM knowledge base.

## **Analysis of previous literature**

### **Motivational theory and the need for career growth**

Four key theories on career growth are based primarily on Maslow's hierarchy of needs, published by Abraham Harold Maslow in 1943. It proposed a pyramid structure of needs, ranked from lower order (physiological, safety and social) to higher order needs (esteem and self-actualisation) (Maslow, 1943). The hierarchy implies growth over time, where the next level only has value once the previous level has been satisfied. Alderfer, Herzberg, Adams, and Vroom each emphasise different elements of the needs people have in developing their working lives, but all of them hark back to Maslow's higher needs: esteem and self-actualisation. This need for the esteem of others includes the need for respect, prestige, recognition, and a personal sense of competence or mastery. Self-actualisation at the top of Maslow's hierarchy encapsulates the need for self-fulfilment, achieving one's aspirations through one's own efforts (Schermerhorn, Hunt, & Osborn, 2008). Clayton Alderfer (1969) expanded on Maslow's theory and categorised the lower order needs (physiological and safety) as 'existence', the middle order needs (interpersonal love and esteem) as 'relatedness', and the high order needs (self-actualisation and self-esteem) as 'growth'. Frederick Irving Herzberg (1959) developed a two-factor theory known as the motivator-hygiene theory, where hygiene factors are sources of job dissatisfaction, while motivator factors are sources of job satisfaction. Herzberg's motivation factors include growth, advancement, responsibility, recognition, and achievement. All of these are directly related to advancing in one's career over time. Adams's equity theory formulated in 1965 (Goodman & Friedman, 1971) predicts that employees will act in ways that remove any perceived negative inequity by, for example, changing work inputs (reducing effort), changing the outcomes (e.g. asking for a raise in salary), or leaving the situation (e.g. quitting).

Closely related is Victor Vroom's Expectancy Theory (Vroom & MacCrimmon, 1968), which argues that a person is motivated to the degree that he or she believes that effort will yield acceptable performance (expectancy), that performance will be rewarded (instrumentality), and that the value of the rewards is highly positive (valence). Vroom postulates that motivation can be represented by the equation 'Expectancy x Instrumentality x Valence'.

Related to these motivation theories is the term 'management by objectives' that Peter Drucker popularised in his book *The Practice of Management* (P. F. Drucker, 1954). Goal-setting theory postulates that both specific goals and difficult goals are more likely to lead to higher performance than vague and less difficult goals. In goal-setting theory it is also postulated that appropriate and accurate feedback or knowledge of results motivates people to higher performance. Goals are also more likely to motivate people to higher performance if they are accepted and there is commitment to these goals. Organisations that provide their employees with vividly clear career goals that are aligned with the objectives of the organisation are able to capitalise on the motivational energy it releases.

All the motivational theories discussed have a common element related to growth. People do not want to remain stagnant in their working lives, so career growth is one of the most important elements influencing employee satisfaction. Organisations that recognise and establish a culture that values their employees' need for growth have the potential to harness employee satisfaction to the benefit of the organisation. But employees' jobs, attitudes, and behaviours develop and change over time (Fried, Grant, Levi, Hadani, & Slowik, 2007). To improve staff retention, organisations have to keep on stimulating their staff and provide opportunities to grow their careers within the organisation.

Edwin Locke and Gary Latham (2004) published an integrated model of work motivation. This meta-model helps to integrate various concepts and theories. It is relevant to this study because the purpose of a career ladder is to recognise career growth and to facilitate fair compensation to employees in order to attract and retain human resources in a competitive labour market.

### **Job-level and competency based assessments**

The history of job design can be traced back to the work of Frederick W. Taylor, a mechanical engineer with a passion to improve industrial efficiency, who formulated what became known as the scientific management theory in 1967 (Schermerhorn et al., 2008). Taylor introduced the practice of managerial decision-making based on proven fact rather than unscientific approaches – such as tradition, rule of thumb, guesswork, precedent, personal opinion, or hearsay (Locke, 1982). He wanted to create management and organisational practices that

would increase the efficiency of people at work. Job simplification describes the scientific management approach that standardises work procedures and employs people in clearly defined and highly specialised jobs. In contrast, job enrichment (linked to Herzberg's two-factor model for motivation (Herzberg & Mausner, 1959)), is the practice of enhancing job content by adding motivational factors such as responsibility, achievement, and personal growth. Taylor was concerned about productivity, and advocated maximum specialisation in order to complete a task or job most efficiently. The practice of designing a job to maximise efficiency, and assigning this position to a specialist capable of doing it – and/or training a person to perform it – flowed from the ideas of Frederick Taylor (Taylor, 1911). During the industrial age of the 19<sup>th</sup> and 20<sup>th</sup> centuries, which was characterised by machinery and automation, this approach worked very well.

Another reason for doing job assessments is so that organisations can determine how much the person employed in the position should be paid. According to Spyridakos et al. (2001), job evaluation instruments are important in large organisations, ensuring that employees are correctly ranked according to their worth to the organisation, and resulting in fair and equitable wages/salaries for employees placed at various pay-grade levels. Important characteristics of the job evaluation process include (1) the existence of multiple factors that influence the evaluation; (2) the decision often being the duty of a committee; and (3) the available data including fustiness, while the description, responsibilities, and requirements of the jobs are usually not precisely determined. Job evaluation concerns the assessment of a value system that encapsulates the importance of the parameters that reflect the global responsibility and duties of a job. The payroll system needs to take into account trends in the labour market, job importance from the organisation's point of view, and jobholder performance.

According to the Spyridakos model, job evaluation criteria can be divided into:

- a) Input criteria, which include the knowledge, skills, and personal characteristics required for the efficient accomplishment of the job;
- b) Process criteria, which encapsulate what the job demands from its holder, such as problem-solving, complexity, originality, judgement, etc.;
- c) Output criteria, which represent the contribution of the job to the quantitative and qualitative results for the organisation, such as sales, quality of products, profit, etc.

According to these criteria, job evaluation requires a high level of judgmental and negotiation activity from the evaluation panel. Time-consuming meetings, communication, and data handling

procedures take place to determine the relative situation of every job, and to assign accurate values according to the criteria.

Van Sliedregt, Voskuijl and Thierry (2001) question the assumption that job value scores match with pay grade structures and allow adequate predictions of basic job wages or salaries in practice. One of the reasons they give is that job evaluation systems are regularly simplified by deleting several scales. According to Sliedregt et al. (2001), the attributes of job evaluation systems that might influence the match of total job value scores to pay grade structures include the number of defined scale anchors per scale, the number and type of scales (general versus job specific), and the attached scale weights. It is important for both the job-based and the competency-based scenarios that assessments should not be over-simplified, and that characteristics that adequately discriminate between the complexity of different jobs or the competency of different people be retained in the evaluation instrument.

### **Competency assessment**

According to Nicholson (1996), a new model of careers is quietly replacing the traditional corporate career model. He states that deeply frustrating needs for self-expression and development have been created by the flat structures of employment at lower organisational levels, by the restricted scope of jobs, and by insecurity about employment. Nicholson describes a paradigm shift from bureaucracy to networks, from inputs to outputs, from jobs to skills, from security for commitment to employability for flexibility.

Previously the hierarchical structures of large organisations made it relatively easy for competent performers to fulfil their career growth needs (Huemann, Keegan, & Turner, 2007). However, the trend towards flatter organisational structures is making it very difficult for organisations to address the need for career growth in order to satisfy and motivate their employees. Keegan and Turner (2003) introduced the idea of a 'spiral staircase career', in which people move through a series of varied and wide-ranging jobs in project-oriented companies. Turner, Huemann and Keegan (2008) argued that in the spiral staircase career, project managers gain experience in technical roles, client interfacing, and line management in addition to their project management role. Organisations competing for talented human resources even help individuals to develop their skills and to attain advanced qualifications; but without appropriate recognition of newly-obtained capabilities, organisations fail to motivate and satisfy these individuals.

According to Baruch (2004), career systems have seen major changes in recent decades; and this trend may be portrayed as a transition from what may be labelled the 'linear career system'

into a 'multidirectional career system'. He contrasts the emerging nature of career paths – described as multidirectional, dynamic, and fluid – with the traditional view of careers, which is more linear, static, and rigid. Careers are no longer employer-specific or bounded, but are becoming boundary-less, especially in project-orientated organisations (Jones & DeFillippi, 1996). The view of Atkinson (2002) is that despite the changing psychological contract between employer and employee, people still seek a relational contract, and that organisations should offer, foster, and support a culture of continuous learning, respect for the individual, and valuing loyalty, and should reward people for performance and personal development.

A war over talent is raging in a globally competitive world (Michaels, Handfield-Jones, & Axelrod, 2001). More and more organisations are realising that their competitive edge comes from the various individual and collective talents of the human resources they employ. Several organisations are implementing talent management programmes to attract and retain the best people (Lewis & Heckman, 2006). The career management process involves career exploration, development of career goals, and use of career strategies to obtain career goals (Noe, 1996). Noe's study suggests that managerial support for employee development in terms of advice, referral, and feedback is a very important skill for the manager to master.

Granrose and Portwood (1987) argue that a common rationale for organisational involvement in career planning is that it reduces employee uncertainty, helps employees to plan, and thus yields a positive outcome for the organisation. They point out that this rationale is based on the assumptions that effort leads to success, certainty leads to satisfaction, and knowledge about options leads to organisational commitment. However, the notion that 'effort leads to success' fails, in that effort might also lead to higher expectations for return on investment. The second assumption, that 'certainty leads to satisfaction', depends on whether there is a match or a mismatch between personal and organisational goals. They found that the last assumption, that 'knowledge of organisational alternatives leads to organisational commitment', has narrow support, because employees are looking for readily available options. They also found that inaccurate or ambiguous information given by an organisation might lead valued individuals to misperceive a situation and seek career options elsewhere. The implementation of a formal career ladder linked to associated pay levels may lead to employee expectations for 'automatic' promotions and associated salary increases. If this promise cannot be realised, it can lead to employee dissatisfaction, resulting in employee turnover.

Igbaria, Kassicieh and Silver (1999) performed a study among research, development, and engineering (RD&E) professionals, and found that the dual (managerial and technical) career

ladder is not an effective device for managing RD&E professionals. There was a rich diversity of career orientations among the RD&E professionals studied, but most scored higher for service, lifestyle, and security orientations, and lowest on technical orientation and entrepreneurship. Their conclusions suggest that organisations need to recognise the diversity of career orientations so that appropriate reward systems and career paths can be developed. Reducing the options of knowledge workers in selecting an appropriate career management instrument might result in dissatisfied employees. King (2004) argues that career self-management can lead to career satisfaction because of an enhanced perception of control; but it may also lead to negative outcomes and maladjustment when the person experiences career barriers or thwarting conditions. King showed that when a thwarting condition is experienced, the person will either comply (give up rather than taking constructive action), manipulate (change the environment), or take an integrative response (synthesising factors in conflict). King then described behaviours employed by individuals towards career self-management, including positioning behaviour, influencing behaviour, and boundary management.

The red flags discussed above should be considered when designing and making decisions about implementing formal career ladders in the organisation. According to Lawler (1994), evaluation systems based on the employees' competencies may be an alternative to fixed jobs in a hierarchical structure. A competency-based approach might be more appropriate; but if this is implemented, the reward systems, career tracks, and even the structure of the organisation need to change to focus on competencies. In a competency-based approach the basic building block needs to be the person. Detailed job descriptions need to be replaced by skill and person descriptions.

Crawford (2005) developed an integrated model of competence. According to this, competencies can be grouped into 'input competencies' consisting of the knowledge and skills a person brings to the job; 'personal competencies', or the core personality characteristics that support the person's ability to do a specific job; and 'output competencies', demonstrable performance or ability to perform an activity to a required standard.

The Novations Four Stages<sup>®</sup> model (Novations.com, 2010) is a descriptive model of how the impact and influence of persons increases when employees move through distinct stages of career development. This model emphasises the fact that employees appointed to a specific job grow within the job over time because, as they become more competent and skilled, their role changes within the organisation according to the following stages:

- Stage 1: Contributing dependently – 'helping and learning';



- Stage 2: Contributing independently – ‘technical expertise’;
- Stage 3: Contributing through others – ‘local leadership’; and
- Stage 4: Contributing strategically – ‘shaping the organisation’.

This model guides organisations that are developing career ladders for different professions, because it provides insight into the type of outputs that can be expected from employees at different stages in their careers.

In a study of 20 organisations that implemented a career path for project managers, one of the key findings was that successful and sustainable project management culture results when the individual needs of the project managers are respected and integrated into an overall organisational incentive system (Hölzle, 2010). Hölzle found that the role of the project managers evolves from being the administrator of the project to a much more managerial position, and that a very different set of capabilities and competencies is required at different career stages. Some of these competencies may be acquired through qualification programmes, but the project manager must also learn to apply these skills by gaining experience to transform competencies into expertise.

The literature shows a clear movement away from the job-based assessments that were dominant in the industrial age of the 20<sup>th</sup> century, to a competency-based approach in the knowledge-driven 21<sup>st</sup> century. Organisations realised that their strength is not predominantly in their capital equipment and machinery, and that competencies that provide organisations with a competitive edge are built on people. Talent management is the new buzzword; and organisations are starting to design their operational process around people.

### **Project manager competency**

The project manager competency development framework (PMCDF), developed by the Project Management Institute (PMI<sup>®</sup>), provides a model framework that organisations can use to assess the project management competence of persons in the organisation.

It can be applied to determine both the job specification prior to appointing a project manager to a position, and the competency of the project manager.

The PMCDF (PMI, 2007) consists of the dimensions listed below:

- **Project manager knowledge competence:** Knowledge of project management related processes, tools, and techniques for project activities;

- **Project manager performance competence:** Application of project management knowledge to meet project requirements;
- **Project manager personal competence:** Project manager's behaviour when performing activities in the project environment, project manager's attitudes, and core personality characteristics;
- **Industry-specific competence:** Application of industry-specific knowledge;
- **Organisational competence:** Application of organisation-specific knowledge.

In determining the job specification the 'know-how' requirement for the job must be defined and include prior *knowledge* (e.g. a Masters Degree in a certain field) as well as relevant experience requirements. The 'problem-solving' element includes the reasoning and type of decisions the candidate is expected to make. This is captured in the PMCDF's *performance* dimension, where key performance indicators are agreed between the project manager and management. 'Accountability' is captured in the *organisational* dimension of the PMCDF, and specifies the boundaries of the position – for example, financial approval authority, or authority to enter into contracts. The job specification may also include *industry* requirements – for example, a professional engineer (PR Eng) certification. At a *personal* level the job description may require an individual who is able to interact at a professional and social level with senior executives.

The competency-based career ladder approach differs from the job-based assessment, in that the detailed job descriptions are replaced by skill and person descriptions. The building block is not the job but the individual (Lawler, 1994).

From the perspective of a competency-based career assessment, the PMCDF assists with the evaluation of project managers' competence by providing detailed breakdowns of the different units and elements of the PMCDF, as well as the performance criteria and types of evidence applicable to performance and personal competencies. The PM knowledge competency is assessed as part of the Project Management Professional (PMP®) certification examination, or any other internationally accredited examination. Project manager *performance* competence can be demonstrated by assessing project-related outcomes and actions that need to be considered competent. Project manager *personal* competence can be demonstrated by assessing project manager behaviour. *Industry-specific* and *organisational* competencies are acknowledged in the PMCDF but are not addressed specifically, since these vary across industries and organisations (PMI, 2007). The organisation can use the PMCDF to identify the existing competence of project managers and gaps to be addressed. Project managers benefit because knowing the gaps enable them to grow their skills; and doing so increases their value to the organisation.

The PMI®'s project manager competency development framework (PMCDF) provides an effective way to assess project managers' competence. A project management career ladder based on the PMCDF empowers project managers to grow their skills and develop their careers in line with the strategic direction of the organisation.

### **Influence of organisational culture**

At the most basic level, organisational culture is defined as the values, beliefs, and organisational practices that are shared by the members of the organisation (Cohen, 1995). Deal and Kennedy (2000) define organisational culture as "the way we do things around here". Organisational culture influences this study in a number of areas. This multiple-case study is performed within a knowledge worker research and development environment. Research and development work are almost always associated with uncertainty and risk. Work in the organisation is performed through projects, but the ways in which projects are managed differ significantly between various operating units in the organisation.

Peter Drucker introduced the term 'knowledge worker' in his well known book *The effective executive* (P. F. Drucker, 2002). According to Drucker, knowledge workers want to understand what is expected of them and why – and have it clearly stated: "Since the knowledge worker directs himself, he must understand what achievement is expected of him and why. He must also understand the work of the people who have to use his knowledge output". They need a substantial amount of information, discussion, and instruction so that they can focus on the performance goals of the organisation. It can therefore be argued that knowledge workers' involvement and participation in the formulation and structuring of a career management instrument would result in buy-in and a positive attitude towards such an instrument.

The use of project management methodologies differs significantly between the various operating units of the organisation that are the subject of this study. In some areas very formal project management methodologies are followed; these units appointed full-time project managers. In other units project administration is less formal, and has become one of many roles of the technical or research group leader. Yvonne du Plessis (2006) argues that a non-supportive project management culture in organisations is one of the main causes of project failure. According to Du Plessis, day-to-day administrative and functional skills are becoming insufficient to deal with the complexities of modern project undertakings. Erling Andersen (2003) points out that the project culture might be at odds with the organisational culture. Du Plessis (2006) expresses a strong view that the commitment of the organisation's leadership team to establish a suitable culture for project management is so important that project management

should not be used until the leaders of the organisation are committed to its use. The PMBOK (Guide to Project Management Body of Knowledge) states that the degree of project management maturity and the project management systems in the organisation influence project success (Pmi, 2008). According to Du Plessis (2006), project the descriptive elements of management culture can be divided into four dimensions: people in projects, systems and structures in projects, processes within projects, and the project environment. She developed a culture framework that superimposes the descriptive elements of the framework on the culture definition of Deal and Kennedy (2000).

- 'The way': refers to the project process (how);
- 'We': refers to the people in the project, i.e. project team and stakeholders (who and for whom);
- 'Do things': refers to the project management methodology (what);
- 'Around here': refers to the project environment (where).

For an analogy to this model, one can put the way the organisation deals with career development into a similar framework. 'The way' being the career ladder assessment process (how); 'We' the project managers and the assessment panel members (who and for whom); 'Do things' referring to the career development or talent management process (what); and 'Around here' the organisation (where).

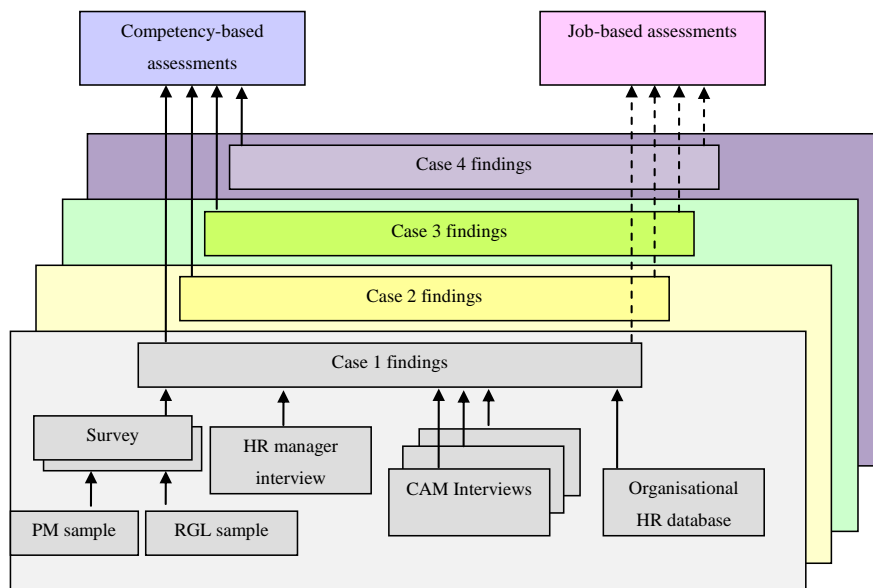
'Upper management support' is an important culture factor (Englund & Graham, 2003). Recognising the strategic role of project management and facilitating the career growth of project managers is one way in which senior management can offer upper management support.

Organisational structure strongly influences organisational culture. Among other things, it affects who assigns and manages resource availability, which impacts strongly on project success. Hölzle (2010) advocates implementing a project managers' department just below the top management level in the organisation, where all project managers are consolidated in order to have enough resources available and to strengthen the power base. Hölzle points out, however, that many companies feel that project managers lose their sense of organisational belonging in such a department. It is important to note that within the larger organisation, various sub-cultures may exist that function in different structures within the same organisation. Sub-cultures will align support processes (such as career assessments) to the way in which they operate.

## Research design and methodology

### Research strategy

The research took the form of a qualitative multiple-case study of various operating units within the same organisation. Yin (2008) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used”. In contrast to ‘statistical generalisation’, which makes an inference of the population based on empirical data collected from a representative sample, ‘analytical generalisation’ is based on replication logic in which it can be shown that two or more cases support the same theory (Yin, 2008). According to Yin, the case is even stronger if it can be shown that two or more cases support the same theory and do not support the rival theory.



**Figure 1: Level 2 inference through replication logic**

According to Blumberg (2008), case studies are based not on sampling logic but on replication logic. Figure 1 illustrates how replication logic was used to generalise across the organisation. Since case studies rely on multiple sources of evidence, the research strategy was to obtain inputs from various sources using appropriate instruments, and to use a method of triangulation that could point the researcher to conclusions for each of the stated hypotheses.

Data used to test the stated hypotheses included the following:

- Survey testing project managers’ (PM) perceptions;

- Survey testing research group leader's (RGL) perceptions;
- Semi-structured interviews conducted with human resource (HR) managers and competency area managers (CAMs);
- Supporting organisational documentation.

Each source of evidence is discussed in more detail below.

#### *Survey testing project managers' perceptions*

A questionnaire designed to test the perceptions of the existing project management career ladder and the alternative job-based approach was distributed to the population of 55 full-time project managers in the organisation. SurveyMonkey – an electronic survey collector providing easy data retrieval – was used, since everybody within the organisation has access to the Internet. The response rate was 53%.

The objectives of the questionnaire were to obtain relevant data from project managers listed below:

- To gather demographic information, including career ladder level, operating unit, qualifications, project management related training, and project management experience.
- To elucidate perceptions of career growth experienced within the organisation, the extent to which career growth was recognised and rewarded in the organisation, and the perceived value of the project management specific career ladder.
- To understand the importance of various criteria as a measurement or indicator of career growth, and the extent to which the project management career ladder provided a reasonable assessment of career growth in the organisation.
- To test the effectiveness of using a job-based approach as an alternative to a competency-based career ladder assessment.
- To find out the preferences of respondents for a career ladder or a job-based approach.

#### *Survey testing research group leader perceptions*

Early in the data gathering process, the authors realised that project managers were not well-represented in Case 4. Only a few operating units lumped together in Case 4 employ full-time project managers. In this case, research group leaders or technical leaders also perform the role of project manager for the projects for which they are responsible. In order to ensure that the outcome for the selected cases was not biased an electronic survey was sent to a population of

40 research group leaders in the organisation. The response rate was only 30% but five research group leaders from the total of 13 who responded came from Case 4 improving the representation from Case 4.

*Semi-structured interviews conducted with senior managers*

A series of semi-structured interviews was conducted with human resource managers and competency area managers within each of the cases. In total the author conducted 10 interviews, summarised in Table 1.

**Table 1: Senior manager semi-structured interview summary**

<b>Line managers</b>	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>
Competency area managers	2	3	1	
Human resource managers	1	1		1
Manager of project management office			1	

An interview guide was prepared to guide the researcher during the process of interviewing human resource managers and line managers. This guide allowed him to obtain both quantitative and qualitative data that was used during data analysis as part of the triangulation process. During personal interviews, feedback on the following was requested:

- Demographic information, including current job description, operating unit, work experience, and exposure to project management;
- The extent to which the career growth of project managers was observed in their environment, and the extent to which the career growth of project managers was recognised and rewarded by the organisation;
- The importance of various criteria as a measurement or indicator of career growth, and the extent to which the project management career ladder provided a reasonable assessment of career growth in the organisation;
- The value of a project management specific career ladder in the organisation;
- The advantages and disadvantages of using a job-based approach as an alternative to a competency-based career ladder assessment;
- Assessment of how well a job-based approach could facilitate career growth, and of the administrative burden of a job-based approach. In addition the respondent was asked to assess the impact on employee satisfaction of implementing a job-based approach in the organisation;

- Preference of respondents for a career ladder or a job-based approach for project managers in the organisation.

### *Supporting organisational specific documentation*

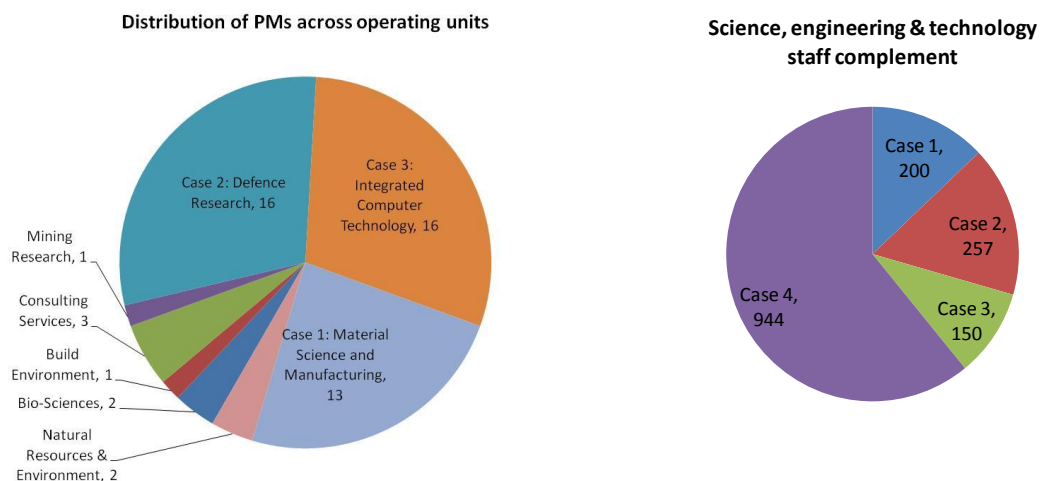
To supplement the survey and interview data, the authors obtained data from the organisation's human resources database, as well as documentation used by the organisation to perform job evaluations and career assessments. Data extracted from the organisations human resource database included personnel number, operating unit, career ladder selection, level on the career ladder, qualifications and email address.

Job evaluation and career assessment documentation used in the organisation included:

- The project management career ladder instrument
- The researcher's career ladder instrument
- The research application and development (RAD) career ladder instrument
- The Hay job level instrument, used to assess fixed jobs within the organisation

## **Analysis of results**

The first step required the selection of the individual cases in the organisation. Figure 2 indicates that most project managers in the organisation are employed in three separate operating units.



**Figure 2: Distribution of project managers relative to staff complement**

Four separate cases were selected:

- Case 1: Material Science and Manufacturing
- Case 2: Defence Research



- Case 3: Integrated Computer Technology
- Case 4: All other operating units

Figure 2 also illustrates the distribution of the employees who are classified as professional staff and who contribute directly towards science, engineering, and technology development in the organisation, according to the 2008/09 annual report. (Corporate management and administration staff are excluded, but project managers are included.)

Comparing Figures 2 and 3, it is evident that Cases 1, 2, and 3 predominantly make use of dedicated project managers, while most of the rest of the organisation (Case 4) seems to follow an alternative approach to organising work activities.

**Table 2: Number of respondents per case and per source of evidence**

<b>No. of respondents</b>	<b>Population</b>	<b>%</b>	<b>Total</b>	<b>Case 1</b>	<b>Case 2</b>	<b>Case 3</b>	<b>Case 4</b>
Project Manager Survey	55	55%	30	4	15	7	4
Research Group Leader Survey	40	30%	12	2	4	1	5
Interviews with HR Managers and Competency Area Managers	45	22%	10	3	4	2	1
<b>Total number of respondents</b>	<b>140</b>	<b>37%</b>	<b>52</b>	<b>9</b>	<b>23</b>	<b>10</b>	<b>10</b>

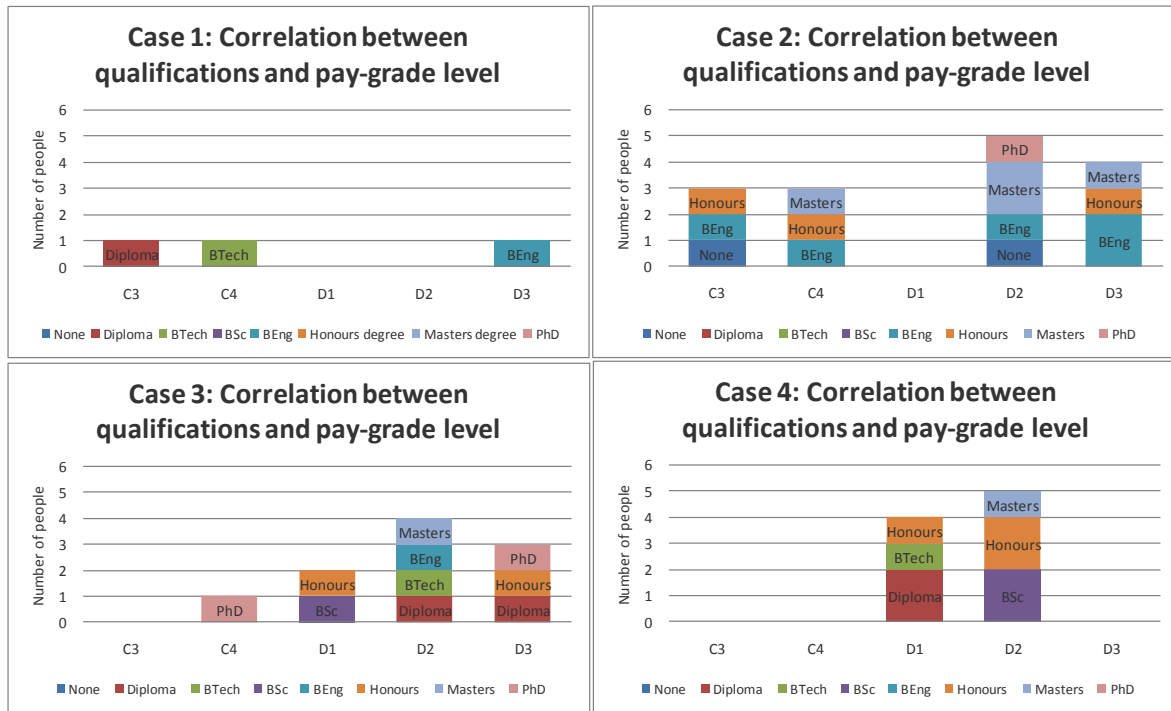
Supplemented with downloads prior & post career ladder assessments from the organisation's human resource database and documentation including career ladder descriptions and fixed job assessment manual.

Table 2 provides a summary of the respondents that participated in the research study. For a qualitative exploratory study the analysis does not rely on statistical significance but representation from various sources of evidence is important.

### **Project managers survey**

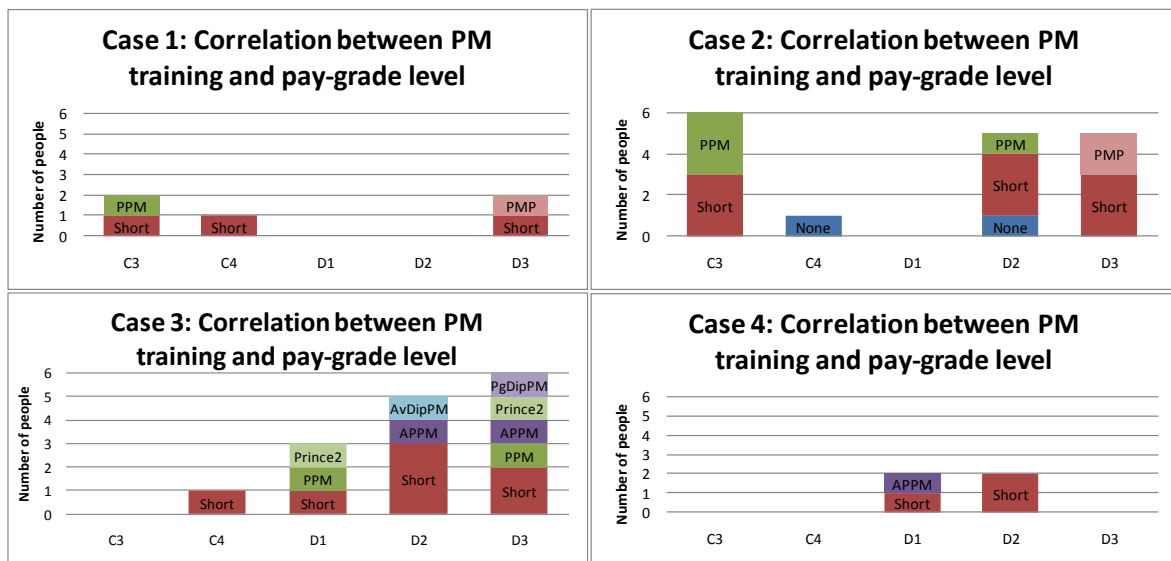
Most project managers are qualified professionals in their field. Although higher levels of education are in general associated with higher pay-grade levels, it is clear from Figure 3 that education alone is not enough.

Case 2 has examples of project managers with Honours and Masters degrees at levels C3 and C4, while Case 3 also has a PhD at level C4. It is also evident that people with only a diploma – or even with no tertiary education – reached levels D1, D2, and D3 (Cases 2, 3, and 4).



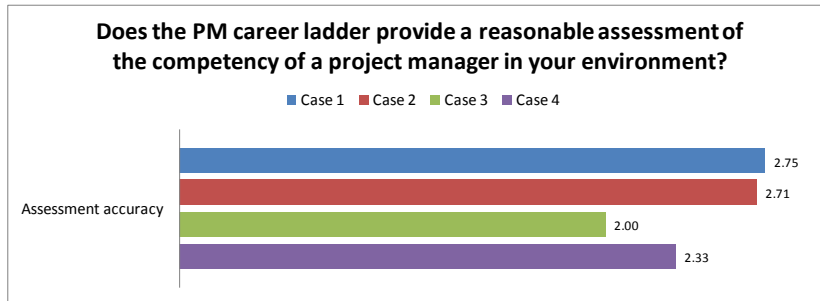
**Figure 3: Correlation between tertiary qualifications and pay-grade levels**

When project management specific training is evaluated, Figure 4 indicates that formal project management certification is generally associated with higher pay-grade levels. Short courses are spread across the whole spectrum. The Programme in Project Management (PPM) qualification is generally associated with junior project managers, except in Cases 2 and 3. The Advanced Programme in Project Management (APPM), the advanced diploma in PM, and the post-graduate diploma in PM are also associated with higher pay-grades.



**Figure 4: Correlation between PM Training and pay-grade levels**

An overall rating of the accuracy with which the project management career ladder assesses the competency of project managers is provided in **Figure 5** for each of the cases. The average (mean) is indicated, derived from a four-point Likert scale stratified for each of the cases.

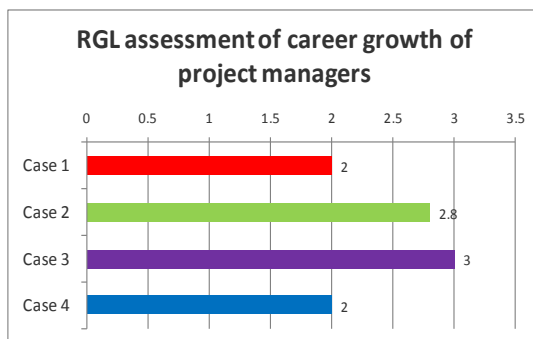


**Figure 5: Accuracy rating of project management career ladder**

The ratings provided in Cases 1 and 2 are the highest, Case 4 is somewhat lower, but in Case 3 the accuracy of the ladder was rated significantly lower. All of the ratings are below 3, and on a four-point Likert scale this means that, overall, respondents perceive the project management career ladder as not very accurate.

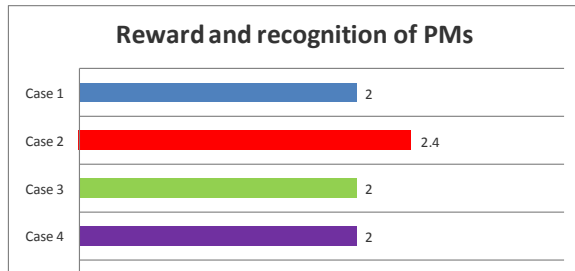
### Resource Group Leader Survey

When asked to assess the amount of career growth RGLs witness in people performing project management in their environment according to a four-point Likert scale, the mean ratings (indicated in Figure 6) were obtained.



**Figure 6: RGL's assessment of PM career growth**

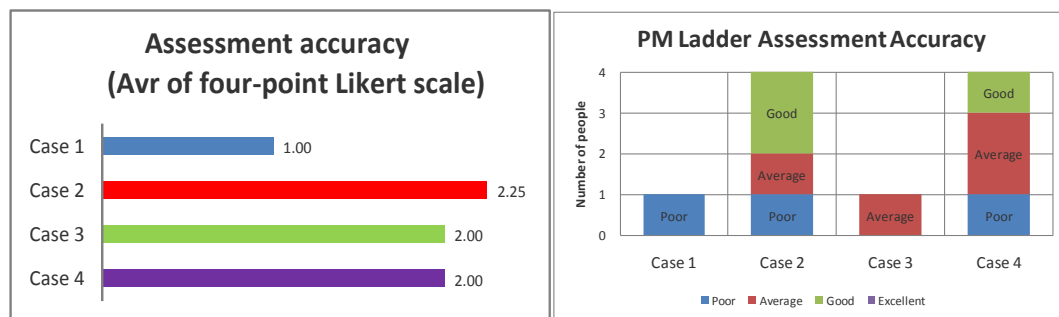
Figure 7 shows the assessment of the amount of recognition project managers receive from the organisation according to a four-point Likert scale for each of the cases.



**Figure 7: RGL assessment of recognition of PM career growth**

Very similar ratings were obtained from all respondents in all the cases. A rating of 2 indicates that project managers are recognised and rewarded ‘somewhat’, confirming the notion expressed by one respondent that project management is not recognised as a career in the organisation.

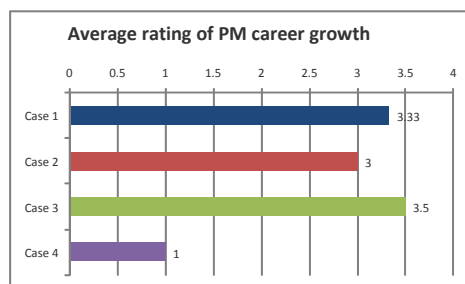
The assessment of the accuracy of the project management career ladder of RGLs who responded to the survey is illustrated in Figure 8.



**Figure 8: RGL assessment of accuracy of PM career ladder**

### Senior manager semi-structured interviews

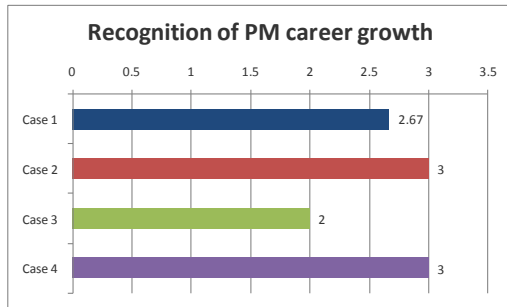
When asked to assess the amount of career growth HR and Competency Area managers witness in project managers in their environment, the mean ratings calculated from a four-point Likert scale (shown in Figure 9) were obtained.



**Figure 9: Senior manager’s assessment of PM career growth**

The ratings for Cases 1, 2, and 3 are significantly higher than for Case 4. This is mainly due to the fact that in Case 4 the project management role is performed by the research group leader, the technical leader of a project, or a project administrator.

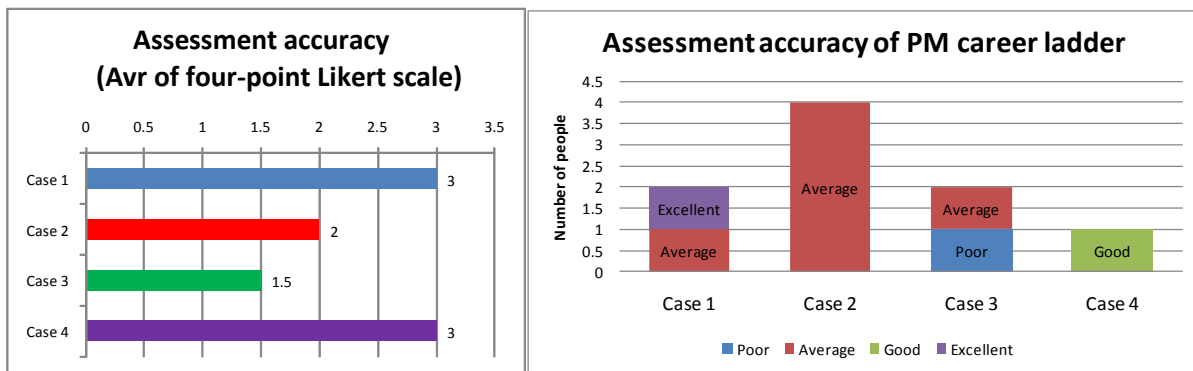
Figure 10 shows an assessment of the amount of recognition project managers receive from the organisation according to a four-point Likert scale for each of the cases.



**Figure 10: Recognition of PM career growth**

It is interesting that recognition of project managers in Case 3 is rated significantly lower than in the others. During the interviews it became clear that this unit struggles to appoint and retain project managers from the information technology (IT) industry who, according to them, leave the organisation for less complex work at significantly higher salaries. They argue that the current PM career ladder makes it nearly impossible for managers to appoint project managers in the IT industry at competitive salaries.

Figure 11 shows the perception of the accuracy of the project manager career ladder measured according to a four point Likert scale.



**Figure 11: Senior manager assessment of accuracy of PM career ladder**

Line managers interviewed in Cases 1 and 4 seemed on average to be comfortable with the accuracy of the assessment. In Case 2 the perception is average, but the perception in Case 3 is rather negative.

### Hypotheses testing and cross case analysis

Table 3 provides a summary of deductions flowing from the data analysis which are further discussed in the subsections below.

**Table 3: Summary of evidence for stated hypothesis**

Hypothesis	H1	H2	H3	H4						
Sources of Evidence				a	b	c	d	e	f	g
C1 PM Survey	Strong pos	Some	None	Pos	Pos	Strong pos	Pos	Strong pos	Strong pos	Some
CAM & HR Manager Interviews	Pos \$ Neg	Pos \$ Neg	Neg	Pos	Strong pos	Pos	Pos	Strong pos	Pos	Some
RGL Survey	None	None	None	Pos	Pos	Pos	Pos	Pos	Pos	Pos
C2 PM Survey	Pos	Some	None	Pos	Pos	Strong pos	Pos	Strong pos	Strong pos	Some
CAM & HR Manager Interviews	Pos	Pos \$ Neg	Neg	Pos	Strong pos	Pos	Strong pos	Strong pos	Pos	Pos
RGL Survey	Strong pos	Pos	None	Strong pos	Strong pos	Pos	Pos	Strong pos	Strong pos	Some
C3 PM Survey	Strong neg	Some	None	Pos	Pos	Strong pos	Strong pos	Strong pos	Pos	Neg
CAM & HR Manager Interviews	Strong Neg	Pos \$ Neg	Neg	Pos	Some	Strong pos	Pos	Pos	Pos	Neg
RGL Survey	Pos \$ Neg	None	None	Pos	Pos	Pos	Neg	Pos	Pos	Neg
C4 PM Survey	Neg	Some	None	Some	Pos	Strong pos	Strong pos	Strong pos	Pos	Pos
CAM & HR Manager Interviews	Pos \$ Neg	Pos \$ Neg	Neg	Some	Pos	Some	Pos	Pos	Pos	Some
RGL Survey	Pos \$ Neg	None	None	Pos	Pos	Pos	Pos	Pos	Pos	Neg
C1-4 Supporting Org Documentation	Pos	Pos \$ Neg	None	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.

*Testing Hypothesis 1: A fixed job approach provides very little opportunity for career growth of project managers within a research and development organisation.*

Support for H1 was tested through the PM survey by rating a question and a statement against a four point Likert scale. "How well does the PM career ladder instrument measure career growth?" and "A job-based approach is better at assessing and awarding career growth." To obtain a clearer answer the mean values obtained were then weighted by the average preference of candidates for the career ladder or the job-based approach for each case. Results showed that Case 1 and Case 2 support H1 with Case 1 showing a strong preference. Case 3 and Case 4 contradict H1 and specifically Case 3 indicates strong support for the Job based approach.

RGLs confirmed that on average they witnessed that project managers or technical leaders assigned the role of project manager in their environment experienced a fair amount (Case 1 and Case 4) to very good (Case 2 and Case 3) career growth.

According to the qualitative statements from RGLs only Case 2 presents strong support for H1. In other cases RGLs raised concerns that growth is limited by the environment independent of the competency of the project manager.

According to the HR managers assigned to the various cases, a fair amount of career growth was observed in Case 1, some career growth in Case 2 and very little career growth in Case 4. One reason for limited career growth observed is that the period of 3 years that the career ladder exist is too short to objectively judge the extent of career growth that took place.

Interviews with CAMs from Case 2 revealed strong support for H1 and respondents from Case 3 revealed strong support for H1<sub>rival</sub>. Respondents from Case 1 and Case 4 were indifferent.

Positive evidence was found in the organisational documentation that 9% of project managers grew their competency and were recognised through a promotion after the career ladder assessments in 2010. No evidence of project managers appointed in fixed jobs that grew their careers could be obtained.

In summary it was not possible to form a consolidated view for the organisation as a whole since individual cases provided opposing results. This is a significant finding indicating that different operating units in the organisation find it necessary to respond differently to the realities of their own environments.

*Testing Hypothesis 2: Career ladder instruments can be used effectively by managers to motivate project managers to perform within their environments.*

The effectiveness of the PM career ladder as a motivational tool was rated according to a four point Likert scale. The resulting mean values obtained from the project managers are very moderate. Qualitative comments suggest that measurement criteria utilised in the current ladder need to be expanded so that the size of the jump from one level to the next is smaller. In all of the cases the fact that a career ladder instrument can be a motivational tool is acknowledged but especially in Case 3 participants feel that the current tool does not perform well in recognising career growth of individuals.

Most RGLs indicated that the effectiveness of the project management specific career ladder as a motivational tool is fairly good and that an appropriate career ladder can be used as a motivational tool. RGLs from Case 2 expressed negative remarks on the possible influence of switching to a fixed job based approach for project managers in the organisation.

Qualitative statements revealed that the views of competency area managers and HR managers are very balanced for all of the cases and agree that both career ladders and a series of fixed jobs could add value towards the reward and motivation of project managers. However, this is dependent on the assumption that series of "fixed" jobs with increased level of seniority will be

established and that project managers that outgrow a specific position will be promoted to a higher position.

Evidence from the organisation's HR database that a relatively low percentage (9%) of project managers succeeded in growing their pay grade levels during the April 2010 assessment process, might lead to dissatisfaction amongst project managers. It should however be noted that only a small number of project managers submitted claims for promotion and that only a small number of these remained at the same pay-grade level after the assessment.

In summary positive and negative notions exist within each case. Some project managers like the career ladder approach emphasising the fact that project managers are treated as professionals similar to scientists and engineers that can influence their own destiny. They are very concerned that should project managers be placed on fixed jobs their only career option will be to accept another appointment external to the organisation. Participants would like the career ladder to provide for smaller and more frequent steps to be more effective as a motivational instrument. Should the organisation replace the project management career ladder with a series of fixed jobs and ensure the regular re-evaluation of project managers job sizes the fear of capped career growth should be addressed.

*Testing Hypothesis 3: A competency based project management specific career ladder measures consistent pay grade levels for individuals in comparison with the job based approach.*

The PM survey asked respondents to rate the assessment accuracy of the current project management career ladder according to a four point Likert scale. Case 1 and Case 2 produced the highest mean ratings and Case 3 the lowest. Although some participants voiced their concern that the project management career ladder does not make adequate provision for career growth very little evidence as to the consistency of the measurements could be obtained from the survey. It was also not possible to do a comparative analysis between the career ladder or job based assessment approach since project managers in the organisation had no experience with this approach.

RGLs from Case 2, Case 3 and Case 4 rate the accuracy of the PM ladder range as average and poor in Case 1. In Case 2 and Case 4 ratings of both poor and excellent were given. This might indicate that the results might not be consistent and representative for the complete case. Respondents indicated leniency at the lower end and limitations at the top end.

Competency area managers believe that the accuracy of the PM ladder range from good in Case 1 and Case 4, average in Case 2 and poor in Case 3. HR managers rated the accuracy of



the PM ladder as average (Case 1 and Case 2) to good (Case 4). When the qualitative data is analysed it however becomes evident that this is for opposing reasons. In Case 3 the overall notion is that project managers are rated too low while for all the other cases senior managers feel that the ratings are too lenient. The accuracy of job based assessments was never questioned by any respondent.

Data obtained from the organisational database is insufficient to determine the impact on H3. Sensitive salary information was not accessible to the author.

In summary hypothesis 3 is not supported. Job evaluations, if done correctly with the necessary rigor provide accurate job-level assessments. The accuracy of job-level assessments was never questioned by respondents. Concerns were raised as to the accuracy of the career ladder instrument and the mapping to pay-grade levels.

*Testing Hypothesis 4: The competency drivers for project managers within a research and development organisation which should be measured with a project management (PM) specific career ladder instrument include (a) Domain/Application knowledge, (b) PM training and skills, (c) PM experience, (d) Leadership, (e) Level of responsibility and accountability, (f) Level of stakeholder interaction and (g) Contribution to the PM knowledge base.*

Evidence from all sources supported metrics (a) to (f) in general. Metric (g) contribution to the PM knowledge base received very little support indicating that it should be an expectation that the most senior project managers should lead efforts within their sphere of influence to enhance the project management knowledge base. Others recommended that this metric should be replaced by a metric that measures aspects such as networking, mentorship and human skills.

In Case 3 metric (b) PM training and skills was also rated rather low. One person points out that the fact that the ladder even makes provision for gaining a PhD in project management in addition to a PhD in an application domain is an unrealistic expectation.

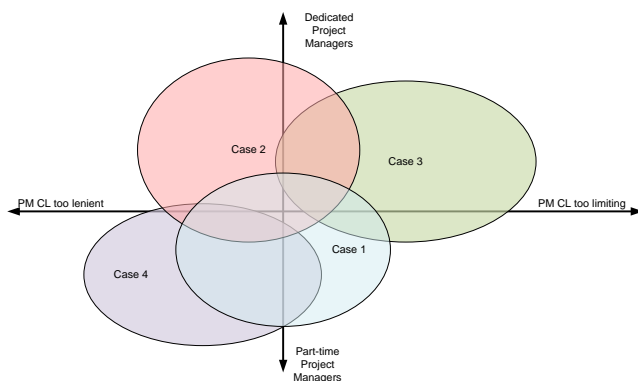
The most important metrics included in the organisations PM career ladder were e) Level of responsibility and accountability and c) PM experience. This is consistent with the metrics typically find in job assessment instruments.

### **Conclusions and recommendations**

Research results indicate that there are two distinct schools of thought in the organisation: those that make use of dedicated project managers, and those that utilise technical leaders to fulfil the role of project manager as well. Second, there are two distinct groupings around how well the

project management career ladder performs in measuring pay grade levels and providing adequate growth opportunities for project managers. One group perceives the ladder to be too lenient, and the other group sees it to be too limiting, in the sense that they cannot attract project management talent to, and retain them in, their application area. This can be either that the ladder does not measure competency adequately, or that the mapping between competency scales and market-related salaries for the specific domain is the problem. This is because the organisation uses a general mapping between pay grade levels and salary brackets for all professional staff, independent of the application domain. For example, the salary scales for scientists, engineers, and project managers in vastly different domains from the natural environment – the ICT industry, military technology development, etc. – are all using the same pay grade scales.

**Figure 12** provides a visual indication of how the various cases differ in the dimensions discussed above. It is clear that a ‘one size fits all’ mentality will not be optimal for the entire organisation.



**Figure 12: Case mapping in four dimensions**

The exploratory multiple-case study provided insights from project managers, research group leaders, competency area managers, and human resource managers into how the quality of the career ladder instrument for project managers can be improved. Recommendations include:

- Expanding the number of assessment scales for all input and output criteria to allow finer steps. For example, project management training currently makes provision for 1) short courses, 2) project management qualification at B degree level, and 3) Masters in Project Management or Project Management Professional (PMP) Certification with the Project Management Institute. Other qualifications should also be recognised – for example, a

National Diploma, Technical Diploma, Postgraduate Certificate in PM, Programme in Project Management, or an Advanced Programme in Project Management qualification.

- When finer levels are implemented, the ladder should make use of 'OR' rather than 'AND' statements to provide applicants with more options.
- Implementing a certification programme external to the organisation (the PMCDF or similar) that measures competency. This will ensure auditability and parity within and outside the organisation.
- The project management career ladder should include metrics to measure other management responsibilities, and not only focus on the project management role.
- Assessments should measure not only depth, but also the breadth of knowledge.
- Expanding the lower end of the career ladder to accommodate project administrators, and expanding the top end of the ladder to make provision for a manager of project managers.
- Mentoring and training of junior project managers should become a stronger element in the metric measuring contribution to the project management knowledge base.
- Output-related metrics should measure the contribution or impact in the environment.
- Measuring insight and understanding of finances.
- Increase the values for the portfolio budget metric due to inflation.
- Providing a metric to measure people skills (social skills, skills to manage people, and foster teamwork).

The research results indicate that the project management career ladder instrument does add value to a large R&D organisation, and helps management to motivate and retain highly skilled project managers. Negative perceptions raised as part of the study can be addressed by implementing the recommended changes listed above. As suggested in the literature, the organisation should resist generalising career ladders (Van Sliedregt et al. 2001), and should realise that the ability to discriminate between various levels will be negatively affected. Should the organisation decide to consolidate the various ladders and standardise a single ladder for all research staff, such generalisation might reduce the usefulness of the ladder for researchers, engineers, and project managers alike. In fact, as the research indicated, project managers will be better off with the fixed job approach, should the project management specific career ladder be discontinued.

Care must be taken when generalising a specific case study to a larger population. The results might be useful as a comparison for other R&D organisations, but decision-makers and other

scholars will have to consider the impact of differences in culture, policies, and the reward and recognition systems adopted by the institution.

In conclusion, organisations that desire successful projects delivered on brief, on budget, on time, every time, and who wish to build project management competency, need to ensure equity in reward and recognition policies across the organisation. This includes recognising and supporting the career growth of project managers in the organisation. Highly skilled project managers who are motivated to lead project teams towards success are an asset to any organisation. Making provision for career growth, as well as recognising and rewarding career growth, is the key to attracting and retaining competent project managers.

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