

**THE PREDICTIVE VALIDITY OF LEARNING POTENTIAL AND
PERSONALITY FOR WORK PERFORMANCE IN A PUBLIC
SECTOR DEPARTMENT**

by

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DECLARATION

Student number: **3249-748-2**

I declare that the dissertation, “The predictive validity of learning potential and personality for work performance in a public sector department” is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

SIGNATURE

DATE

(E.M. MASHAU)

SUMMARY

THE PREDICTIVE VALIDITY OF LEARNING POTENTIAL AND PERSONALITY FOR WORK PERFORMANCE IN A PUBLIC SECTOR DEPARTMENT

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**DEPARTMENT : INDUSTRIAL AND ORGANISATIONAL
PSYCHOLOGY**

DEGREE : MCOM (Industrial and Organisational Psychology)

The first objective of this research was to investigate the predictive validity of the learning potential as measured by Ability, Processing of Information and Learning Potential Short Version (APIL SV) in predicting work performance. The second objective was to investigate the predictive validity of personality as measured by the Occupational Personality Questionnaire Ipsative (OPQ32i) in predicting work performance. The sample consisted of 104 employees of a public sector department. Learning potential and personality were the predictor/independent variables; work performance as measured by supervisory rating was the only criterion/dependent variable of the study. The results revealed that both the APIL SV and the OPQ 32i dimensions did not correlate significantly with work performance as measured by supervisor rating.

Key terms:

Psychological assessment, dynamic assessment, learning potential, personality, work performance, predictive validity

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CHAPTER 1

SCIENTIFIC ORIENTATION TO THE RESEARCH

1.1 INTRODUCTION

This dissertation focused on the psychological assessment of learning potential and personality and the measurement of work performance. Chapter 1 presents a discussion on the background and motivation of the study, the problem statement, aims of the study, and its paradigm perspectives in order to contextualise the study, research design and method. The chapter layout of the dissertation is also discussed.

1.2 BACKGROUND AND RATIONALE FOR THE STUDY

Rapid changes experienced in the world economy as a result of development in technology, globalisation, information and communication, financial volatility and war has brought daunting challenges to managers as they strive to remain competitive with a talented workforce which purported equal treatment of employees while adhering to government policies (Verweire & Van den Berghe, 2004; Williams 2002). Pfeffer (1994) noted that gone were the days in which competitive advantage was gained through economies of scale, proprietary technology or a protected market; rather it was the manner in which companies utilised their human resources that would sustain long term competitive advantages. Thomas and Scroggins (2006) asserted that talent is rare and important to the organisation; therefore the selection process must accurately identify aptitude, ability and other attributes important to give an organisation a competitive advantage.

If one can assume that all organisations are the same with regard to their human capital, a competitive advantage will be gained by ensuring that people add value and that the acquired personnel are unique resources which cannot be easily duplicated (Huselid, Jackson & Schuler, 1997). Attaining and maintaining competitiveness through their employees means that organisations must be able to select people with exceptional skills and whose talents, values and motives are congruent with the organisational culture, structure and reward systems (Thomas & Scroggins, 2006).

Hunter and Schmidt (2006) noted that studies assessing the ability of personnel assessment methods to predict future performance have been conducted from the beginning of the first decade of the 20th century. In South Africa, while psychological assessments have been used for some time, the transition from apartheid to an inclusive democratic government in 1994 led to a new era of recruitment processes. Therefore, as Nzama, De Beer and Visser (2008) noted, the use of psychological assessment in South Africa for the purpose of employment has a mixed history; some accepted the process whilst others remained sceptical. The emergence of a democratic government in South Africa saw the introduction of the Labour Relations Act of (1995) (LRA) and the Employment Equity Act of (1998) (EEA) (Lopes, Roodt & Mauer, 2001). The former Act compelled organisations to have specific objective criteria by which applicants for a position are measured whereas the latter Act prohibits psychological assessments unless they have been shown to be valid, reliable, applied fairly and not biased against a certain employee or group of employees.

Prior to the introduction of the LRA, companies could hire people they wished to without having to make the criteria for hiring known to applicants (Nzama et al., 2008). Mauer (2000) noted that in the draft bill, which later became the EEA, psychological assessment was completely forbidden, but the Parliamentary Portfolio Committee on Labour was persuaded to regulate it rather than ban it completely. The promulgation of these acts has placed the issue of psychological assessment in South Africa in the spotlight, particularly as it relates to cultural appropriateness and its application thereof (Van de Vijver & Rothmann, 2004).

The study by Schmidt and Hunter (1998) found a correlation between general mental ability and performance which ranged between 0.31 and 0.73. They also established that the validity coefficients between cognitive ability and job performance were strongest for jobs with high complexity. In a meta-analysis study, Thomas and Scroggins (2006) established that cognitive ability tests are the most valid psychological tests for many occupations as well as simpler and cheaper to use for the selection process.

The practical value of the personnel assessment method is its predictive validity for future job performance, job related learning and other relevant criteria (Schmidt & Hunter, 1998). The intention of this research project is to establish whether psychological assessment does

predict work performance in one of the South African public sector departments. In this particular research the focus is placed on personality traits and cognitive ability assessments.

The first independent variable in this study falls within the learning potential assessment and is designed to assess learning ability rather than crystallised intelligence. Cognitive psychologists often distinguish between crystallised and fluid intelligence. The fluid intelligence refers to cognitive processes which tend to allow an individual to manipulate abstract symbols such as solving mathematics problems or the ability to reason; while the crystallized intelligence refers to gathered knowledge over an extended period, such as vocabulary (Anderson, 1995; Sternberg, 1999). The current study embraces intelligence “as the ability to learn” (Thorndike, 1924). Unlike the conventional intelligence definition, Thorndike’s approach does not assume that everyone has a similar learning history or equal opportunity (Guthke, 1993).

Learning potential or dynamic assessment emerged through the quest to address the inadequacy of conventional intelligence tests which did not test the potential to learn but rather made static measures of individual abilities which often did not lead to prediction of the ability to learn (Schneider-Lidz, 1987). The learning or dynamic test seems to be acceptable in the context of a multi-cultural assessment as the approach puts emphasis on the capacity for adaptation to novel task performance as a result of exposure, instruction or hints (Taylor, 1994). Tests based on this approach provide information on the learning process and diagnostic nature necessary in the design of remedial instruction (Taylor, 1994).

The second independent variable of this study comprises personality traits. Before 1980s, personality was not regarded as having a link to work performance in the way that cognitive ability was valued in this regard (Coetzee, 2003). It is acknowledged that the development of the Five Factor Model of personality led to intensification of research in examining the link between personality traits and work performance (Barrick & Mount, 1991; Coetzee, 2003). Personality assessment is deemed to be legally and ethically sound as a selection tool that can assist an organisation to determine whether an applicant is able to perform the job or will enjoy it (Coetzee, 2003; Thomas & Scroggins, 2006).

The study by Shackleton and Newell (1991) revealed that there is a strong belief amongst practitioners on the utility of personality in the selecting of employees. The study confirmed that 37% of UK companies used personality tests for management selection in 1989 (Shackleton & Newell, 1991). However, apart from the strong beliefs held by practitioners, studies found that some prospective job applicants who were asked of their perception of fairness in relation to the use of personality measures for selection purposes viewed these as unfair compared to other selection methods (Steiner & Gilliland, 1996; Visser & De Jong, 2001; Visser & Du Toit, 2004).

In the current study, the concern is that the public sector department has been using psychological assessment for more than a decade. Since the acquisition of current assessment instruments, no validation study has been conducted on the departmental data to provide support for the continuous utilisation of these instruments. This research therefore set out to investigate the predictive validity of Ability, Processing of Information and Learning Battery Short Version (APIL SV) and Occupational Personality Questionnaire (OPQ 32i) as assessment tools for employment selection processes.

1.3 PROBLEM STATEMENT

The issue of predictive validity is the most crucial aspect of Human Resources testing; the USA Equal Employment Opportunity Commission (EEOC) 1978 under the Uniform Guideline on Employee Selection Procedures suggests that organisations/companies may conduct their own validation studies or rely on those available in the commercial market (Scroggins, Thomas & Morris, 2008; Thomas & Scroggins, 2006). Similar to USA labour legislation, there is a serious need in South Africa to establish the degree to which assessment tools used in companies and organisations comply with the requirements stipulated in the Employment Equity Act (55 of 1998) (Lopes et al., 2001).

It is incumbent on the organisation to ensure that its selection processes fall within the ambit of the required regulations and that the selected individuals are able to perform the required tasks and are productive to the organisation (Nzama et al., 2008). This study is therefore crucial to the department under discussion in understanding the value of psychological assessment as part of the selection process. The study is also important because this particular

department invests millions of rands in the personnel, infrastructure and instruments for assessment. There are managers in this public department who believe that this process is a waste of state resources and adds no value to the department; hence no one has ever conducted a validation study to ensure that these instruments meet the assessment standards and do in fact predict work performance. Thomas and Scroggins (2006) noted that psychological testing is likely to be more important in future and that managers must understand its potentials and shortcoming in the selection process.

According to Urbina (2004), the perennial challenges in the sphere of employment are the questions of how to select the best possible candidate for a given job. Psychological tests are credited with enhancing employee selection, placement and management of human capital in the organisation (Van der Merwe, 2002). The most crucial aspect of human resources in the application of psychological tests for the purpose of selection is determining the validity of the instrument (Scroggins et al., 2008).

The current study is based on the predictive validity of learning potential and personality assessments. Confirmation of the contribution of these assessment tools to work performance will increase the body of knowledge in the field of Industrial and Organisational Psychology and further contribute to the world of work.

1.3.1 Research questions

To address the above issues, this research was designed to answer the following literature and empirical questions:

1. Is learning potential as measured by APIL SV able to predict work performance?
2. Is personality as measured by OPQ 32i able to predict work performance?

1.4 AIMS OF THE RESEARCH

In relation to the research questions posed above and problem statement, the following aims were formulated: general aim of the research; the specific theoretical aim of the literature review and the specific aim of the empirical study.

1.4.1 General aim

The general aim of this study was to determine whether learning potential and personality traits are valid predictors of work performance.

1.4.2 Specific theoretical aims of the literature review

The specific theoretical aims of this study were as follows:

1. To conceptualise the learning potential, personality traits and work performance
2. To conceptualise the role of learning potential, and personality traits in predicting work performance

1.4.3 Specific aims of the empirical study

The specific empirical aims of the study were as follows:

1. To determine if learning potential, as measured by APIL SV, predicts work performance.
2. To determine if personality traits, as measured by OPQ 32i, predicts work performance.
3. To draw conclusions, highlight limitations and make recommendations for future research

The independent variables were separately analysed in determining their relationship with the dependent variable.

1.5 THE PARADIGM PERSPECTIVE

According to Nieuwenhuis (2007, p.47), a paradigm “*is a set of assumptions or beliefs about fundamental aspects of reality which gives rise to a particular world view*”; these assumptions are based on faith or beliefs about the nature of reality and methodologies. This study was conducted within the discipline of Industrial and Organisational Psychology. According to Schreuder and Coetzee (2010), there are two major objectives of Industrial and

Organisational Psychology: firstly, to conduct research for the purpose of increasing knowledge and understanding human work behaviour and secondly, to transfer the gained knowledge to improve the work behaviour, environment and psychological conditions of employees.

The subfield of Industrial and Organisational Psychology in which the study was conducted is Personnel Psychology, which is concerned with the scientific study of individual differences in the work place. Personnel psychology encompasses many activities but specific to this study are psychological assessment and employee performance evaluation (Schreuder & Coetzee, 2010).

The functionalist paradigm was used to inform the research. This paradigm is widely used for organisational study and it assumes that relationships are concrete, can be identified, studied and measured through hypothesis testing (Mouton & Marais, 1991). Functionalism is rooted from positivism which is concerned with the gathering of information about social facts through an objective means without the influence of the researcher (Willis, 2007). The positivist paradigm views human behaviour as rational and predictable and that fixed social realities exist which are able to be measured and described (Willis, 2007). This is therefore aligned to the quantitative methodological approach followed in this study where both independent and dependent variables were identified and measured through independent research. The results were statistically analysed to determine the predictive relationship between the variables.

1.6 RESEARCH DESIGN

1.6.1 Research approach

Quantitative research designs are either descriptive or experimental; this study undertook to perform a descriptive study. According to Hopkins (2000) a descriptive study establishes whether there is a relationship between variables. The specific research design used in the study was a cross-sectional survey which is aimed at assessing the relationship between independent and dependent variables within a defined population (Struwig & Stead, 2001). In this research the independent variables were constituted by learning potential and personality traits whilst the dependent variable was work performance.

This study utilised a quantitative research approach, defined as “*a process that is systematic in its ways of using numerical data from only a selected subgroup of the universe (or population) to generalise the findings to the universe that is being studied*” (Maree & Pietersen, 2007, p.145). The quantitative research is aimed at determining the relationship between the independent and dependent variables (Hopkins, 2000). This study proposed hypotheses to test; the results were statistically analysed.

1.6.2 Research variables

In this study there were three variables: learning potential and personality traits (independent variables) and work performance (dependent variable).

1.6.2.1 Predictor/independent variables

Learning potential measurement is regarded as an instrument which will minimise or alleviate the impact of static measurement of intelligence. The proponents of these methods believe that they will yield results that are culturally fair, valid and reliable (De Beer, 2006; Sternberg & Grigorenko, 2002; Toglia & Cermak, 2009). All participants in the study completed a learning potential measurement (APIL SV) for the purpose of the selection process. The second predictor/independent variable is that of personality traits; although it is reported that they lack face validity (Steiner & Gilliland, 1996; Visser & De Jong, 2001), studies have established that many companies are using personality traits as selection tools (Visser & Du Toit, 2004). The personality traits in this study were measured by OPQ 32i; the respondents completed the tests during the process of selection.

1.6.2.2 Criterion/dependent variable

The only criterion variable for the study was work performance, where the criterion score was based on the supervisory rating. Studies have confirmed that supervisory ratings can be affected by biasedness such as central tendency and leniency (Bol, 2007; Cordner, 2014).

1.7 RESEARCH METHOD

The research participants, measuring instruments, research procedure and statistical analysis are discussed below.

1.7.1 Research participants

The population of this study is all the personnel employed in the department under study. According to Brink, Van der Walt and Van Rensburg (2009), a population is the whole group of persons or objects that fall within the area under study and which meet relevant criteria that the researcher is interested in studying. Since it is usually impossible to include the whole population in one study, in this research a non-probability sampling technique was used. According to Maree and Pietersen (2007), these methods of sampling do not utilise random selection of population elements, which tends to render them vulnerable in drawing important conclusions about the population.

In this study a convenience sample of 104 respondents was used; the data collected between 2010 and 2011 were from staff members who had been employed in a professional band. All members in this sample group had to have attained the National Qualifications Framework (NQF) level 5 to qualify for employment or promotion at this level and had undergone a performance review during the 2012 financial year. Both psychological assessment data and performance review ratings were retrieved from the Human Resources Information system (HRI system). The sampling group was constituted by both female and male participants from diverse cultural groups.

1.7.2 Measuring instruments

1.7.2.1 APIL SV

The APIL SV used in this study to assess learning potential as one of the independent variables was designed to assess an individual core or fundamental capabilities and potentialities (Taylor, 1994). The APIL SV target population is a person with at least 12 years of education. It was intended to assess applicants for the purpose of selecting individuals for university or technical education, and also for employment candidates who would be required to master a number of new skills in a relatively short period of time, as well as for evaluation of employees as part of restructuring (Taylor, 1994). The standard version of APIL-B is administered for 3 hours 45 minutes whilst the APIL SV is administered for a maximum of two hours (Taylor, 2004). Another difference is that in APIL-B, the administration of the curve of learning test is carried out in four sessions whilst in APIL SV it requires just two

sessions (Taylor, 2004). APIL SV contains four dimensions: Conceptual Reasoning Ability; Learning rate; Level of Performance at the Conclusion of the Learning Exercise Memory and understanding (Taylor, 1994).

1. Conceptual Reasoning Ability: it is also regarded as a Concept Formation test. This test is composed of 33 items which are quasi-geometrical in nature. Each item is made up of 6 diagrams marked A to F. The test requirements are for respondents to identify the box with the anomalous diagram.
2. Learning rate: is expressed as a gradient of after-lesson performance in relation to before-lesson performance. This test is regarded as a dynamic assessment in that respondents are assessed on what they have been exposed to, instructed in or any other learning opportunity. The first session Learning Rate test consists of 30 items whilst the second session test consists of 70 items.
3. Level of Performance at the Conclusion of the Learning Exercise: this test is based on assessment of learning potential as the measures tend to focus more on future achievement than past achievement. Respondents are presented with learning materials and given four sessions to practice manipulating the materials. The good results are mainly due to comprehension of the learning material exposed to during practice sessions.
4. Memory and understanding: the test in this dimension is geared towards investigating the respondent's level of knowledge gained from the dictionary material. It consists of 28 items and is limited to 12 minutes to complete the tasks.

All dimensions of the APIL SV have been tested for reliability in six samples (Taylor, 1994). The validity study on these six different samples on the APIL SV uncovered correlations ranging between 0,21 and 0,89 while the reliability estimates on various dimensions range from 0,60 to 0,70, although these may be high as 0,97 and as low as 0,45 (Lopes et al., 2001).

1.7.2. 2 OPQ 32i

For the measurement of personality traits an ipsative version of OPQ 32i model was used. It follows the general OPQ model of personality, which was originally developed in the United Kingdom between 1981 and 1984 (SHL, 2009). The original OPQ divides personality into three domains: Relationship with people; Thinking style and Feelings and Emotions (SHL, 2009). OPQ32i is an occupational model of personality, which describes people's preferences within 32 dimensions (Brown & Bartram, 2009).

OPQ provides a less complicated framework of explaining complex patterns of personality and, furthermore, is available in more than 30 languages and amongst different ethnic groups including those in South Africa (Bartram, 2013; Brown & Bartram, 2009). OPQ 32i is recommended for selection purposes because respondents find it difficult to fake and distort answers (Brown & Bartram, 2009). It is noted that the OPQ 32i has evolved into version OPQ 32r which offers high construct validity and criterion related validity (Brown & Bartram, 2009). OPQ 32i contains the following competency domains:

1. **Leading and Deciding:** This competency refers to individual ability in making decisions, taking initiative, leading and supervising.
2. **Supporting and Cooperating:** Refers to a person's ability to work with other people as well as complying with principles and values.
3. **Interacting and Presenting:** Ability to establish relationships with others, build an effective network, persuading and influencing others, speaking fluently and making public presentations.
4. **Analysing and Interpreting:** The competencies involve good writing skills, job knowledge and expertise, understanding the use of technology, ability to analyse numerical data or any other information.
5. **Creating and Conceptualising:** Ability to quickly learn new tasks; search for information, create new ideas, formulate strategies and new concepts.
6. **Organizing and Executive:** involves setting clear objectives, planning of activities and projects, effective management of time, monitoring performance against deadlines and milestones.

7. Adapting and Coping: Ability to adapt to a new environment, tolerance to change, adapt interpersonal style that suits different situations; maintain an initiative personal outlook at work, balance the demand of work life and personal life.
8. Enterprising and Performing: Achieving personal work goals and objectives; make efforts for personal development; entrepreneurship and commercial thinking.

In the United Kingdom the internal consistency reliabilities for the scales ranged from 0.65 to 0.87 for the general population of 2028 whilst in a South African study of 1181 employees and students, results of alpha coefficients ranged from 0.69 to 0.88 (SHL, 2002). The alpha coefficients from 0.60 to 0.80 are generally perceived as sufficient for personality measurements (SHL, 2004). Test retest reliability was also conducted in the United Kingdom using a sample of 107 undergraduates at various institutions of higher learning; a follow-up after one month resulted in reliabilities ranging from 0.64 to 0.91, with a median of 0.79 (Visser & Viviers, 2010). According to SHL (1999), minimum reliability coefficients of 0.7 were an acceptable norm for test use for selection purposes. It was noted that no research has been conducted on the test retest reliability for OPQ 32i in South Africa (Visser & Viviers, 2010).

A study of criterion related validity in the United Kingdom found that the scale of OPQ 32i ranged from 0.14 to 0.35 (SHL, 2009). The criterion validity of OPQ 32i has been confirmed in various studies in United Kingdom and other countries including South Africa; it was found that OPQ 32i results do correlate with indicators for job performance of various kinds, particularly for specialist knowledge, written communications, problem solving and analysis (SHL, 2009). OPQ32i has been discontinued by SHL and replaced with OPQ 32r which provides high construct validity and reliability (Brown & Bartram, 2009; Venter, 2010). The former instrument was used in this research as it was used in the organisation under study for the selection process.

1.7.2. 3 Individual Performance Management System (IPMS)

In this study, the dependent variable is work performance, which was measured by the Individual Performance Management System (IPMS) through supervisory rating. The purpose of IPMS is to provide a framework in which members' and teams' work-related

activities are aligned with the objectives of the organisation and provide members with opportunities to develop or enhance their performance. IPMS is designed to measure performance in the organisation using a Likert scale of 1-5, where the lowest number represents poor performance and the highest the best performance. Employees are assessed based on performance contracts set between manager and employee; the contract is based only on the tasks of the job. Managers or supervisors conduct performance reviews twice a year; and the ratings are aggregated before they are submitted to the moderation committee. According to Whitford and Coetsee (2006), organisations are aware of the value derived from managing performance in terms of increasing both individual and organisational performance, and a number of case studies have provided a solid support for integrated performance management as the reason for increased performance. However performance management is clouded with many challenges. Spain (2010) argued that the treatment of performance as one-dimensional is an issue of concern in the estimation of validity. Furthermore, issues such as central tendency, biasedness, and leniency may affect the results of performance measurements (Bol, 2007; Cordner, 2014).

1.7.3 Research procedures and ethical considerations

All information used in this study was gathered during the employment process; the results of both APIL SV and OPQ 32i were stored in the structure that administers psychological assessment in the department for purpose of confidentiality. The performance rating data had also been already gathered and stored in the HRI system during the 2012 financial year. Statistical analysis was performed by a person outside the organisation. However, confidentiality and privacy of participants was maintained: names were altered to numbers before sending the data to the statistician. All employees had signed consent forms for the organisation to use data for research purposes prior to the completion of the tests.

1.7.4 Statistical analysis

This study used a quantitative research approach; statistical data was processed and analysed. Descriptive statistics were calculated to provide a better understanding of the nature of both independent and dependent variables. This also provided results on the measures of central tendency (mean), standard deviation, minimum and maximum values of the variables. The Pearson Correlation Coefficient was calculated to establish the strength of a linear

relationship between independent and dependent variables; this method measures the strength of the linear relationship between normal distributed variables (McDonald, 2014). A regression analysis was carried out that estimates the predictive relationships among the variables under study.

1.7.5 Hypothesis

H₁₀: There is no statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

H₁₁: There is a statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

H₂₀: There is no statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

H₂₁: There is a statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

1.8 RESULTS

In Chapter 3 the empirical results of the study are presented. Descriptive statistics and correlations results are displayed graphically in tables and graphs, and the results are analysed and discussed. Chapter 4 culminates with drawing of conclusions, discussion of limitations and making recommendations for future research.

1.9 CHAPTER LAYOUT

The remaining chapters are presented in the following manner:

Chapter 2 of this study is constituted by a review of literature dealing both with independent and with dependent variables. The literature reviews explore the background, development and theoretical perspectives of all the variables concerned.

Chapter 3 is an article based on this study comprising an Abstract, background, research design, results, discussion and references.

In Chapter 4, the results and limitations of the study are discussed and recommendations as a result of the study are offered.

1.10 CHAPTER SUMMARY

This chapter discussed the scientific orientation to the research. This includes the background and motivation, the research problem, aims, the paradigm perspective and the research design. The chapter concluded with the chapter layout.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter was prepared in response to the specific theoretical aims of the literature review. As stated in the previous chapter, these were to conceptualise the learning potential, personality traits and work performance. It was also to conceptualise the role of learning potential and personality traits in predicting work performance.

2.2 LEARNING POTENTIAL

Psychologists have devoted a considerable amount of energy and effort to understanding the structure and function of human cognition, in particular the ways in which individuals differ in their cognitive abilities. Cognitive psychologists often distinguish between crystallised and fluid intelligence, the latter refers to cognitive process which tend to allow individual to manipulate abstract symbol such as solving mathematic problems or ability to reason, while the former refers to gathered knowledge over an extended period, such as vocabulary (Anderson, 1995; Sternberg, 1999). This study is based on the foundation of fluid intelligence because the potential measurement for learning is designed to assess an individual's ability to learn new things other than those that they have learned in the past (Sternberg & Grigorenko, 2002; Toggia & Cermak, 2009).

The first learning potential test was developed by Alfred Binet and Theodore Simon in 1903; the two were requested by the French Minister of Public Instruction to develop a test that would distinguish mentally defective and normal children (De Beer, 2006). The motivation was to ensure that every child was tested before they were placed so that retarded children were able to benefit from special education (De Beer, 2006; Sternberg & Grigorenko, 2002). Binet and Simon's approach to intelligence and its measurement differed from that of Galton's who considered time needed to complete a test; their main concern was good judgement without concern about the time it takes to complete the test (Sternberg & Grigorenko, 2002).

Binet and Simon also believed that intelligence is constituted by three different elements: direction, adaptation and criticism (Hergenhahn, 2005). Direction is the ability to know what the task is and how to execute it; while adaptation refers to selected strategy employed in the execution of task; and criticism refers to the individuals' ability to judge themselves on right and wrong so as to employ necessary strategies to improve on performance (Hergenhahn, 2005; Sternberg & Grigorenko, 2002). Binet's tests were designed and validated to measure individual reasoning and judgemental abilities that were deemed to constitute intelligence (Sternberg & Grigorenko, 2002). They were designed with consideration for age; thus results were compared with the child's chronological age (Sternberg & Grigorenko, 2002). In this section the discussion focuses on the approaches to measurement of cognitive ability, Vygotsky's conception of the Zone of Proximal Development (ZDP), dynamic assessment, measurements of learning potential and dynamic testing in South Africa.

2.2.1 Approaches to measurement of cognitive ability

There are three approaches to the measurement of cognitive ability, namely the conventional/structural approach, the information processing approach and learning and dynamic assessment (Taylor, 1994).

2.2.1.1 The conventional/structural approach

This approach measures performance on dimensions that are deemed to constitute important structures of the psychological domain under assessment such as personalities, interests and others (Taylor, 1994). Circa 1800, Wilhelm Wundt pioneered the introduction of the structuralist approach to measurement of cognitive ability; he believed that the mind's structure is similar to the classifications in development of biology and chemistry because it is composed of basic and unchanging elements (Grider, 1993). Wilhelm Wundt was the first to approach the cognitive question scientifically and design experiments to test cognitive theories (Galotti, 2004).

The proponents of this school were concerned with individual differences and their research focused on the differences in structural approach utilising correlation and factor analytic techniques to investigate both theoretical and empirical questions (Taylor, 1994). The conventional tests tend to measure broad and mostly not well-defined psychological

constructs (Taylor, 1994). The tests within this approach measure prior learning and proponents of this school make the assumption that all test subjects have comparable exposure to what is being assessed (De Beer, 2006). Considering the historical background of South Africa, static intelligent tests are undesirable (De Beer, 2006). However, a study by Thomas and Scroggins (2006) found that conventional testing have economic utility as these tests are able to predict job performance in the work place.

2.2.1.2 Information processing approach

The development of cognitive psychology in the 1960's accelerated the emergence of the information processing approach which was further stimulated by the introduction of the computer, concepts regarding which being seen as useful modes for comprehending human perception, thinking and problem solving (Arther, Doverspike & Bell, 2004; Taylor, 1994). The approach helped cognitive psychology to make a fundamental shift from "black box" to human functioning conceptions, in contrast to the conventional test, the information processing test measures limited and specified cognitive activities (Taylor, 1994).

The general view of this school is that mental human abilities could be understood by measuring activities, such as: information received, processing, retrieval speed and short-term memory that cannot be contaminated by available knowledge and environmental variables (Taylor, 1994). It is noted that both general ability and information processing tests are able to predict performance. However, the former offers more advantages in that it is readily available, easy to administer, easy to score and widely used in the employment process ((Arther et al., 2004). The practical advantage of an information processing approach is that it can be administered by computer and therefore makes it easier to allow large numbers of people to be tested at the same time (Taylor, 1994).

2.2.1.3 Learning or dynamic approach

The learning or dynamic testing seems to be acceptable in the context of multi-cultural assessments as the approach puts emphasis on the capacity to adaptation to novel task performance as a result of exposure, instruction or hints (Taylor, 1994). Tests based on this approach provide information on the learning processes and diagnostic nature necessary in

the design of remedial instruction (Taylor, 1994), which means the tests are able to benefit those whose cognitive processes are not well developed due to their social environs.

The central theoretical foundation for this approach was conceived by the Russian psychologist Vygotsky, who had as his underlying assumption the notion that individual acquisition of cognitive competence is the result of social interaction (Vygotsky, 1978). Vygotsky acknowledged that individuals differ in their capacity to benefit from mediated learning experiences. He developed the concept “Zone of Proximal Development” (ZPD) to demonstrate gaps between tasks completed independently and tasks completed with assistance or mediation (Taylor, 1994; Vygotsky, 1978).

The APIL SV employed in this study combined elements of both information processing constructs and dynamic assessment. Unlike a conventional testing approach, APIL SV is geared towards assessing the capabilities and potential of candidates (Taylor, 1994).

2.2.2 Vygotsky’s conception of the ZPD

Vygotsky wrote about the relationship between learning and development in school children; he was concerned with Piaget’s theoretical assumption which postulates that there is no relationship between development and learning (Vygotsky, 1978). His assumption was that processes such as deduction and comprehension, development of ideas regarding the world, mastery of logical thinking and abstract logic all occur by themselves without the influence of school learning (Vygotsky, 1978). Unlike Binet and other scholars, Vygotsky did not believe that a child’s development needs to reach a certain maturation stage in order to be exposed to learning; he believed that learning is on-going and cannot be separated from a child’s development (Vygotsky, 1978).

Vygotsky (1978) disputed the reflex theories which claimed that development takes place as a result of elaboration and substitution of innate responses. Vygotsky’s approach endeavours to explain the nature of the relationship between learning and development and the specific nature of the relationship when the child starts formal schooling (Vygotsky, 1978). He argued that children learnt arithmetic, subtraction, quantity, division, addition and size long before pre-school (Vygotsky, 1978). His theoretical position was that children learn through

different modes such as assimilation and imitation; they tend to acquire many skills and a great deal of knowledge from the first day of life (Vygotsky, 1978).

In Vygotsky's writing, the psychological research concerning the problem of instruction focuses only on the level of mental development; to determine this level, a child is given a task that has to be completed independently in order to assess what the child currently knows; level of maturity; and the actual level of the child's development (Minick, 1987; Vygotsky, 1978). He differentiated between two aspects of the child's mental cognitive functioning, the mental functions that have matured and those that are in the process of maturing. The former comes from those activities which a child performs independently whereas the latter is manifested when the child is working together with an adult or competent peer (Minick, 1987; Vygotsky, 1978).

The primary goal of Vygotsky was not to assess learning efficiency or potential, but rather to test the child's current state of development (Minick, 1987). The underlying assumption of his theory and research was that advances to human mental process are the result of a collaborative activity mediated by verbal interaction: he believed that social interaction leads individuals to participate in the first form of mental activity (Minick, 1987; Vygotsky, 1978). His theory stemmed from his concept of the ZPD, already mentioned, which developed into the foundational concept in learning potential assessment (Vygotsky, 1978.) The ZPD is described as the distance between an individual's real development level as measured by an independent intelligence tool and the level of potential development as measured through problem solving under adult supervision or working together with capable peers (Hamers & Resing, 1993).

From Vygotsky's point of view the analysis of ZPD is conducted for the purpose of understanding the child's psychological processes in order to deduce the child's capabilities in the proximal phase of development, as well as being a means to determine the kind of instruction or assistance that could be beneficial to the child in realising her/his potential (Minick, 1987). He advocated that there is an integral relationship between child levels of mental functioning and the development of social interaction (Vygotsky, 1978). He utilised formal school instruction as a viable vehicle for empirical research since he viewed instruction as another means of social interactions (Minick, 1987). While Vygotsky's death in

1934 deprived him of the opportunity to implement his concept of ZPD in a practical diagnostic work, efforts have been made to implement his approach both in assessment and developmental research, but there is a need to refine and conduct additional empirical research of the development of specific psychological processes (Hamers & Resing, 1993).

2.2.3 Measurements of learning potential

2.2.3.1 Dynamic Assessment

Dynamic assessment emerged through the quest to address the inadequacy of conventional intelligence tests which did not test the potential to learn but rather static measures of certain individual abilities, which often did not lead to prediction of the ability to learn (Schneider-Lidz, 1987). Dynamic assessment is a measurement method which includes instructional intervention during the testing process. It is viewed as a mechanism to alleviate the effects of environmental variables which influence performance and distort the measurement of latent capacity (Sternberg & Grigorenko, 2002). According to Minick (1987), all forms of dynamic assessment have been motivated by the conviction that the static intelligence approach to testing of learning potential had failed to provide information that could be useful to facilitate the psychological development of children from disadvantaged backgrounds.

The underlying assumption of dynamic assessment is that the child learns through interaction with adults and other peers (Vygotsky, 1978). Another assumption is that cognitive activities are learned and performed within a cultural context, which means that learning, thinking, and problem solving, which are instances of higher mental activities, are of social origin (Minick, 1987). Learning ability or learning potential are used interchangeably and have the same meaning; the approach is based on exposing the candidate to training first and assessing learning potential afterwards. Changes noted as the result of training intervention in terms of quality or quantity are indicative of learning potential (Guthke, 1993). In the study of development in learning potential, Guthke (1993) pointed out that ZPD in its original theoretical meaning was designed as a model of the relationship between education and development processes and was only later developed into diagnostic principles.

De Beer (2006) noted that the test-train-retest approach is a dynamic assessment which stems from Vygotsky's theory of the ZPD, wherein the main focus is not on the current level of

ability, but the potential level that the individual can reach with an appropriate level of training opportunities being provided.

2.2.3.2 Budoff's Learning Potential Measurement Approach

Budoff was motivated by the concerns of validity of static intelligence measurement, which he believed was relevant to understanding the abilities of certain children but tended to compromise the results of children from disadvantaged economic backgrounds due to cultural incompatibility of school and home environment (Poehner, 2008; Sternberg & Grigorenko, 2002). Budoff is credited with the engineering of the sandwich format of Dynamic Assessment borrowed from classical research design in experimental psychology (pre-test-treatment-post-test) (Poehner, 2008). He attributed the effects of low performance to lack of quality educational opportunity and further argued that exposure to the test and certain assistance in solving test problems would mitigate the results of the test (Poehner, 2008).

Budoff's approach starts with conducting a pre-test with the candidate. Based on the results, training is provided so as to improve the candidate's test performance; he believed that the degree of improvement on the test score is an indication of potential for future learning (Poehner, 2008; Sternberg & Grigorenko, 2002). Though Budoff's approach does not advocate a focus on cognitive development as a goal of his interactions, he acknowledged that cognitive abilities are permeable to change, given appropriate opportunities (Poehner, 2008; Sternberg & Grigorenko, 2002).

2.2.3.3 Guthke Lerntest Approach

While working with his colleagues at the University of Leipzig, Guthke extended the work of Budoff by developing a number of dynamic testing procedures (Guthke, 1993). He differed from Vygotsky's view of cognitive development by advocating that there is more than one ZPD for general intelligence or learning ability (Guthke, 1993; Poehner, 2008). He adopted an approach different from that of Budoff's by combining mediation into the test itself; together with his colleagues, Guthke developed five standardized units to be utilised during completion of the test (Poehner, 2008). The proponents of learning potential testing believed that learning in the training phase of the test was the reflection of learning performance at school; their research found that the predictive validity of learning potential tests is higher

than that of static tests and that post-tests have more predictive validity than pre-tests (Guthke, 1993).

2.2.3.4 Brown's Graduated Prompt Approach

Brown and her colleagues' focus was on designing Dynamic Assistant procedures for particular domains, such as reading and mathematics for both normal and special needs children (Poehner, 2008). The Brown's Graduated Prompt Approach uses standardised hints and leading questions for each item or problem in the test; the mediation clues are arranged from more complex to the most obvious clue leading to an answer (Poehner, 2008; Sternberg & Grigorenko, 2002). The Graduated Prompt Approach differs from the Vygotskian perspective because it includes certain transfer tasks (Poehner, 2008). Budoff's approach advocates that the most important development should be noted in the improvement on different kinds of task performance rather than on repetition of a test parallel to the original test. The candidate should be given a new test but with similar principles combined with a completely new task (Poehner, 2008).

Once the candidates are able to solve the novel exemplars of the initial tasks, they are given new tasks of "near transfer" which combine tasks using similar principles to previous questions; after this the test candidates are given "far transfers" tasks which require new rules in addition to the familiar principles (Poehner, 2008; Sternberg & Grigorenko, 2002). Lastly, the candidates are given "very far transfer" tasks which are more difficult; on the basis of their performance the examiner can compile a report which indicates how quickly the examinee could learn and to what degree they could use the knowledge in solving novel problems (Poehner, 2008; Sternberg & Grigorenko, 2002).

2.2.3.5 Feuerstein Mediated Learning Experience

The Feuerstein approach did not adopt the perspective of Vygotsky, but many of Feuerstein's procedures seem to be a continuation of defectology work by Vygotsky and Luria which dates back more than 7 decades, where his point of departure was that assessment and instruction do not exist separately (Poehner, 2008). Feuerstein and Feuerstein (1999, p.7) defined Mediated Learning Experience (MLE) "*as quality of interaction between the organism and its environment*". The quality of interaction is a planned intervention to

mediate the stimuli affecting the individual rather than generalised interaction between the world and organism (Feuerstein & Feuerstein, 1999). The MLE view of the human being as an open system whose cognitive ability is amenable to change, as well as the notion that cognitive abilities are fixed traits that are determined by biology, like height and colour of hair, are rejected (Poehner, 2008). Feuerstein and his colleagues indicated that an individual living in a modern and changing society could not be viewed as having stable and predictable patterns; therefore, they viewed modifiability and auto plasticity as proper characterisations (Poehner, 2008).

The underlying assumption of Feuerstein and his colleagues stems from the basic belief that intervention could be made in the development of human cognitive abilities; this conviction is termed Structural Cognitive Modification (SCM) (Poehner, 2008). The modification of the cognitive structure could be achieved through MLE (Sternberg & Grigorenko, 2002). MLE is the way in which stimuli created by the environment are transformed by mediating agents such as parents, siblings or any other caregivers in an effort to create cognitive structural changes (Sternberg & Grigorenko, 2002).

Feuerstein's theory is said to be supported by a number of individual success stories, one of which includes a young boy who was classified as retarded but went on to obtain his PhD in psychology (Poehner, 2008). APIL SV stems from the learning potential theory and assesses the individual's potential to learn new things instead of crystallised abilities. Similar to Thorndike's definition and approach, this study embraces intelligence as the ability to learn and, as he did, the assumption that everyone has a similar learning history is rejected (Guthke, 1993).

2.2.4 Dynamic testing within the South African context

The concerns of psychological testing in a multicultural context cultivated a fertile ground for scholars in cognitive psychology to explore an equitable assessment. As a result, dynamic testing and learning potential emerged as a favoured approach both locally and internationally (De Beer, 2006). The flourishing of dynamic assessment stems from its promises to provide measures that are culturally fair, comparable in a multicultural society, and suitable for people from previously disadvantaged educational backgrounds (De Beer, 2006).

De Beer (2006) noted that several researchers have made significant contributions towards the development of instruments measuring learning potential and providing information on the validity of dynamic testing measures. The utility and predictive validity of cognitive ability testing have received an overwhelming acceptance within the field of human resources for the purpose of selection (Schmidt & Hunter, 2006). South Africa has seen remarkable increases in research based on learning potential measurements (Laher & Cockcroft, 2013).

De Goede and Theron (2010) investigated the internal structure of the learning potential construct as measured by the APIL-B test battery using a non-probability sample of 434 new recruits in the South African Police Services Training College in Philippi, Cape Town. The results corroborated the hypothesised relationship between information processing capacity and automation and the hypothesis of a direct path between information processing capacity and learning performance (De Goede & Theron, 2010). The study did not find significant relationships between abstract thinking capacity and transfer of knowledge; abstract thinking capacity and learning performance; transfer of knowledge and learning performance; and between automation and learning performance (De Goede & Theron, 2010).

Lopes et al. (2001) investigated the predictive validity of the APIL-B against the background laid down by employment legislations in South Africa. The findings of this study were generally positive; because the APIL-B was found to predict the performance of employees in a financial institution satisfactorily (Lopes et al., 2001). The study predicted a 36, 6% rating accurately, far better than the generally accepted norm of 9% by psychologists 20 years ago (Lopes et al., 2001). Although the study found that mean scores for African employees were consistently lower than the total sample mean whilst White employees' mean scores were consistently above the total sample mean, the differences in the mean scores were not attributed to bias as these were similar to the work performance rating (Lopes et al., 2001). However, it should be noted that the results only become satisfactory after the collapsing of the criterion score into a two-point scale by combining the bottom three and top two ratings.

Strachan (2008) investigated the validity of APIL SV as a predictor of future performance to determine whether APIL SV has construct validity in the financial/consulting industry. The results were generally positive as they confirmed that APIL SV is a good predictor of learning potential. Makgoatha (2006) studied predictive validity using APIL B in a cross-

cultural environment within a financial institution using performance rating as a criterion. The study found a correlation between APIL-B dimensions and a performance rating of 0, 53, was statistically significant.

In a study by Schoeman, De Beer, and Visser (2008) on the relationship between learning potential, English language proficiency and work-related test results, the relationship between learning potential (Learning Potential Computerised Adaptive Test (LPCAT) and the English language proficiency test yielded positive results, whereas LPCAT and the Proficiency Test English Second Language and criterion (training results) showed no predictive validity. Gilmore (2008) studied the relationship between learning potential and job performance in a precious metals company in South Africa using (LPCAT2), which is classified as a dynamic assessment instrument. The study confirmed that there is a statistically significant relationship between learning potential and job performance for technical employees (Gilmore, 2008).

A number of empirical studies conducted in South Africa on learning potential measurement with academic performance as criterion provided evidence which suggests that learning potential instruments have predictive validity (Gilmore, 2008; Schoeman, De Beer & Visser, 2008; Strachan, 2008). Studies also confirmed that APIL B as an instrument for measuring learning potential is not biased towards any ethnic group (Lopes et al., 2001; Makgoatha, 2006; Taylor, 2007). In the study by De Goede and Theron (2010), certain dimensions of APIL-B were confirmed to have predictive validity on learning performance. It was also confirmed that APIL B can predict work performance in a financial institution (Lopes et al., 2001).

2.3 PERSONALITY

The utility and predictive validity of cognitive ability testing has been broadly accepted for the purpose of employment selection, but a similar view cannot be expressed with regard to personality testing (Hunter & Schmidt, 2006). Prior to the 1990s, many researchers, as previously mentioned, had no confidence in personality research. However, the search for different instruments to minimise the impact of cognitive ability testing increased the momentum of the development of personality instruments (Hunter & Schmidt, 2006).

Although it was ascertained that personality testing could enhance their validity and utility for selection, research was delayed due to lack of shared definitions of personality (Hunter & Schmidt, 2006). The discussion in this section covers the definition of personality, traits theory and models of personality, approaches to personality at work as well as personality and work performance.

According to Ewin (2003), the most suitable approach in defining personality is through investigating characteristics and qualities within an individual; thus he argued for a definition that is inclusive of everything about the person, e.g. mental, emotional, social and physical aspects. Personality is defined as the dynamic organisation within the individual psychological and physical systems which influences characteristics, behaviour and thoughts (Maddi & Costa, 2009). According to Schultz and Schultz (2005), personality may be defined as “*unique, relatively enduring internal and external aspects of a person’s character that influence behaviour in different situations*” (p. 10). The above definitions accommodate both the role of internal and external aspects of a person in determining the unique and enduring characteristics which shape a person. The definitions embrace the views of those who are proponents of the role of conscious and unconscious stimuli and environment in determining individual personality.

2.3.1 Traits theory and models of personality

Currently traits theory shaped the study of personality, particularly so with the aggregation of specific traits into broad definition of personality which led to the prediction of broad behaviour that relates to job performance (Thomas & Scroggins, 2006). Traits focus on the enduring characteristics of a person, and proponents of this approach advocate that traits predict certain behaviour (Crowne, 2007). According to McCrae and Costa (2003), personality traits focus on the structural differences and similarities among people; thus researchers have developed a universal taxonomy or framework in which to compare individuals and identify individuality. The Cattellian project championed by Raymond B. Cattell is regarded as the foundation of discussion regarding primary traits and was intended to explain people’s differences through psychometric measurement of ability, motivation, personality and mood (Matthews, Deary & Whiteman, 2003). The project gathered massive amounts of data eventuating in the development of twenty three fundamental primary factors

which eventually formed part of the Sixteen Personality Factors Questionnaire (16PF) (Matthews et al., 2003).

2.3.1.1 Eysenck Gigantic Three Framework

Eysenck developed a model that he called the “Gigantic Three framework”, presented in Table 2.1 below, that identified three major dimensions of personalities (Neuroticism, Extraversion and Psychoticism) which determine individual differences (McCrae & Costa, 2003). High levels of neuroticism are characterised by unstable behaviour such as being tense and anxious while low levels are displayed by behaviour such as being relaxed, confident, and so forth. High levels of extraversion are characterised by behaviour such as being energetic, sociable, lively, active, confident and assertive, while people with low levels tend to be passive, asocial, socially lacking in confidence. People with high levels of psychoticism tend to be egocentric, aggressive, impersonal and cold while people with low levels tend to be warm, aware of others and non- aggressive (Eysenck, 2004)

TABLE 2.1
EYSENCK’S THREE PERSONALITY FACTORS

	Neuroticism	Extraversion	Psychoticism
High	Anxious Moody Depressed Pessimistic Tense Shy Low self-esteem	Energetic Sociable Lively Active Assertive Confident Dominant	Tough-minded Un-empathetic Creative Sensation-seeking Aggressive Cold
Low	Stable Positive Optimistic Confident relaxed	Asocial Passive, Slow Reflective Introspective Socially unconfident	Altruistic Rational, Conformist Organised Down-to-earth Empathic

McCrae and Costa (2003).

Eysenck further developed a self-report inventory to measure the three dimensions which he called the Eysenck Personality Questionnaire-Revised (EPQ-R), which is answered on a 2 point Likert scale of yes or no (McCrae & Costa, 2003). Eysenck’s theory assumes that personality traits are biological and inheritable and are responsible for similarities and differences among individuals (McCrae & Costa, 2003). The assumption of the Eysenck theory was confirmed by a longitudinal study conducted by McCrae & Costa (2003); it proved that there is stability in personality traits across life span and cultures.

2.3.2.2 The Five Factor Model

The Five Factor Model (FFM) originated from the studies of natural language traits terms. The Five Factor theorists asserted that these factors, alone or in combination, can be found in almost all personality instruments (McCrae & John, 1992). During 1960s, the FFM disappeared from the radar but Goldberg's revived interest in the lexical approach culminated in the reintroduction of FFM to the mainstream of personality psychology (McCrae & Costa, 2003). The FFM is based on the hierarchical organisations of personality traits in terms of five basic dimensions as presented in Table 2.2: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience (McCrae & John, 1992).

1. Neuroticism

This is described as a dimension of normal personality demonstrating a general tendency to experience negative effects such as fear, sadness, embarrassment, anger, guilt and disgust (Rothmann & Coetzer, 2003). High levels of neuroticism indicate that the person is not emotionally stable and is likely to experience the extreme expression of negative effects (Rothmann & Coetzer, 2003).

2. Extraversion

This is characterised by positive feelings and experiences and is usually associated with traits such as sociability, assertiveness, activity and talkativeness (Rothmann & Coetzer, 2003). In the study by Barrick and Mount (1991), it was found that Extraversion is a valid predictor of performance in a job such as sales, which requires social interactions.

3. Openness to Experience

This is associated with an active imagination, aesthetic sensitivity, and attentiveness to inner feelings, a preference for variety, intellectual curiosity and independence of judgement (McCrae & John, 1992). Those who score low on this dimension tend to be conventional in behaviour and conservative in outlook, whereas those who score high tend to be unconventional, willing to question authority and can engage in new ethical, social and political ideas (McCrae & John, 1992).

TABLE 2.2
THE FIVE FACTOR MODEL

Neuroticism	Agreeableness
Calm – Worrying	Ruthless – Soft-hearted
Even-tempered – Temperamental	Suspicious – Trusting
Self-satisfied – Self-pitying	Stingy – Generous
Comfortable – Self-conscious	Antagonistic – Acquiescent
Unemotional – Emotional	Critical – Lenient
Hardy – Vulnerable	Irritable – Good-natured
Extraversion	Conscientiousness
Reserved – Affectionate	Negligent – Conscientious
Loner – Joiner	Lazy – Hardworking
Quiet – Talkative	Disorganised – Well organised
Passive – Active	Late – Punctual
Sober – fun-loving	Aimless – Ambitious
Unfeeling – Passionate	Quality – Persevering
Openness to experience	
Down-to-earth – Imaginative	
Uncreative – Creative	
Conventional – Original	
Prefer routine – Prefer variety	
Uncurious – Curious	
Conservative – Passionate	

McCrae and Costa (2003)

4. Agreeableness

The person who is agreeable is usually altruistic, sympathetic to other people and willing to help; in turn this person expects others to be helpful whilst the disagreeable person tends to be egocentric, sceptical of others' intentions and competitive, rather than co-operative (McCrae & John, 1992).

5. Conscientiousness

According to McCrae and John (1992), conscientiousness involves self-control and an active process of planning, organising and carrying out tasks. People who possess these traits tend to be purposeful, strong-willed, determined, hardworking, persistent as well as dependable and organised (McCrae & John, 1992).

The proponents of this school adopted the hypothesis that the FFM of personality is a true representation of the structure of traits and that the focus should consider its implication for theory and psychology so that researchers in the field do not measure the same construct under a dozen different names (McCrae & John, 1992).

The FFM is criticised for its minimal dimensions in that they are insufficient to cover all differences known in humankind. McCrae and John (1992) acknowledged this particular limitation and argued that the FFM only gives a complete characterisation of traits at a broad level.

Traits theory shaped the study of personality (McCrae & John, 1992). Traits focus on the enduring characteristics of a person; the theorists in this approach advocate that traits predict certain behaviour (Crowne, 2007). According to McCrae and Costa (2003), personality traits focus on the structural differences and similarities among people; thus researchers have developed a universal taxonomy or framework in which to compare individuals and identify individuality.

2.3.3 Approaches to personality at work

Previous investigations in diverse literature sources on personality, proposed a numerical approach to the study of personality at work (Furnham, 1994).

2.3.3.1 Classical Personality Theory

The starting point of this approach is theoretical, which means that research investigating the assumptions made by the theory, as well as personality as an independent variable, is correlated to related behaviour (Burger, 2010; Furnham, 1994; 2008). In terms of this approach, the researcher can opt to measure single or multiple traits; normal or abnormal traits; dynamic or stylistic traits (Furnham, 1994). According to Furnham (2008), the approach is criticised for poor ecological validity as it is sometimes conducted in the laboratory; furthermore, selections of work-related behaviours are based on convenience.

2.3.3.2 The concept of “fit and misfit” at work

The Fit and Misfit approach is based on the underlying assumption that personality is a predisposition; this means that certain jobs are more suitable for people with certain personality traits than others (Chatman, 1989; Furnham, 1994). Therefore on the basis of analysis of the job and person, it is possible to measure job fit or misfit accurately (Furnham, 1994). The approach is characterised by the following features: analysis of both the job and

individual to ensure proper fit; recognition of individual impression and lastly, the similarities and attractions amongst people (Furnham, 1994; Schneider, 1987). The approach has remained the most popular area in research, particularly in vocational choice and work settings (Furnham, 1994).

2.3.3.3 Longitudinal studies of people at work

The longitudinal approach is appropriate for studying how variables such as personality, psychographic and demographic change over time or predict behaviour (Furnham, 1994). The longitudinal study, in accordance with its name, tends to take an extended period but there is no prescription of time span (Furnham, 1994; Rajulton, 2001). The approach may be difficult, expensive and problematic; it could be conducted either within or between organisations (Furnham, 1994). The longitudinal study may be done by comparing past records; however, the preferred approach is to conduct the study and plan for a future one which the researcher will be able to control (Rajulton, 2001). The concern with a longitudinal study is that participants might drop out or relocates and that many events could occur, which may influence the results due to lower sample size than the thought variables (Brain, 2002).

2.3.3.4 Biographical or case history research

This is based on the “great man theory” wherein the researcher studies the life of successful individuals to determine biographical factors that could be contributing to their success (Furnham, 1994). However there are few examples of this approach in the study of personality traits (Burger, 2010; Furnham, 1994). Research can investigate either individual or groups such as family or people who are successful and attended similar institutions; the important aspect is to decide the criteria for success, and the researcher can choose candidates either on the basis of impressionistic or scholarly (Furnham, 1994). The concerns of this approach are that only highly successful individuals are studied, which results in unrepresentative data, and that there is no control group (Furnham, 1994). Another concern is that the subjective judgements of the investigator may interfere with scientific objectivity in the case study work (Barenbaum & Winter, 2008; Burger, 2010).

2.3.3.5 Classic occupational-psychology/organisational behaviour

This approach focuses on work related variables at the individual, group or organisational level and investigates how they correlate with personality (Furnham, 2008). The measurement of variables is through questionnaires, interviews or results of actual behaviour such as absenteeism, promotion or sales; from single or multiple sources (Furnham, 2008). Lastly, the study could be done within the organisation or by comparing various organisations (Furnham, 2008). In this approach the interest is in establishing personality traits which correlate with a specific work behaviour in order to assist in hiring, promotion and training decisions (Furnham, 2008). However, this approach makes the integrity of choosing personality questionable; it is not based on theory and in addition organisational factors tend to have a major influence on work-related behaviour (Furnham, 2008).

2.3.3.6 The development of work-specific individual differences measures

The central focus of this approach is to establish the personality measures for predicting a specific work-related behaviour such as absenteeism (Furnham, 2008). The measure could be a narrow or broad concept; single or multiple dimensions; self-reporting or behavioural options, and attitude or attitudinal (Furnham, 2008). This approach is predominantly used by those from the personality and occupational psychology schools; the approach has a number of limitations, such as ignorance of the aetiology of the trait, limited generalizability and possible tautology (Furnham, 2008).

2.3.3.7 Meta analyses of studies

Meta-analysis research was first introduced in the field of Industrial and Organisational psychology towards the late 1970s and utilised mostly in the sphere of selection tests validations (Rothstein, 2003). The approach focuses on the review of previous studies of similar sets of criteria. For a study to be included, it must meet certain criteria in terms of the instrument used, findings and date reported (Furnham, 2008). Meta-analyses provide an opportunity of seeing certain trends and review a number of studies that indicate the relationship between variables such as personality and work outcomes (Furnham, 2008).

The measuring instrument used for personality in this study (OPQ 32i) was developed on the trait theory of personality. The research is based on classical personality theory; in this study the focus was on investigating the assumptions made by trait theory on the prediction of work performance.

2.3.4 Personality and work performance

In a meta-analytic study of research conducted between 1952 and 1963, it was noted that “*it cannot be said that any of the conventional personality measures have demonstrated really general usefulness as selection tools in employment practice*” (Guion & Gottier, 1963, p.140). It has also been said that the problem pertaining to personality testing creates doubt as regards using these tests for employment decisions (Guion, 1965). Morgeson et al., (2007) shared similar sentiments as they argued that personality tests only account for 5% of job success.

It is noted that the relationship between personality traits and job performance may not necessarily be linear, as other research had indicated (Le et al., 2007). This view was also supported by Murphy (2006), who articulated that some personality traits could form a curvilinear relationship with job performance. As a result of the said relationship, it is suggested that practitioners should not select candidates by a top down approach of personality test results, but rather have a cut-off point due to the fact that at certain points personality is not constantly related to performance (Le et al., 2011).

The emergence of the Big Five personality factors is credited with the renewed interest in the studies of personality measurements (Rothstein & Goffin, 2006; Scroggins, Thomas & Morris, 2008) The findings of meta-analytic researches showed that there was an upward surge in the validity estimates of personality measurement which resulted in the growth of utilisation of personality in employment selections (Rothstein & Goffin, 2006; Scroggins, Thomas & Morris, 2008). In the study by Jackson and Corr (1998), it was concluded that the confidence in the use of personality measures in employment selections stems from correlations obtained from group scores. The results of the research found that at individual level, personality-performance correlation was no more than 0.2 whilst on aggregate level it was much higher (Jackson & Corr, 1998).

Meta-analytic studies conducted between the FFM dimensions and work performance found modest correlations on certain dimensions which range from .04 to .22 (Schmidt & Hunter, 1991). Another influential meta-analytic study found an increased validity on FFM and work performance, greater than had been previously recorded (Tett, Jackson, & Rothstein, 1991). Despite early doubts regarding the use of personality tests as a selection tool, the study by Shackleton and Newell (1991) revealed that there is a strong belief amongst practitioners on the utility of personality in the selecting of employees. It is acknowledged that the use of personality measurement for the purpose of employment selection has increased drastically in South Africa; evidence of this may be seen in the number of research projects being conducted in this regard in South Africa (Blignaut, 2011; Davis, 2013; Forbes, 2006; Rothmann & Coetzer, 2003; Van Der Linde, 2005; Visser & Viviers, 2010).

In investigating the relationship between personality and job performance, many of these studies have found low to moderate correlations between personality measurements and work performance (Blignaut, 2011; Davis, 2013; Rothmann & Coetzer 2003; Van Der Linde, 2005; Visser & Viviers, 2010). Two different studies conducted by Forbes (2006); Nobre (2005) using OPQ 32i in a financial institution found that the instrument is not a valid predictor of work performance or theft, respectively.

2.4 WORK PERFORMANCE

The practice of measuring performance is as old as the existence of mankind (Fitz-Enz & Davison, 2002; Williams, 2002). The meaning of work performance has changed over the last 49 years. Traditionally, work performance was evaluated on the basis of proficiency in which a person carried out the designated tasks, as specified in the job standards (Griffin, Neal & Parker, 2009). Today it is advocated that work performance is viewed as multidimensional in nature (Rothmann & Coetzer, 2003; Spain, 2010). Organisations are aware of the value derived from managing performance in terms of increasing both individual and organisational performance, and a number of case studies have provided a solid support for integrated performance management as the reason for increased performance (Whitford & Coetsee, 2006; Williams, 2002). The discussion for this section covers theories that underpin performance management, perspectives of performance management, the performance management cycles, and performance management in the department under study.

2.4.1 Theories underpinning performance management

2.4.1.1 Goal setting theory

The concept of performance management stems from motivation theories and specifically, from goal setting and expectancy theories (Atkinson & Shaw, 2006). Various studies on goal setting theory advocate that there is a linear relationship between the degree of goal difficulty and performance (Locke & Latham, 1990).

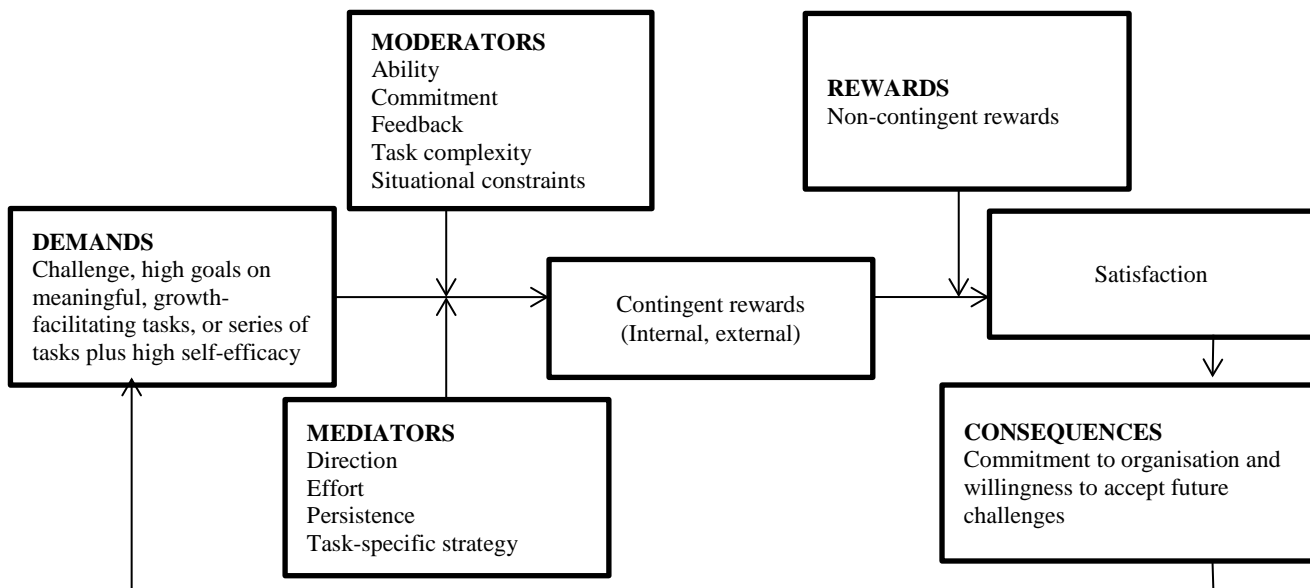


Figure 2.1: Goal Setting Theory Integrated Performance Model (Latham, 2012).

The main thrust of the goal difficulty effect stems from the view that more challenging goals result in more effort and persistence than easy goals do, provided the said goals are accepted (Locke & Latham, 1990; Mitchell, Thomson & George-Falvy, 2000). Figure 2.1 illustrates an integrated performance model based on goal setting theory. According to Locke and Latham (1990), more than 400 laboratory and field studies demonstrated that specific hard to attain goals lead to better performance levels than low, vague goals do; provided that one is committed to the goals and that they are not in conflict with each other.

The theory asserts that facing employees with specific and difficult goals will yield higher performance; specific goals help to clarify the desired performance results and allow individuals to channel their energy towards appropriate targets (Cooper & Locke, 2000). A laboratory study found that when participants are presented with no goals they tend to do

nothing, whilst if presented with “do your best” or a vague goal, they tend to do work at a moderate pace (Locke & Latham, 1990).

In the presence of high commitment the relationship between goal and performance is much stronger than when there is low commitment towards the goal; thus commitment to a goal is viewed as a key factor in enhancing performance (Mitchell et al., 2000). According to Locke & Latham (1990), commitment to higher goals stem from the view that people are receptive to instruction given by an authority figure. However, the following conditions need to exist:

1. the authority figure needs to be accepted to give effect to higher performance;
2. the subordinates must understand the order and believe that it is in line with organisational objectives and their own interests;
3. the subordinates must believe that they are mentally and physically able to execute the order (Locke & Latham, 1990).

Another crucial moderator in the relationship between goal and performance is feedback: the effect of feedback depends on how well it is communicated to and interpreted by the recipient (Locke & Latham, 1990). An additional factor that has been discovered in a number of studies conducted, confirmed that ability is the crucial moderator of goal setting; it was found that when goals are difficult the relationship between goal and performance tends to be stronger for the individuals with high ability than for those with low ability (Mitchell et al., 2000).

Studies furthermore revealed that a person’s confidence tends to have a major influence on how well the task is executed; people with high self-efficacy perform well on tasks compared to those with low self-efficacy (Latham, 2012). It was also found that people who set higher goals had higher self-efficacy on average compared to people with low self-efficacy (Locke & Latham, 1990). A person will endeavour to achieve a task that is seen to be adding value or enriching to him or her; for a set goal to stimulate performance it should be perceived as enriching (Latham, 2012). Studies confirmed that an individual’s perception of set goals determines performance level (Latham, 2012). Mitchell et al. (2000) noted a number of

studies that confirm the role of personality aspects, such as the need for achievement, conscientiousness and goal orientation in goal levels and efficacy and performance.

2.4.1.2 Expectancy Theory

The theory asserts that an individual's motivation to perform well depends on three factors: valence of outcomes – which is the desirability of the rewards attached to a given level of performance; instrumentality – the person's beliefs that the required efforts will lead to valued rewards; and expectancy – the beliefs that certain level of efforts will lead to expected level of performance (Bartol & Durham, 2000).

The expectancy theory focuses mainly on individual “*choice, efforts and persistence*”; it explains individual work related behaviour towards issues such as career choice and performance on the job (Latham, 2012, p. 48). The theory advocates that the person at the work place will increase their efforts if she or he believes that they have the capacity to achieve the task and that the results will be of added value to them in terms of reward (Bartol & Durham, 2000). Both expectancy and goal setting theories set the tone for performance management practitioners or supervisors on how to structure and conduct performance contracts with subordinates in the workplace. Theories provide all stakeholders with understanding of individual work related behaviour at work.

2.4.2 Perspectives of performance management

Performance management is a multi-dimensional domain encompassing different levels and functions within the organisation (Cardy & Leonard, 2011). It is viewed from three perspectives: as a system of managing organisational performance; a system of managing employee performance and a system of integrating the management of the organisation and employee performance (Williams, 2002).

2.4.2.1 Performance management as a system of managing organisational performance

To attain organisational performance, the organisation develops policies, resources, aims and guidelines; management puts together a detailed plan, budget, objectives, targets and standards of performance as well as periodically monitoring and reviewing the performance of all services (Williams, 2002).

2.4.2.2 Performance management as a system of managing employee performance

This perspective involves multiple stages of performance management processes. The initial stage is performance planning, which consists of setting key performance areas and performance targets; the second stage involves monitoring performance and the last one involves performance appraisals, usually occurring twice in a financial year (Williams, 2002).

2.4.2.3 Performance management as a system of integration of organisational and employee performance

This perspective assumes that performance management defines the vision and strategy of the organisation which in turn provides guidelines for individual performance planning; thus, individual performance agreements should reflect the key performance areas outlined in the organisation's strategy (Williams, 2002).

This particular study is interested in the second perspective of performance management as a system of managing employee performance. The process of doing so will be further explained in more detail.

2.4.3 Performance management models

Many scholars and practitioners have contributed a great deal to the field of performance management and the multidimensionality of the subject models has been sufficiently accepted in the literature (Verweire & Van den Berghe, 2004).

2.4.3.1 Balanced scoreboard

In the early 1990s, Robert Kaplan and David Norton developed the balanced score board in an attempt to counter the inefficiency of the traditional financial model, as depicted in Figure 2.2, of measurement which did not include measurement of intangible and intellectual assets such as high quality products or services (Kaplan & Norton, 1996; 2001).

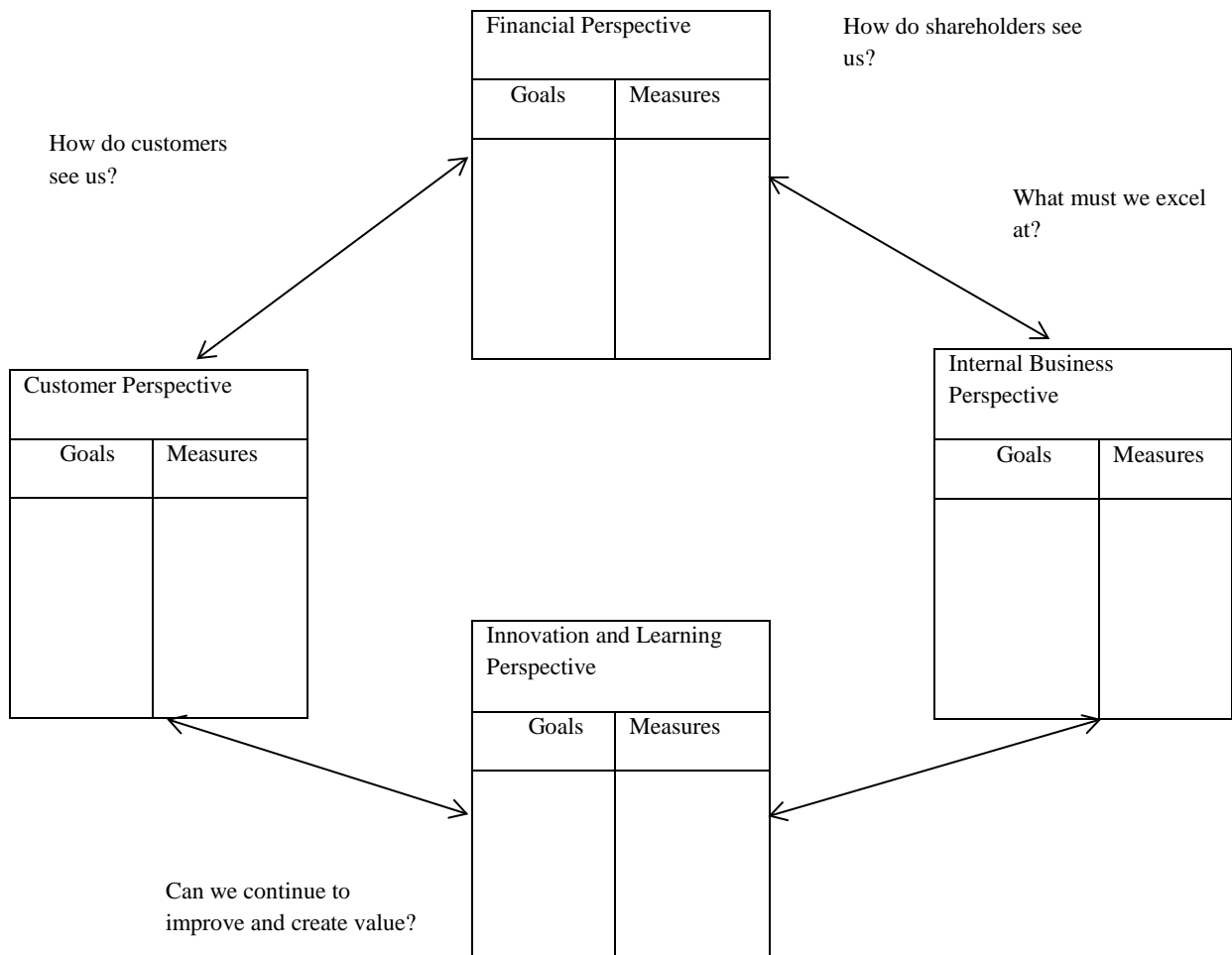


Figure 2.2: Norton & Kaplan (2001).

The traditional measure of financial performance focuses on increasing the market and creating more value for shareholders. Therefore results measurements have focussed on sales growth, cash flow and cost reduction measures (Bruggeman, 2004). Development of the scoreboard did not discard the financial measurement, but it complemented the model by adding customers, internal business processes as well as learning and growth as part of performance measurement (Kaplan & Norton, 1996; 2001).

Figure 2.2 reflects the way in which Kaplan and Norton (1996) configured the balanced scorecard model. The inclusion of the customer in the performance measurement mix allows the organisation to identify the former and the market segment in which they intend to compete and enable the organisation to identify value propositions to deliver to the client through measuring customer satisfaction, loyalty, relation, acquisition and profitability (Kaplan & Norton, 1996; 2001).

The notion of measuring internal business processes is to provide an organisation with an opportunity to develop mechanisms aimed at delivering customers' and shareholders' objectives (Kaplan & Norton, 1996). It focusses mainly on measuring processes such as innovation, operation and post sales services (Bruggeman, 2004; Kaplan & Norton, 1996; 2001). The last aspect of the balanced scoreboard is the learning and growth perspective, which concentrates on providing required infrastructure to employees, such as employee capabilities, information system capabilities, motivation, empowerment and alignment (Kaplan & Norton, 2001).

2.4.3.2 System model of performance management

According to Spangenberg (1994), this model views performance management as a system in relationship to other elements and aligned to other systems within the organisation. The model takes into account those organisational issues which can build or break the organisation, such as inputs, processes and outputs (Spangenberg, 1994). Figure 2.3 below reflects the interaction of inputs, process and outputs as illustrated by Spangenberg (1994).

1. Inputs

Inputs refers to resources, human capital, raw materials, energy, facilities, machinery and the like, needed for delivery of products or services (Williams, 2002). The input of leadership is crucial for the success of performance management implementation as its members can serve as a role model by fostering commitment and accountability to the programme (Spangenberg, 1994). Organisational culture is also considered crucial in the implementation of performance management and the chosen model should be compatible or aligned to the culture of the organisation so as to ensure success of the process (Spangenberg, 1994).

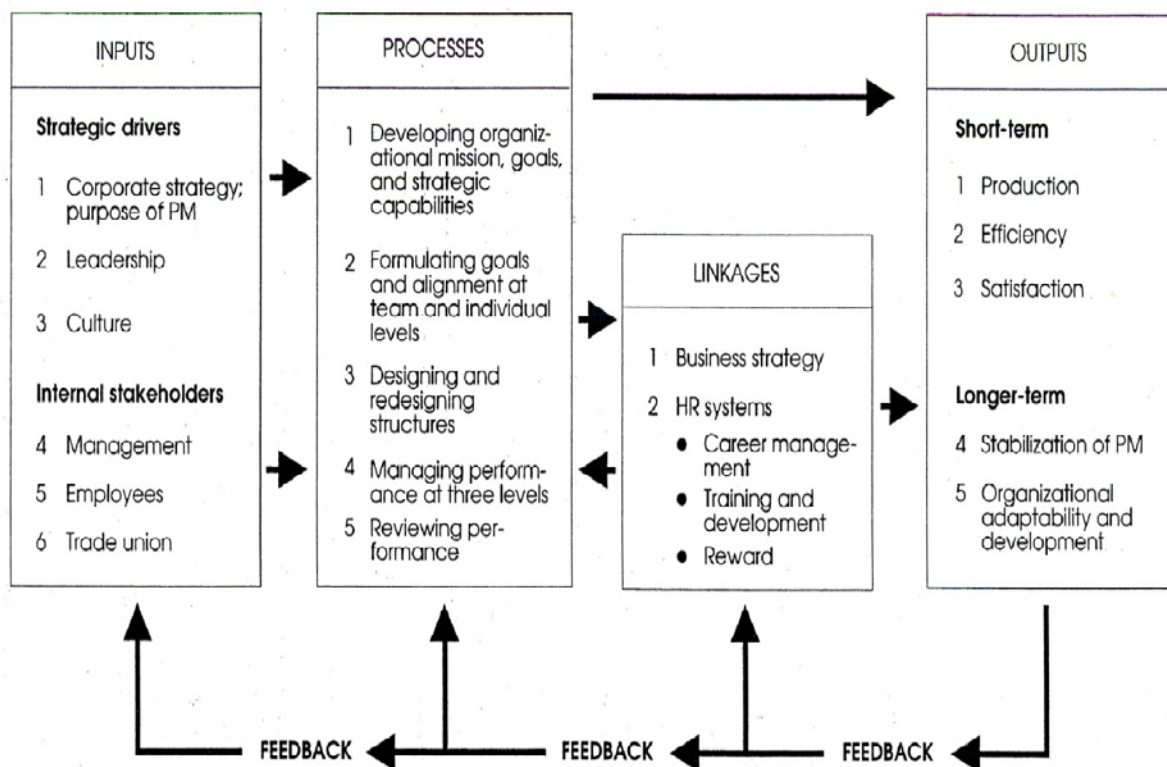


Figure 2.3: System model of performance management (Spangenberg 1994).

For successful implementation of performance management, managers should understand the practices, principles and philosophy of performance management (Spangenberg, 1994). Employees are required to have a certain degree of sophistication as the implementation of performance management requires conceptual ability, certain levels of cognitive ability and a positive attitude towards the system (Spangenberg, 1994).

2. Process

The initial stage of the process involves the development of the organisation's mission, goals and strategic capabilities, values, identification of critical success factors as well as performance goals and measures for the organisation (Spangenberg, 1994). Based on the completion of the initial stage, team and individual goals are formulated to ensure organisational alignment (Spangenberg, 1994). Since the inception of goal setting theory, it has generally been accepted that goal setting is the cornerstone of performance management (Spangenberg, 1994). The model recommends the designing or redesigning of the structure to

ensure that the organisational structures are aligned to strategy to allow the achievement of goals and objectives (Spangenberg, 1994). The most fundamental stage of the process is the management of performance, which involves managing performance at organisational and employee levels where goals are set, measured and feedback is given (Spangenberg, 1994).

At employee level, the management of performance involves management of human performance systems such as input, output, consequences, feedback and knowledge, skills and individual capacity of job performance (Spangenberg, 1994). The model advocates the understanding of an employee's work motivation process. This requires insight into employee needs, values and a motivation such as intentions, self-efficacy and expectancy, rewards and satisfaction (Spangenberg, 1994).

The last aspect of managing performance is the role of leadership in enhancing performance through vision that enables people to work towards a common long term goal by providing specific short-term goals in terms of organisational vision; being a role model for important behaviour, listening to the workforce and measuring performance (Spangenberg, 1994). This is the critical part of the process; many managers tend to neglect or shy away from reviewing their subordinates and this is often undertaken as window dressing. Prior to performance review discussions both manager and employee prepare beforehand based on agreed objectives; during the discussion the employee is given an opportunity to talk and do a self-review and the manager should provide suitable feedback, create a positive atmosphere and praise good performance (Armstrong, 2012).

3. Outputs

The model classified performance management outcomes into three criteria namely, "*short-term and medium term individual and organisational effectiveness*" (Spangenberg, 1994, p. 46). The short term output may include services and products, may be measured by factors such as profit, sales, market share, number of patients treated, clients served, students graduated and so forth (Spangenberg, 1994). The second short term criterion is efficiency, a ratio of output to inputs which measures, amongst other things, rate of return on capital or assets, units cost, wastage, downtime and cost per patients/client etcetera (Spangenberg,

1994). The last short term criterion is satisfaction, which measures employee attitudes, turnover, absenteeism, tardiness and grievances (Spangenberg, 1994).

The medium term criteria deal with the measure of an organisation's ability to adapt to both internal and external changes. The achievement of the short-term criteria could serve as a measure of the organisation's adaptability (Spangenberg, 1994). The last output to be measured is the effectiveness of production and people, which can be strengthened by expanding production capacity and training and development, respectively (Spangenberg, 1994).

2.4.3.3 The "new" performance paradigm

This model advocates that each part of the organisation should understand, manage and improve those activities of the organisation which lead to the achievement of company aims, goals and objectives (Walters, 1995). The model, as illustrated in Figure 2.4, reflects performance as a pyramid where objectives and measures are linked to the organisation's corporate vision, values and objectives as well as to routine daily operational work (Walters, 1995). The right hand side of the pyramid is occupied by traditional concerns and measures, such as wastage, productivity and financial issues, which are crucial for the survival of the organisation (Walters, 1995). The pyramid model takes into account the value added by market focus other than just focusing on return on investment as a measure of performance (Walters, 1995).

At the summit of the pyramid is the organisation's goals and values which communicate its spirit, life and soul, defining how the organisation will compete either by price, volume of products or range and quality of its services (Walters, 1995).

The second layer of the pyramid is the level of the business unit which defines success in terms of two important criteria, short-term and long-term targets, the former measured by cash flow and profitability and the latter by growth and market position (Walters, 1995).

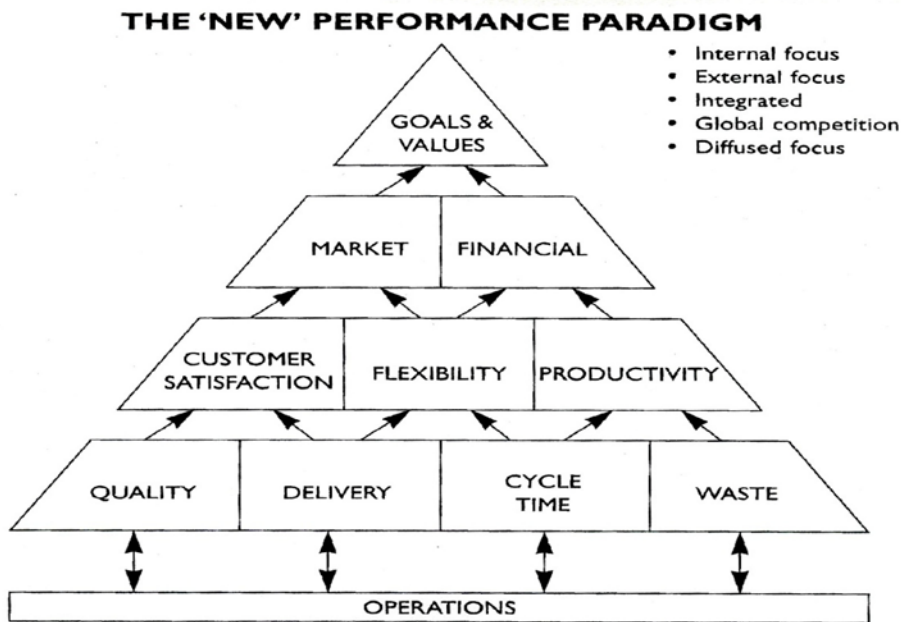


Figure 2.4: The new performance paradigm (Walters, 1995)

The third level of the model contains day-to-day operational measures; it comprises all internal activities such as “*internal functions, activities, policies, procedures and supporting systems needed to develop, produce and provide specific goods and services*” (Walters, 1995, p. 10). Level four of the model includes three performance indicators, such as: customer satisfaction, which indicates how well the organisation is doing in relation to attaining customer expectations through product and service delivery; flexibility, which indicates the organisation’s ability to response to new customer demand as well as productivity, which indicates how well the organisation is able to effectively use its resources to achieve its goal (Walters, 1995).

The bottom of the pyramid contains measures that managers and employees can use to monitor or control quality delivery, cycle time and wastage, all of which could result in customer satisfaction, flexibility of the organisation to cope with changes and higher productivity (Walters, 1995).

2.4.3.4 Sink and Tuttle model

The model is used to spearhead the transition from a single measurement of cost is the Sink and Tuttle performance model as portrayed in Figure 2.5 below. It views performance as a

complex interrelationship of different performance criteria: effectiveness; efficiency; quality; productivity, quality of work life, innovation and profitability (Tangen, 2004).

- Effectiveness

This criterion involves the person doing the right thing required at the expected time and quality; employees will be deemed to have worked effectively if the expected goals are achieved within the reasonable period and the work quality is not compromised (Tangen, 2004).

- Efficiency

A work performance that is deemed to be efficient exists when the results are of a quality nature and reasonable resources were utilised to achieve the end product (Tangen, 2004).

- Productivity

This is viewed as the ratio of output to input and denotes that goals are achieved through a means which makes economic sense.

- Quality of work life

The model does not ignore the well-being of the workforce; employees' quality of life is measured as they are viewed as human capital.

- Innovation

The criteria for innovation are critical for an organisation to compete effectively, as products or services that stand out will win the market share war.

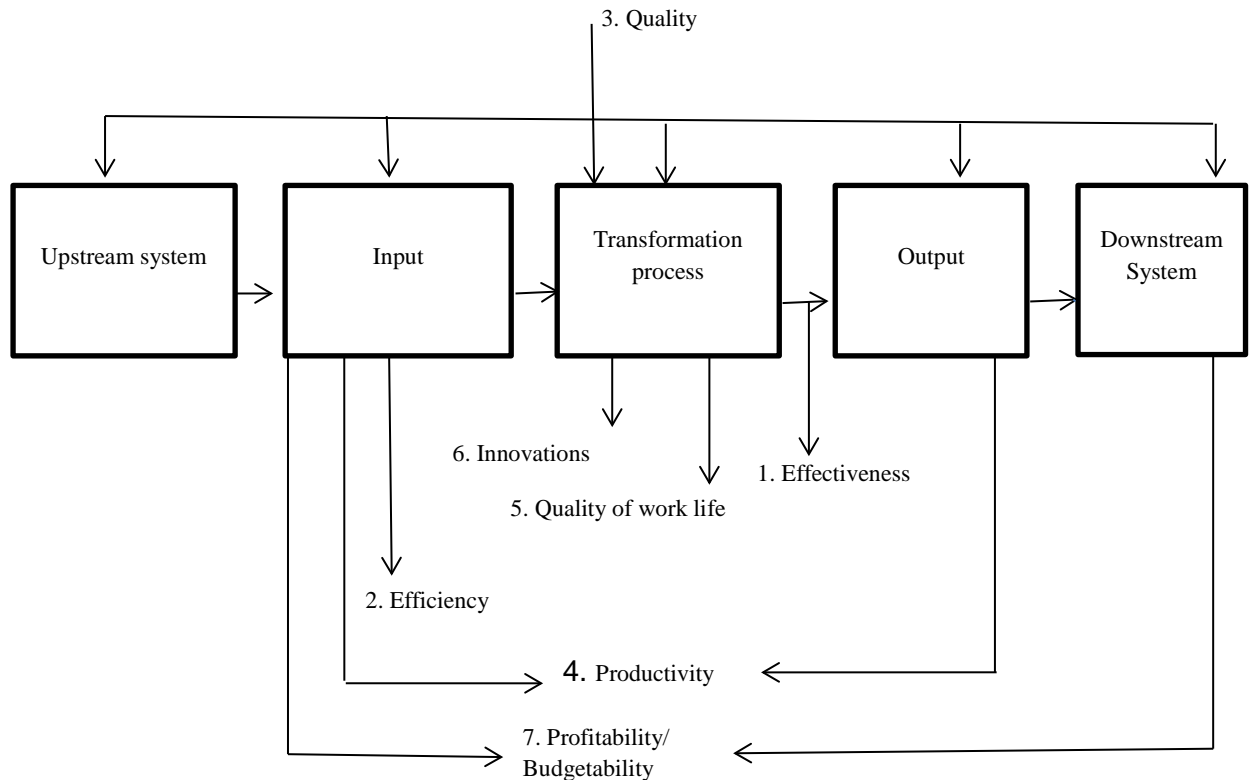


Figure 2.5: Sink and Tuttle model (Tangen, 2004).

- Profitability

Many organisations exist to make profits for their own shareholders; if the organisation fails to make a profit it ceases to exist.

This model is criticised for its lack of flexibility which characterises our modern economy. It is also silent about customer perspectives (Tangen, 2004).

2.4.3.5 Medori and Steeple's framework

Medori and Steeple's (2000) performance measurement model (Figure 2.6 below) proposed an integrated framework structure that consisted of a six-stage plan for auditing:

Stage 1: Company success factors: the framework begins with the outlining of organisational strategy and its success factor, the intention being to create compatibility between organisational strategy and performance management.

Stage 2: Performance measurement grid: this stage involves matching competitive priorities to strategic requirements

Stage 3: Selection of measures: this is accomplished using the existing checklist which contains 105 measures; the checklist is debated for the selection of the most appropriate measure (Medori & Steeple, 2000; Tangen, 2004).

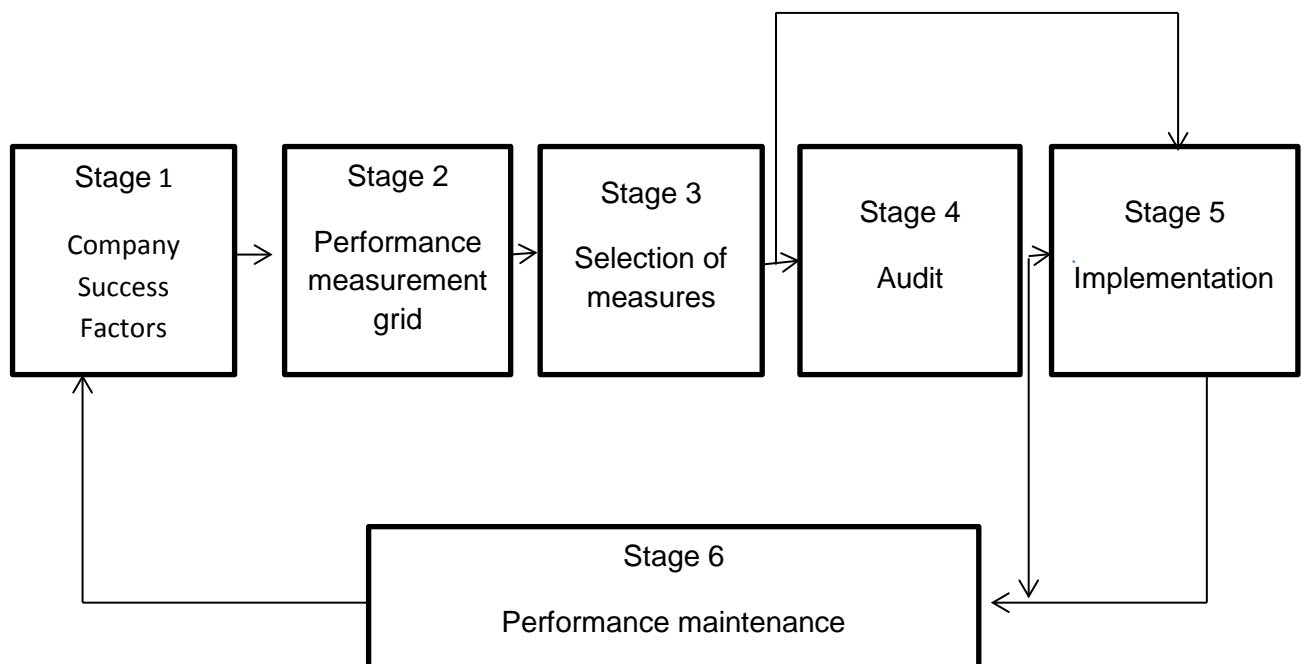


Figure 2.6: Medori and Steeple's framework (Medori & Steeple, 2000).

Stage 4: Audit: the stage involves the review of the organisation's existing performance measurement system; both existing and new measures are compared in the following manner:

1. The old measures that remain congruent with new ones continue to be utilised but if not they are discarded
2. However, new measures that are not congruent with the selected measures are also retained and viewed as measures of gaps – these gaps are regarded as important for future success (Medori & Steeple, 2000).

Stage 5: Implementation of measures: This is the crucial stage of a performance management system as all measures selected are implemented.

Stage 6: Periodic maintenance: this stage involves reviewing of performance measurement to ensure progress and to determine whether measurement remains relevant.

2.4.3.6 The performance prism

This conceptual framework proposed that the performance management system should be organised around five different perspectives which are linked together: stakeholder satisfaction, strategies, processes, capabilities and stakeholder contribution as illustrated in Figure 2.7 below.



Figure 2.7: The performance Prism model (Tangen, 2000)

Stakeholder satisfaction: the first stage identifies organisation's stakeholders and their needs and wants.

Strategies: this stage involves identification of suitable strategies to ensure that the organisation is able to satisfy stakeholder needs.

Process: for the strategy to be delivered, the organisation must put certain processes in place.

Capabilities: organisation then determines capabilities (people, technology, infrastructure, etc.) necessary to operate the process for implementing strategies.

Stakeholder contributions: the last stage involves determining the involvement of the stakeholder in the maintenance and development of capabilities.

Unlike others, this model does not suggest that performance measures should be driven by the organisational strategy; rather, it advocates that the needs and wants of the stakeholder should determine the strategy (Tangen, 2004).

2.4.4 Performance management cycle

There is a diversity of approach when it comes to the performance management cycle (Armstrong, 2011; Williams, 2002). The organisation under study use performance cycle similar the one outlined below by (Amstrong, 2012) in figure 2.8.

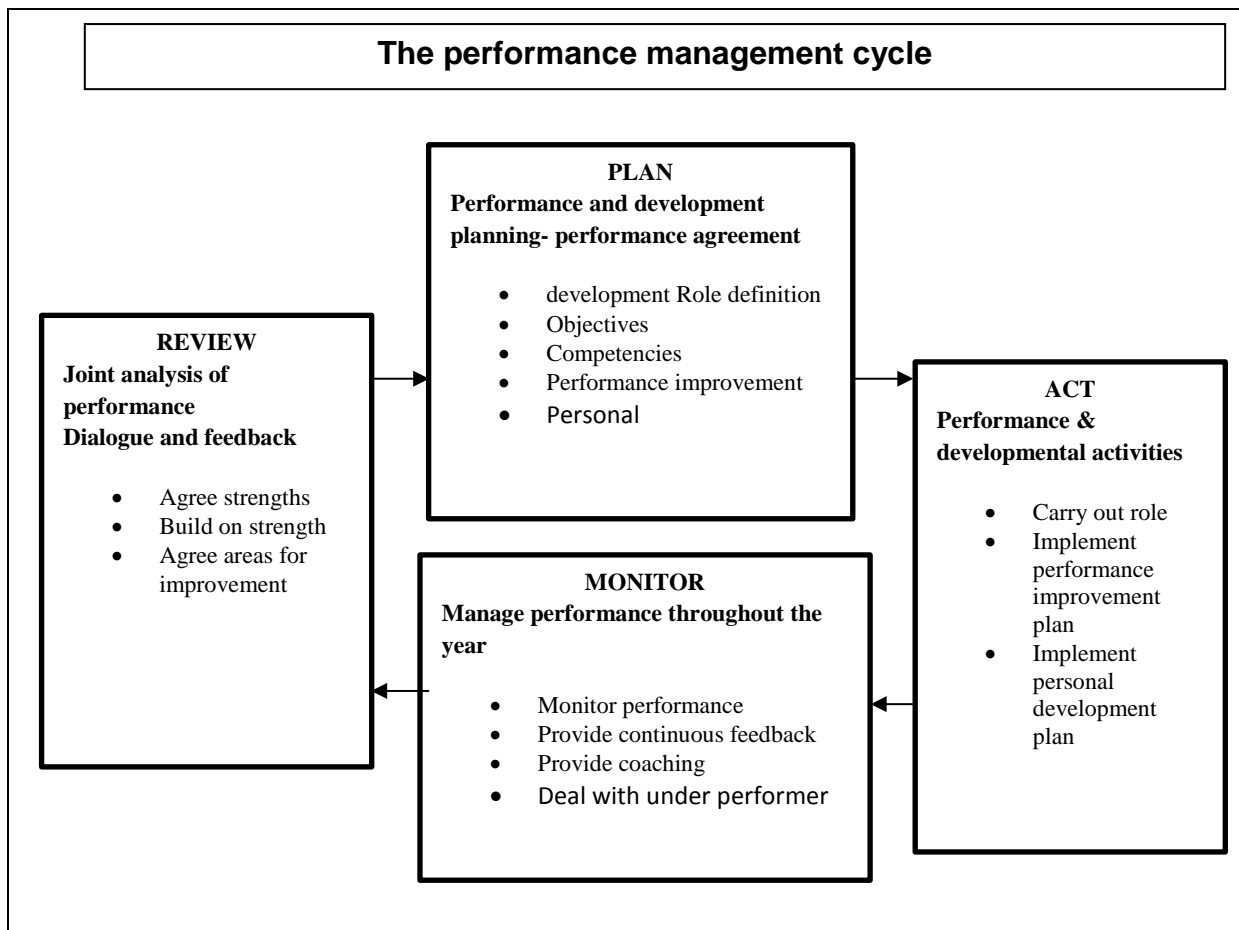


Figure 2.8: The performance management cycle (Armstrong, 2012).

2.4.4.1 Performance and development planning- performance agreement

This is the foundation of development, assessment and feedback; it involves the defining of the employee’s role profile, setting objectives/targets, identification of competencies,

expected performance improvement and personal development plan (Armstrong, 2011; 2012; Williams, 2002). This phase is concerned with what employees need to achieve objectives, raise standards and improve performance; and lastly the employee and manager together formulate the employee development plan (Armstrong, 2011; 2012).

2.4.4.2 Performance and development activities

In this cycle employees are expected to execute their duties with the aim of achieving objectives stipulated in the performance agreement and adapt to the new challenges as they present themselves (Armstrong, 2012).

2.4.4.3 Manage performance throughout the year

Managing performance is a continuous process that happens throughout the financial year. A good performance management practice is to constantly monitor performance, give direction and measure progress outside of the formal cycle (Armstrong, 2011; 2012).

2.4.4.4 Joint analysis of performance

Although performance management process is a collaborative approach, managers still have an upper hand in the ultimate decision, particularly when it comes to performance rating (Armstrong, 2012). Organisations normally choose to review at intervals between quarterly and biannually; this is a formal process which has implications for rewards and benefits, depending on what the organisation chooses (Armstrong, 2011; 2012).

2.4.5 Performance management system of the department under study

The organisation under study uses the IPMS model. Its purpose is to provide a framework in which members and teams' work-related activities will be aligned with the objectives of the organisation, which provides members with opportunities to develop/enhance their performance. The performance cycle of the department is aligned to the financial year, extending from 01 April to 31 March of the following calendar year. At the beginning of April the performance agreement is concluded; October is the first formal review of the performance agreement which is followed by moderation in November, after which in March

the final performance review takes place followed by moderation. The results of the first and second appraisals are combined to determine rewards and development needs.

2.5 CHAPTER SUMMARY

Chapter 2 explored two independent variables (learning potential and personality traits) and the dependent variable (work performance).

CHAPTER 3: RESEARCH ARTICLE

The predictive validity of learning potential and personality for work performance in a public sector department

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ABSTRACT

Orientation: It is incumbent on an organisation to ensure that the psychological assessment instruments used for the purpose of employment are reliable, valid and fair.

Research purpose: The purpose of the study was to determine the predictive validity of the Ability, Processing of Information and Learning Potential Short Version (APIL SV) and the Occupational Personality Questionnaire –ipsative (OPQ 32i). Both instruments are designed to measure learning potential and personality traits respectively.

Motivation for the study: There is a need for an organisation to have scientific evidence on the psychological instruments used for the purpose of selection of its personnel. It is also important for the organisation to justify the expenditure on the procurement and use of such psychological tests.

Research design, approach and method: The study utilised a quantitative cross-sectional survey design to determine the predictive relationship between learning potential, personality traits and work performance. The study used convenience sampling of 104 personnel employed in a public sector department. The data for psychological assessment was gathered during the employment process while data for work performance was gathered during the performance appraisal conducted by the supervisors.

Main findings: The results showed no significant relationship between dimensions of both APIL SV; and OPQ 32i and work performance rating.

Practical/managerial implications: Further research is needed on the APIL SV with properly moderated and validated criterion scores. For the OPQ 32i, the department should consider discontinuing the use of this instrument because SHL have replaced it with the OPQ 32r.

Contribution/added value: Research on the predictive validity of the said instruments for psychological assessment continues to be contentious. The results add scientific evidence on the predictive validity of these instruments and valuable information on the use of criterion scores.

KEY WORDS:

Psychological assessment, dynamic assessment, learning potential, personality, work performance, predictive validity.

INTRODUCTION

Background to the study

The economic revolution brought about by the introduction of technology, globalisation, information and communication, unstable global financial environment, limited talented workforce and government policies of employment equity has provided a daunting challenge to managers as they strive to remain competitive (Verweire & Van den Berghe, 2004; Williams, 2002). Previously, organisations gained their competitiveness through economies of scale, development of exclusive cutting edge technological systems or markets that were shielded from competition (Thomas & Scroggins, 2006). However, in global economy, sustainable competitiveness is gained through proper management of human capital (Pfeffer, 1994). Consequent to this, the emphasis has been placed on those responsible for the selection process to ensure that they accurately identify and acquire unique personnel that will add value and increase competitiveness (De Goede & Theron, 2010; Huselid, Jackson & Schuler 1997; Thomas & Scroggins, 2006).

Organisations use different instruments or tools for purposes of employee selection, such as interviews, psychological tests, bio data, references and performance data (Nzama, De Beer & Visser, 2008). Importantly, the selection process should not discriminate against anyone and should be fair, reliable and valid (Lopes, Roodt & Mauer, 2001; Nzama et al., 2008). Psychological assessment is not a new phenomenon in the South African labour market; however, the transition from apartheid to an inclusive democratic government in 1994 led to a new era regarding how the assessments were used. As Nzama et al. (2008) noted, the use of psychological assessment in South Africa for the purpose of employment has a mixed history whereby some accepted the use of psychological assessments whilst others were sceptical.

The emergence of a democratic government in South Africa saw the introduction of the Labour Relations Act of (1995) (LRA) and Employment Equity Act of (1998) (EEA) (Lopes et al., 2001). The former compelled organisations to have specific objective criteria which measure applicants for a position while the latter prohibited psychological assessments unless they have been shown to be valid, reliable, applied fairly and not biased against any employee or group of employees. The amendment to the EEA that became effective from 1st

August 2014 proposed that all assessment tools used as selection instruments should be approved by the Health Professions Council of South Africa (HPCSA) (Employment Equity Act of 2013). This means that all organisations that make use of psychometric tests must ensure that their tests are approved by HPCSA.

The introduction of the LRA led to a new regime in terms of recruitment and selection processes in the South Africa labour market and placed psychological assessment in the spotlight, particularly when it relates to cultural appropriateness and the application thereof (Nzama et al., 2008; Van de Vijver & Rothmann, 2004). The perpetual challenges for those responsible for recruitment concern the method of selecting the best candidates for a particular job (Urbina, 2004). Psychological tests are credited with enhancing employee selection, placement and management of human capital in the organisation (Van der Merwe, 2002). The most crucial aspect of human resources in the application of psychological tests for the purpose of selection is determining the validity of the instrument (Lopes et al., 2001, Scroggins, Thomas & Morris, 2008).

In the current study, the criterion-related validity of the Ability Processing of Information and Learning Battery Short Version (APIL SV) and Occupational Personality Questionnaire (OPQ 32i) that are utilised in this public sector department was investigated. APIL SV was designed to measure *“an individual’s core or fundamental cognitive capabilities and potentialities, it does not measure specific skills, which are strongly affected by past opportunities”* (Taylor, 2012, p.1). The OPQ 32i was designed to provide structure for understanding the role of personality in the workplace and its impact on job performance (SHL, 2009). Criterion-related validity can be established through the relationship between the test (predictor) scores and criterion measures, such as job performance (Thomas & Scroggins, 2006).

In this study, the concern is that the public sector department has been using psychological assessments for more than a decade. Since the acquisition of current assessment instruments, however, no validation study had been conducted on the department data to provide support for the continuous utilisation of these instruments. This study set out to investigate the predictive validity of APIL SV and OPQ 32i as assessment tools used for the employment selection process.

Problem statement

The issue of predictive validity is the most crucial aspect of Human Resources testing; the USA Equal Employment Opportunity Commission (EEOC) 1978, under the Uniform Guideline on Employee Selection Procedures suggests that organisation/companies may conduct their own validation studies or rely on those available in the commercial market (Scroggins et al., 2008; Thomas & Scroggins, 2006). Similar to USA labour legislation, there is a serious need in South Africa to establish the degree to which our assessment tools used in companies and organisations comply with the requirements stipulated in the EEA (Lopes et al., 2001).

It is incumbent on the organisation to ensure that its selection processes fall within the ambit of the required regulations and that the selected individuals are able to perform the required tasks and are productive to the organisation (Nzama et al., 2008). This study is therefore crucial for the department to understand the value of psychological assessment as part of the selection process. The study is also important because the department invests millions of rand in the personnel, infrastructure and instruments for assessment. There are managers in this public department who believe that this process is a waste of state resources and adds no value to the department; hence no one has ever conducted a validation study to ensure that the said instruments meet the assessment standards and predict work performance. Thomas and Scroggins (2006) noted that psychological testing is likely to be more important in future and that managers must understand its potentials and shortcomings in the selection process.

To address the above issues, this research was designed to answer the following literature and empirical questions:

1. Is learning potential as measured by APIL SV able to predict work performance?
2. Is personality as measured by OPQ 32i able to predict work performance?

Trends from the literature review

Learning Potential

The first independent (predictor) variable in this study falls within the learning potential assessment, which is designed to assess learning ability rather than crystallised intelligence.

Cognitive psychologists often distinguish between crystallised and fluid intelligence. While the latter refers to cognitive processes which tend to allow individuals to manipulate abstract symbols such as solving mathematic problems or the ability to reason, the former refers to knowledge gathered over an extended period, such as vocabulary (Anderson, 1995; Sternberg, 1999). The current study embraces intelligence “as the ability to learn” which was defined by Thorndike as early as 1924; his approach did not assume that everyone has a similar learning history or equal opportunity (Guthke, 1993).

Learning potential or dynamic assessment emerged through the quest to address the inadequacy of conventional intelligence tests which did not test the potential to learn but rather static measures of individual abilities, which often did not lead to prediction of the ability to learn (Schneider-Lidz, 1987). The learning or dynamic tests seem to be acceptable in the context of multi-cultural assessments as the approach places emphasis on the capacity to adapt to novel task performance as a result of exposure, instruction or hints (Taylor, 1994). Tests based on this approach provide information on the learning process and diagnostic nature necessary in the design of remedial instruction (Taylor, 1994).

Psychologists have devoted a considerable amount of energy and effort to understanding the structure and function of human cognition, in particular, regarding how individuals differ in their cognitive abilities. The first learning potential test was developed by Alfred Binet and Theodore Simon in 1903 in response to a request by the French Minister of Public Instruction to develop a test that would distinguish mentally defective from normal children (De Beer, 2006). The motivation was to ensure that every child was tested before being placed and that cognitively challenged children were able to benefit from special education (De Beer, 2006; Sternberg & Grigorenko, 2002).

Binet and Simon’s approach to intelligence and its measurement differed from that of Galton, who considered time in test taking; as opposed to their main concern which was good judgement (Sternberg & Grigorenko, 2002). Though Binet and Simon are credited with the first learning potential test, a major theoretical approach was developed by a Russian psychologist, Vygotsky, who had, as his underlying assumption, argued that individual acquisition of cognitive competence is the result of social interaction (Vygotsky, 1978). Vygotsky (1978) acknowledged that individuals differ in their capacity to benefit from

mediated learning experiences. He arrived at a concept which he termed “Zone of Proximal Development” (ZPD) to demonstrate gaps between tasks completed independently and tasks completed with assistance or mediation (Taylor, 1994; Vygotsky, 1978).

Dynamic assessment is a measurement method which includes instructional intervention during the testing process; it is viewed as a mechanism to alleviate the effects of environmental variables which influence performance and distort the measurement of latent capacity (Sternberg & Grigorenko, 2002). According to Minick (1987), all forms of dynamic assessment have been motivated by the conviction that a static intelligence approach to testing of learning potential failed to provide information that could be useful to facilitate the psychological development of children from disadvantaged backgrounds. The success of dynamic assessment stems from its promise to provide measures that are culturally fair, comparable in a multicultural society, suitable for people from previously disadvantaged educational backgrounds, measuring just learning potential (De Beer, 2006).

The underlying assumption of dynamic assessment is that the child learns through interaction with adults and peers (Vygotsky, 1978). It assumes that cognitive activities are learned and performed within a cultural context, which means that learning, thinking and problem solving which are instances of higher mental activities are of social origin (Minick, 1987). Learning ability or learning potential denotes the same meaning; its approach is based on exposing the candidate to training, assessing their learning potential afterwards. Changes noted as a result of training intervention in terms of quality or quantity, are indicative of learning potential (Guthke, 1993). In the study of development in learning potential, Guthke (1993) indicated that ZPD in its original theoretical meaning was designed as a model of the relationship between education and development processes but was later developed into diagnostic principles.

Sternberg and Grigorenko (2002) noted that traditionally, intelligence is viewed as the stable attributes of a person that are influenced by the interaction of heredity and environment. Contrary to this notion, they viewed abilities as a form of developing expertise throughout the person’s life and therefore, that any measure to develop abilities is always incomplete (Sternberg & Grigorenko, 2002). According to De Beer (2006), the test-train-retest approach is a dynamic assessment which stems from Vygotsky’s theory of the ZPD, wherein the main

focus is not on the current level of ability, but the potential level that the individual could reach with an appropriate level of training opportunities provided.

De Beer (2006) noted that several researchers have made significant contributions towards the development of instruments, measures of learning potential and providing information on the validity of dynamic testing measures. The utility and predictive validity of cognitive ability testing have received an overwhelming acceptance within the field of human resources for purposes of selection (Hunter & Schmidt, 2006). Psychological testing in a multicultural and multilingual society such as South Africa is complicated (Laher & Cockcroft, 2013). Since 1980, South Africa has seen remarkable increases in the use of research based on learning potential measurements (Laher & Cockcroft, 2013).

A number of empirical research projects conducted in South Africa on learning potential measurement with academic performance as the criterion, provided evidence which suggests that learning potential instruments have predictive validity (Gilmore, 2008; Schoeman, De Beer & Visser, 2008; Strachan, 2008). Studies also confirmed that APIL B, as an instrument for measuring learning potential, did not indicate bias towards any ethnic group (Lopes et al., 2001; Makgoatha, 2006; Taylor, 1997). In the study by De Goede and Theron (2010) certain dimensions of APIL B were confirmed as having predictive validity for learning performance. It was also confirmed that APIL B can predict work performance in a financial institution (Lopes et al., 2001).

Personality traits

The second independent (predictor) variable of this study was personality. According to Ewin (2003), the most suitable approach in defining personality is by utilising characteristics and qualities within an individual; thus, he argued for a definition that is inclusive of everything about the person e.g. mental, emotional, social and physical aspects. Personality is defined as the dynamic organisation within the individual's psychological and physical systems which influences characteristics, behaviour and thoughts (Maddi & Costa, 2009). While according to Schultz and Schultz (2005), personality can be defined as “*unique, relatively enduring internal and external aspects of a person's character that influence behaviour in different situations*” (p. 10). The above definitions accommodate the internal and external aspects of a

person in determining unique and enduring characteristics which shape them. The definitions embrace the views of those who are proponents of the roles of conscious and unconscious, stimuli and environment, in determining individual personality.

The utility and predictive validity of cognitive ability testing has been broadly accepted for the purpose of employment selection, but a similar view cannot be expressed with regard to personality testing (Rothstein & Goffin, 2006; Hunter & Schmidt, 2006). Though it was ascertained that personality testing could enhance the validity and utility for selection, research was delayed due to lack of shared definitions of personality (Hunter & Schmidt, 2006).

Before the 1980s, personality was not regarded as having a link to work performance in the same way cognitive ability was valued (Coetzee, 2003). It is acknowledged that the development of the Five Factor Model of personality led to an intensification of research examining the link between personality traits and work performance (Barrick & Mount, 1991; Coetzee, 2003). Personality assessment is deemed to be legally and ethically sound as a selection tool that may assist an organisation to determine whether an applicant can perform the job or will enjoy it (Coetzee, 2003; Hunter & Schmidt, 2006).

The study by Shackleton and Newell (1991) revealed that there is a strong belief amongst certain practitioners about the utility of personality in the selection of employees. The study confirms that 37% of UK companies used personality tests for management selection in 1989 (Shackleton & Newell, 1991). However, despite the strong belief in this approach by some practitioners, studies found that some prospective job applicants who were asked about their perception of fairness in relation to the use of personality measures for selection purposes viewed these as unfair compared to other selection methods (Steiner & Gilliland, 1996; Visser & De Jong, 2001; Visser & Du Toit, 2004).

Currently, traits theory shaped the study of personality. Traits focus on the enduring characteristics of a person; the theorists of this approach advocate that traits predict certain behaviours (Crowne, 2007). According to McCrae and Costa (2003), personality traits focus on the structural differences and similarities among people; thus researchers have developed a universal taxonomy or framework with which to compare individuals and identify

individuality. The Cattellian project championed by Raymond B. Cattell is regarded as the foundation of discussion regarding primary traits and was intended to explain people's differences through psychometric measurement of ability, motivation, personality and mood (Matthews, Deary & Whiteman, 2003). The project collected a massive amount of data eventuating in the development of twenty three fundamental primary factors, which eventually formed part of the Sixteen Personality Factors Questionnaire (16PF) (Matthews et al., 2003).

In the meta-analytic study of research conducted between 1952 and 1963 it was noted that "*it cannot be said that any of the conventional personality measures have demonstrated really general usefulness as selection tools in employment practice*" (Guion & Gottier, 1963, p.140). It was also said that the problems pertaining to personality testing create doubt for using them in employment decisions (Guion, 1965). Morgeson, Campion, Dipboye, Hollenbeck, Murphy and Schmidt (2007) share similar sentiments, arguing that since personality tests only account for 5% of job successes, this seems to justify Guion's (1965) viewpoint.

It is noted that the relationship between personality traits and job performance may not necessarily be linear as other research had indicated (Le, Robbins, Holland, Oh, Ilies & Westrick, 2011; Ones, Viwesvaran, Dilchert & Judge, 2007). This view supports Murphy's (2006) argument; he contended that some personality traits could form a curvilinear relationship with job performance. As one result of such a relationship, it is suggested that practitioners should not select candidates in terms of a top down approach, based on personality test results, but rather have a cut-off point due to the fact that at certain points personality is not constantly related to performance (Le et al., 2011).

Prior to the 1990s, many researchers had no confidence in personality research; however, the search for different instruments to minimise the impact of cognitive ability testing increased the momentum of the development of personality instruments (Hunter & Schmidt, 2006). The emergence of the big five personality factors is credited with the renewed interest in the studies of personality measurements (Rothstein & Goffin, 2006; Scroggins, Thomas & Morris, 2009). The findings of meta-analytic researches established that the upward surge in the validity estimates of personality measurement resulted in the growth of personality

assessments in employment selection (Rothstein & Goffin, 2006; Scroggins, Thomas & Morris, 2009).

A meta-analytic study conducted between the FFM dimensions and work performance found modest correlations on certain dimensions, which range from .04 to .22 (Schmidt & Hunter, 1991). The notion that personality measurement should be specific to a particular set of jobs was dismissed by Hunter and Schmidt (2006). They argued that the correlations between ability tests and job performance do not differ, irrespective of the job. Another influential meta-analytic study found an increased validity on FFM and work performance; greater than previously recorded (Tett, Jackson & Rothstein, 1991). Beside the early doubt concerning the use of personality tests as a selection tool, the study of Shackleton and Newell (1991) revealed that there is a strong belief amongst practitioners regarding the utility of personality in the selecting of employees. It is acknowledged that the use of personality measurement for the purpose of employment selection has increased drastically in South Africa, evident due to the number of research projects conducted (Blignaut, 2011; Davis, 2013; Forbes, 2006; Rothmann & Coetzer, 2003; Van Der Linde, 2005; Visser & Viviers, 2010).

In a study of the relationship between personality and job performance, many of these studies have found low to moderate correlations between personality measurements and work performance (Blignaut, 2011; Davis, 2013; Rothmann & Coetzer, 2003; Van Der Linde, 2005; Visser & Viviers, 2010). Findings from two different studies conducted by Forbes (2006) and Nobre (2005) using OPQ 32i in a financial institution indicated that the instrument is not a valid predictor of work performance and theft respectively.

Work performance

Performance management only featured prominently as a concept in text books and journals after the late 1980s, during the period when the concept of performance management was coined; however, the practice of measuring performance is as old as the existence of humankind (Fitz-Ens & Davison, 2002; Williams, 2002). The meaning of work performance has changed over the last 49 years, as traditionally, work performance used to be evaluated on the basis of the proficiency with which a person carried out designated tasks as specified in the job standards (Griffin, Neal & Parker, 2009). Today it is advocated that work

performance should be viewed as multidimensional in nature (Rothmann & Coetzer, 2003; Spain, 2010). Organisations are aware of the value derived from managing performance in terms of increasing both individual and organisational performance, and a number of case studies have provided a solid support for integrated performance management as the reason for increased performance (Whitford & Coetsee, 2006; Williams, 2002).

The department in the current study uses an integrated performance management system; however, supervisors have the final say in the allocation of the performance rating. The supervisory rating may be affected by bias such as central tendency and leniency (Bol, 2007). According to Bol (2007), central bias is the tendency by a supervisor to create less variance in the allocation of performance rating. The central tendency is reinforced because supervisors tend to allocate performance ratings which will not require them to provide written justification (Cordner, 2014). Another factor contributing to biasedness in performance rating is leniency: supervisors consider the negative consequences of communicating poor results which may damage the working relationship or lead to conflict with the subordinate (Cordner, 2014).

Several empirical studies pertaining to performance appraisal ratings did not establish a convergence between different sources of rating (Facteau & Graig, 2001). A study on the correlation of self and supervisory rating found significantly low correlations (Facteau & Graig, 2001; Heidmeier, 2005). A meta-analytic study reported low correlations between supervisory ratings and objective performance data (Heneman, 2011). It is proposed that a multisource rating system and well trained evaluators should be utilised to overcome the shortcomings of a supervisory rating (Facteau & Graig, 2001; Heneman, 2011). However, research which was conducted confirmed that a supervisory rating is the most reliable form of performance assessment (Viswesvaran, Ones & Schmidt, 1996). Performance measurement remains a serious concern to Industrial and Organisational Psychology as it is difficult to decide which measure is the most relevant one due to lack of empirical standards to validate the criterion measures (Gottfredson, 1991). Issues pertaining to criterion validity and reliability may render performance measurement instruments futile for the organisation (Guion, 2013).

Research aims

In relation to the research questions posed above and the problem statement, the general objective of the research was to determine whether learning potential as measured by APIL SV and personality traits as measured by OPQ 32i are valid predictors of work performance.

Hypotheses

Based on the aforementioned discussion, the following hypotheses are formulated:

H1₀: There is no statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

H1₁: There is a statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

H2₀: There is no statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

H2₁: There is a statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

RESEARCH DESIGN

The design is presented according to the research approach and method used.

Research approach

In this study, a quantitative research approach was utilised, aimed at determining the relationship between independent and dependent variables (Hopkins, 2000). The design used in the study is a cross-sectional survey, the purpose of which was assessing the relationship between independent and dependent variables within a defined population (Struwig & Stead, 2001).

Research method

The research participants, measuring instruments, research procedure and statistical analysis that were used in this study are discussed below.

Research participants

The population of this study comprised all the personnel employed in the department. According to Brink, Van der Walt and Van Rensburg (2009), the population is the whole group of persons or objects that fall within the area under study and meet relevant criteria which the researcher is interested in studying. Since it is usually impossible to include the whole population in one study, in this research a non-probability sampling method was used to select participants. According to Maree and Pietersen (2007), these methods of sampling do not make use of a random selection of population elements, which tends to render them inaccurate in drawing important conclusions about the population.

A convenience sample of 104 was used; the data had already been collected during the selection process, and was conveniently accessible with the organisation's approval. The study relied on the data that was collected between 2010 and 2011 for staff members who had been employed in a general and professional band in the department's headquarters (HQ). All members in this sample group had to have attained the National Qualifications Framework (NQF) level 5 to qualify for employment at these levels and had undergone a performance review during the 2012 financial year.

TABLE 3.1

FREQUENCY DISTRIBUTION BY GENDER AND RACE

Sample groups	Frequency	Percentages	Cumulative Frequency	Cumulative Percentages
Gender				
Female	57	54.81	57	54.81
Male	47	45.19	104	100
Race				
African	81	77.88	81	77.88
Coloured	5	4.81	86	82.69
Indian	7	6.73	93	89.42
White	11	10.58	104	100

Both psychological assessment data and performance review rating were retrieved from the Human Resources Information system (HRI system). The sampling group constituted of both female and male (see Table 3.1 above) participants from different racial groups

Measuring instruments

APIL SV

The APIL SV was used in this study to assess learning potential as one of the independent variables. It was designed to assess an individual's core or fundamental capabilities and potentialities (Taylor, 1994). The target population of the APIL SV is a person with at least 12 years of education. It was intended to assess applicants for the purpose of selecting individuals for university or technical education, and also for employment candidates who would be required to master a number of new skills in a relatively short period of time or for evaluation of employees as part of restructuring (Taylor, 1994). The standard version of APIL-B is administered for 3 hours 45 minutes whilst the APIL SV is administered for a maximum of two hours (Taylor, 2004). Another difference is that in APIL-B the administration of the curve of learning test is performed in four sessions whilst the APIL SV takes just two sessions (Taylor, 2004).

The APIL SV contains four dimensions, namely, Conceptual Reasoning, Learning Rate, Memory and understanding and Performance level testing in the after-lesson session (Taylor, 1994).

- **Conceptual Reasoning Ability:** is also regarded as a Concept Formation test. This test is composed of 33 items which are quasi-geometrical in nature. Each item is made up of 6 diagrams marked A to F. The test requires respondents to identify the box with the anomalous diagram.
- **Learning rate** is expressed as a gradient of after-lesson performance in relation to before-lesson performance. This test is regarded as a dynamic assessment in that respondents are assessed on what they have been exposed to, instructed on or another learning opportunity. The first session of Learning Rate tests consists of 30 items, while the second consists of 70 items.

- Performance level testing in the after-lesson session. This test is based on the assessment of learning potential as the measures tend to focus on future achievement rather than on past ones. Respondents are presented with learning materials and given four sessions to practice the materials. Good results are mainly due to comprehension of learning material.
- Memory and understanding: the tests in these dimensions are geared towards investigating the respondent's level of knowledge which they gained from the dictionary material. It consists of 28 items and is limited to 12 minutes to complete the tasks.

In the validity study on two different samples, the APIL SV had correlations ranging between 0.31 and 0.67 (Taylor, 2004).

OPQ 32i

For the measurement of personality traits, an ipsative version of the OPQ 32i model was used. The instrument follows the general OPQ model of personality which was originally developed in the United Kingdom between 1981 and 1984 (SHL, 2004). The OPQ model of personality could be measured by two questionnaires, namely OPQ32i and OPQ32n (Normative) (SHL, 2005). However efforts to address concerns of OPQ 32i with regard to construct validity and reliability have led to the introduction of an alternative version known as OPQ32r (Brown & Bartram, 2009; Venter, 2010). OPQ 32i uses a forced-choice format ipsative scale with four statements whilst the OPQ 32n questionnaire utilises a normative five option multiple choice scale (SHL, 2005). The new OPQ 32r uses forced-choice items with three statements; the completion time is 50% less than OPQ32i and has high construct validity as well as criterion related validity (Brown & Bartram, 2009).

OPQ32i is an occupational model of personality which describes people's preferences within 32 dimensions (Brown & Bartram, 2009). It provides a less complicated framework for explaining complex patterns of personality. Furthermore OPQ is available in more than 30 languages and amongst different ethnic groups, including South Africa (Brown & Bartram, 2009). OPQ 32i is recommended for selection purposes because it resists respondent faking

and distortion better than the normative version does. According to SHL (2005) OPQ 32i contains the following competency domains:

- **Leading and Deciding:** This competency refers to individual ability to make decisions, taking initiative, leading and supervising.
- **Supporting and Cooperating:** Refers to a person's ability to work with other people as well as complying with principles and values.
- **Interacting and Presenting:** Ability to establish relationships with others, build an effective network, persuade and influence others, speak fluently and make public presentations.
- **Analysing and Interpreting:** The competencies involve good writing skills, job knowledge and expertise, understanding the use of technology, ability to analyse numerical data or any other information.
- **Creating and Conceptualising:** Ability to quickly learn new tasks; search for information, creating new ideas, formulating strategies and new concepts.
- **Organizing and Executive:** involves setting clear objectives, planning of activities and projects, effective management of time, monitoring performance against deadlines and milestones.
- **Adapting and Coping:** ability to adapt to a new environment, tolerant of change, adapts interpersonal style that suits different situations; maintain an initiative personal outlook at work, balances the demand of work life and personal life.
- **Enterprising and Performing:** Achieving personal work goals and objectives; makes an effort for personal development; entrepreneurship and commercial thinking.

In the United Kingdom the internal consistency reliabilities for the scales ranged from 0.65 to 0.87 for the general population of 2 028 whilst in a South African study of 1 181 employees and students, results of alpha coefficients ranged from 0.69 to 0.88 (SHL, 2004). The alpha coefficients from 0.60 to 0.80 are generally perceived as sufficient for personality measurements (SHL, 2004). Alternative-form reliability assessment of OPQ 32i was conducted using both OPQ 32i and OPQ 32n as both tests attempt to measure similar constructs; the correlation results ranged from 0.45 to 0.79 with a median of 0.66 (SHL, 1999). The alpha coefficients for OPQ 32n found for the South African sample ranged from

0.79 to 0.89 (Visser & Du Toit, 2004). According to SHL (1999), minimum reliability coefficients of 0.7 represent an acceptable norm for test use in the selection process.

Study of criterion related validity in the United Kingdom found that the scale of OPQ 32i ranged from 0.14 to 0.35 (SHL, 2009). The criterion validity of OPQ 32i has been confirmed in various studies in the United Kingdom and other countries including South Africa. It was found that OPQ 32i results do correlate with indicators for job performance of various kinds, particularly with regard to specialist knowledge, written communications, problem solving and analysis (SHL, 2009).

Individual Performance Management System (IPMS)

In this study, the dependent variable is work performance which was measured through an Individual Performance Management System (IPMS). According to the policy of the department under study, the purpose of IPMS is to provide a framework in which members and teams' work-related activities will be aligned with the objectives of the organisation and to provide members with opportunities to develop/enhance their performance. IPMS is designed to measure performance in the organisation using a Likert scale of 1-5, the lowest number (1) being poor performance and the highest number (5) being the best performance. Employees are assessed based on performance contracts set between manager and employee; the contract is based only on the tasks of the job.

Managers or supervisors conduct performance reviews twice a year; and the ratings are aggregated before they are submitted to a moderation committee. However, performance management is clouded with so many challenges that Spain (2010) argued that the treatment of performance as one-dimensional is an issue of concern in the estimation of validity. It is noted that in research into personnel job performance, certain aspects of performance or behaviour relevant to the job could form part of the criterion depending on the organisational needs (Austin & Villanova, 1992). Furthermore, issues such as central tendency, biasedness, and leniency may affect the results of performance measurements (Bol, 2007; Cordner, 2014).

Research procedures and ethical considerations

All information that was used in this study was gathered during the employment process; the results of both APIL SV and OPQ 32i were stored in the structure that administers psychological assessment in the department. The performance rating data had also been already gathered and stored in the HRI system during the 2012 financial year. Statistical analysis was carried out by a person outside the organisation; however, confidentiality and privacy of participants was maintained. Names were altered to numbers before sending the data to the statistician. All employees had signed consent forms for the organisation to use their data for research purposes prior to the completion of the tests. Ethical clearance was obtained from university of South Africa to conduct the research study.

Statistical analysis

This study used a quantitative research approach; statistical data were processed and analysed using the Pearson Correlation Coefficient. SAS System computer software programme was used for analysis of descriptive and frequency statistics whilst SPSS was used for correlation and regression analysis. Descriptive statistics were calculated to provide a better understanding of the nature of both independent and dependent variables. The study also provided results on the measures of central tendency (mean), standard deviation, minimum and maximum values of the variables. The Pearson Correlation Coefficient was calculated to establish the strength of a linear relationship between independent and dependent variables. The above method measures the strength of the linear relationship between normally distributed variables (McDonald, 2014). A regression analysis was performed to estimate the predictive relationships among the variables under study.

RESULTS

The initial stage of the analysis involved computing descriptive statistics for the sample used in the study. Table 3.2 below displays descriptive statistics for APIL SV and OPQ 32i dimensions. APIL SV dimensions received mean scores which ranged from 5.42 to 5.92; the score was measured on a stanines test varying from poor (1) to outstanding (9). The mean sten values obtained in APIL SV appear to be above average, taking into account that the

stanines are from 1-9. Generally, the mean score suggests that all respondents performed satisfactorily on APIL SV.

The OPQ32i score was measured on a 5- forced choice scale item; respondents' mean scores in all competencies ranged from 2.74 to 3.41 (see Table 3.2 below). Overall, the mean score shows that all participants achieved average or above in all dimensions of OPQ 32i. The standard deviation results of OPQ 32i indicate that data points are closer to the mean, all being below 0.87. The dimension of Leading and Deciding had standard deviation at 0.53.

TABLE 3.2

DESCRIPTIVE STATISTICS ON APIL SV AND OPQ32i

Variables	Mean	Std Deviation	Minimum	Maximum	N
APIL SV					
Conceptual Reasoning	5.42	1.98	1	9	104
Learning Rate	5.92	2.06	2	9	104
Memory and Understanding	5.65	1.98	2	9	104
Global Learning Rating	5.53	1.87	2	9	104
OPQ 32i					
Leading and Deciding	2.74	0.53	1.5	4	104
Supporting and Cooperating	3.11	0.72	1.5	5	104
Interacting and Presenting	2.87	0.71	1	5	104
Analysing and Interpreting	3.05	0.87	1	5	104
Creating and Conceptualizing	2.87	0.86	1	5	104
Organizing and Executing	3.41	0.81	1.33	4.67	104
Adapting and Coping	3.13	0.71	1.5	5	104
Enterprising and Performing	2.76	0.74	1	4.5	104

The performance rating was measured on a scale of 1-5. From the frequency results of performance ratings indicated in Table 3.3 below, it is clear that all respondents in this study performed from average to above average, as the allocated performance rating starts from 3 - 5. The majority of respondents were rated 3 (58.65%), a rating of 4 was received by 37.50% whilst a rating of 5, which is the highest score, was only achieved by 3.85%.

TABLE 3.3

FREQUENCY DISTRIBUTION OF PERFORMANCE

Performance Rating	Frequency	Percentages	Cumulative	Cumulative
			Frequency	Percentages
3	61	58.65	61	58.65
4	39	37.5	100	96.15
5	4	3.85	104	100

The first hypothesis focused on the relationship between learning potential and work performance. The null and alternative hypotheses are stated below:

H₀: There is no statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

H₁: There is a statistically significant relationship between learning potential assessment as measured by APIL SV and work performance.

This two-tailed (non-directional) hypothesis was tested at a 1% level of significance (i.e., $\alpha = 0.01$).

TABLE 3.4

RESULTS OF PEARSON CORRELATION COEFFICIENTS BETWEEN PERFORMANCE RATING AND DIMENSIONS OF APIL SV

		Performance	Conceptual	Learning	Memory and Understanding	Global Learning Rating
Performance Rating	Pearson Correlation Sig. (2-tailed)	1				
Conceptual Reasoning	Pearson Correlation Sig. (2-tailed)	-0.019	1			
Learning Rate	Pearson Correlation Sig. (2-tailed)	-0.069	.507**	1		
Memory and Understanding	Pearson Correlation Sig. (2-tailed)	0.002	.647**	.824**	1	
Global Learning Rating	Pearson Correlation Sig. (2-tailed)	0.029	.607**	.518**	.670**	1

** Correlation is significant at the 0.01 level (2 tailed).

The correlation in Table 3.4 above displays Pearson’s Correlation Coefficients, significant values and the number of cases with missing value (N). The results show that all the dimensions of APIL SV did not correlate significantly with the performance rating. Very noticeable in the results of inter-correlations matrix is the strong correlation between the dimensions of APIL SV, Learning Rate and Memory and understanding ($r = .824, p = 0.001$).

TABLE 3.5
MULTIPLE REGRESSION ANALYSIS REGARDING DIMENSIONS OF APIL SV AND PERFORMANCE RATING

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.135 ^a	.018	.022		
ANOVA^a					
	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.607	4	.152	.453	.770 ^b
Residual	32.849	98	.335		
Total	33.456	102			
Coefficients					
	B	Std. Error	Beta	t	Sig.
1 (Constant)	3.514	.205		17.146	.000
Conceptual Reasoning	-.016	.040	-.055	-.396	.693
Learning Rate	-.061	.049	-.219	-1.239	.218
Memory and Understanding	.050	.062	.174	.812	.419
Global Learning Rating	.017	.043	.056	.397	.692

a. Dependent Variable: Work Performance

Table 7 above provides information about the regression model summary, ANOVA analysis and coefficient. The results demonstrate that only 1.8% of the total variance in work performance has been explained, which is significantly low. In order to determine the impact which APIL SV dimensions have on performance rating, ANOVA regression analysis was computed. From this analysis, it is clear that the P-value (.770) is greater than 0.05; the test is not significant as it fails to reject the null hypothesis. The results of linear regression evaluate the contribution of the dimensions of APIL SV. It is noticeable that all the dimensions are not significant at 0.05; therefore the null hypothesis is not rejected. In other words, learning potential as measured by APIL SV does not predict performance rating.

The second hypothesis focused on the relationship between personality and work performance. The null and alternative hypotheses are stated below:

H₂₀: There is no statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

H₂₁: There is a statistically significant relationship between personality assessment as measured by OPQ 32i and work performance.

TABLE 3.6
RESULTS OF PEARSON CORRELATION COEFFICIENTS BETWEEN PERFORMANCE RATING AND
DIMENSIONS OF OPQ 32i

Dimensions			1	2	3	4	5	6	7	8	9
1.	Leading and Deciding	Pearson Correlation Sig.	1								
2.	Supporting and Cooperating	Pearson Correlation Sig.	.298** .002	1							
3.	Interacting and Presenting	Pearson Correlation Sig.	.514** .000	.132 .183	1						
4.	Analysing and Interpreting	Pearson Correlation Sig.	.093 .348	.097 .327	.357** .000	1					
5.	Creating and Conceptualizing	Pearson Correlation Sig.	.096 .332	.065 .513	.339** .000	.898** .000	1				
6.	Organizing and Executing	Pearson Correlation Sig.	.084 .399	.041 .680	-.112 .258	.161 .103	-.028 .776	1			
7.	Adapting and Coping	Pearson Correlation Sig.	.114 .248	.271** .005	.287** .003	.041 .678	.118 .234	-.268** .006	1		
8.	Enterprising and Performing	Pearson Correlation Sig.	.211* .031	.297** .002	.141 .154	.271** .005	.265** .007	.363** .000	.021 .836	1	
9.	Performance Rating	Pearson Correlation Sig.	-.026 .795	-.176 .074	-.095 .336	-.008 .936	-.082 .406	.131 .186	-.068 .495	.109 .269	1

This two-tailed (non-directional) hypothesis was tested at a 1% level of significance (i.e., $\alpha = 0.01$).

Most noticeable in the inter-correlations matrix in (Table 3.6 above) is that all dimensions of OPQ32i are not correlated statistically significantly with performance rating. Correlation is significant at the 0.01 level or 0.05. The results show that Leading and Deciding strongly

correlated with Supporting and Cooperating ($r = .298, p = .002$) and Interacting and Presenting ($r = .514, p = .001$). The dimension of Enterprising and Performing strongly correlated with Supporting and Cooperating, Analysing and Interpreting, Creating and Conceptualising, and Organising and Executing.

The results indicate that only 8.3% of the total variance in work performance rating can be explained by variability in personality traits, which is significantly low (see Table 3.7 below). In order to determine the impact of OPQ32i dimensions on work performance rating, regression analysis was conducted. As expected, the ANOVA analysis yielded a P-value (.389) greater than 0.05. Hence the test is not significant as the results fail to reject the null hypothesis. The result shows that all dimensions yielded more than 0.05, which is therefore not statistically significant. Because the significance value is more than 0.1 the coefficient estimate is not reliable as it displays excessive variance.

TABLE 3.7

MULTIPLE REGRESSION ANALYSIS REGARDING DIMENSIONS OF OPQ 32i AND WORK PERFORMANCE RATING

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.288 ^a	.083	.006	.571		
ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.797	8	.350	1.073	.389 ^b
	Residual	30.962	95	.326		
	Total	33.760	103			
Coefficients						
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.982	.572		6.961	.000
	Leading and Deciding	.096	.140	.089	.691	.491
	Supporting and Cooperating	-.168	.097	-.211	-1.719	.089
	Interacting and Presenting	-.080	.106	-.098	-.751	.454
	Analysing and Interpreting	.233	.168	.355	1.386	.169
	Creating and Conceptualizing	-.243	.168	-.363	-1.447	.151
	Organizing and Executing	.015	.088	.021	.166	.869
	Adapting and Coping	-.060	.091	-.074	-.654	.515
	Enterprising and Performing	.028	.097	.036	.284	.777

a. Dependent Variable: Work Performance

DISCUSSION

The first objective of this study was to determine whether learning potential as measured by APIL SV predicts work performance. As reflected in Table 3.4, results show that no single dimension of APIL SV correlated significantly with performance rating; therefore the null hypothesis is accepted. The lack of correlation could be attributed to a number of factors. The first is the validity of the criterion score, particularly because in this public service department, performance appraisal only concentrates on task performance. Consequently, work performance is viewed as one-dimensional instead of multidimensional. Spain (2010) argued that the treatment of performance as one-dimensional is an issue of concern in the estimation of validity: performance should be viewed as multidimensional and measurement instruments must therefore include both tasks and behavioural repertoire which are specific to the job.

Bias in supervisory ratings such as central tendency and leniency could also have affected the results of this study. The frequency analysis of the distribution values of criterion scores in Table 3.3 clearly demonstrates supervisory bias. In the study commissioned by USA federal government it found that employees who received rating of below average was mainly due to behavioural/conduct issues, substance abuse , or some illegal activities, in the absent of the above issues poor performers are rated as fully successful (Montoya & Graham, 2007). It is noted that fear of communicating negative performances, requirements for providing written justification of lower and higher ratings and an inability to evaluate performance reinforce supervisors' bias (Bol, 2007; Cordner, 2014).

A stepwise multiple regressions did not yield any positive results as none of the dimensions contributed significantly to the prediction of work performance rating. The regression model is not significant at 0.05 levels. Work performance is not predicted by all the variables combined. The results of APIL SV were extremely disappointing as the results are in contrast to the previous findings using a related instrument (De Goede & Theron, 2010; Lopes et al., 2001; Strachan, 2008). However, differences could be attributed to the used of criterion score, two of the studies (De Goede & Theron, 2010; Strachan, 2008) used training and academic results respectively as criterion scores. In the study of Lopes et al. (2001) criterion 5 - point scale had to be collapsed into two classifications and that may have influenced the

results of the study. It is clear that the inter-correlations between various dimensions of APIL SV are generally strong, which is indicative of the various dimensions measuring similar variables. According to Nzama et al. (2008), when dimensions are not strongly inter-correlated this implies that they constituted relatively independent measures.

Generally, the findings of the study are not encouraging; particularly because various studies over the years have found that cognitive ability tests are the most valid predictors of work performance and are valid for many occupations (De Beer, 2006; Gilmore, 2008; Schmidt & Hunter, 1998; Thomas & Scroggins, 2006).

The second objective of the study was to determine whether personality traits, as measured by OPQ 32i, predict work performance. As indicated in the inter-correlation matrix in Table 3.6, all dimensions of OPQ32i are not correlated as statistically significant with performance rating. Correlation is significant at the 0.01 level or 0.05. The results of the study confirm the null hypothesis: there is no significant relationship between personality measures as measured by OPQ 32i and work performance. From Table 3.6, it is clear that inter-correlation between various dimensions of OPQ 32i are generally not strong. The only dimension which correlated strongly with others was Enterprising and Performing, with the exceptions of Interacting and Presenting and Adapting and Executing. It is suggested that weaker correlations imply that dimensions are relatively independent measures (Nzama et al., 2008).

In the regression results the OPQ 32i came out as not significant, and none of the dimensions added any value to the prediction of work performance. Though the results are extremely disappointing, earlier studies had found low or negative validities between personality measures and work performance (Ghiselli & Barthol, 1953). However, it must be said that since early 1990s studies on personality and work performance showed incremental validity as results of factorial approaches (Barrick & Mount, 1991). It was also suggested that personality measures were not appropriate tools for making employment decision (Guion & Gottier, 1963; Morgeson et al., 2007).

In some studies conducted in South Africa on the relationship between personality and job performance, low to moderate correlations were established between personality measurements and work performance (Blignaut, 2011; Davis, 2013; Rothmann & Coetzer,

2003; Van Der Linde, 2005). It was also noted that OPQ 32i tends to correlate with indicators of job performance which require specialist knowledge, written communications, problem solving and analysis (SHL, 2009); hence not all participants in the study perform jobs with these particular indicators.

Other researchers scepticism of the relationship between personality and work performance argued that all efforts to find predictive value failed because the two variables are not related (Spillane & Martin, 2005). The relationship between personality traits and job performance may not necessarily be linear as other research had indicated (Le et al., 2011; Ones et al., 2007). This view had been mentioned by Murphy (2006), who articulated that some personality traits could form a curvilinear relationship with job performance.

The measures of work performance in this public department focus only on task performance and ignore other behavioural aspects. A study conducted by Graham and Calendo (1969) found that personality measures correlate more strongly with supervisory ratings of employees' personal characteristics than work performance rating. Hence, it is argued that performance management is multidimensional and to properly measure work roles multiple criteria are required (Boudreau, Sturman & Judge, 1994). The author contends that personality tests should be used in strategic recruitment, to create diversity in teams and structures, rather than to predict work performance. To conduct a study on the instrument for a specific occupational group for the department with more than 200 occupational groups could, however, be a laborious task. Guion (1963) proposed the development of a group composition model wherein group members would have different personality attributes. The benefits of group heterogeneity outweigh any disadvantages that may occur as the results of such diversity (Schneider, 2007).

It is the contention of the author that the manner in which supervisory performance ratings are allocated contributed significantly to the outcome of this study. The application of the bell-curve in the allocation of ratings is problematic as it tends to obscure the true performance of employees.

Limitations and Recommendations

The main limitation of the study was the use of convenience sampling. This method of sampling does not use random selection of population elements, which tends to render such studies vulnerable if they attempt to draw important conclusions about the population. Longitudinal study should be based on a better sample size and selection that would be more representative and randomly selected. More than 96% of the respondents received work performance ratings of 3 and 4, which resulted in a low standard deviation. According to Nzama et al. (2008), a relatively small standard deviation may be indicative of the restriction range exercising negative influence on the magnitude of correlation. It could also be that the sample was selected from fewer participants who were successful in the selection process during a certain period which means they had similar tenure in the company. Measurement of job performance should not only focus on the task but should include other personal attributes too.

The closeness between work performance ratings also signifies a restriction error, in that the supervisor might have failed to make distinctions between the performances of subordinates. The application of the bell-curve in the rating of work performance in the organisation might have contributed significantly to the results of this particular study. It is argued that the strict distribution of the bell-curve led supervisors to rate higher performers as mediocre (Taylor, 2013). For the purpose of achieving a pre-determined ratio, organisations embarked on different models of moderating or levelling performance assessment results (Vaishnav, Khakifirooz & Devos, 2005).

Considering the unsatisfactory results of the APIL SV, the department may consider conducting further validation studies on the battery, with multisource performance rating consisting of supervisor rating, self-rating, peer rating and job competency assessment. The criterion results must be properly moderated and validated. The department should consider abandoning OPQ 32i as even the SHL have discontinued supplying it in the market. Brown and Bartram (2009) noted that the OPQ 32i has evolved into the OPQ 32r version which has high construct validity, and criterion related validity. If data does not meet the normal distribution requirements it is appropriate to use non-parametric statistics.

Conclusion

The results of this study were not encouraging, as many previous studies had found a correlation between work performance and learning potential. However, a number of the studies used different criterion measures or complemented performance rating with other criterion measures such as questionnaire completed by supervisor; training results; academic performance etc. Supervisory rating biasness, application of performance appraisal and range restriction could have contributed to the nature of APIL SV results. The results of OPQ32i were also not satisfactory; this is not surprising as over the years there have been serious differences over the ability of personality measurement to predict job performance.

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CHAPTER 4

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

In this chapter, conclusions are drawn from scientific orientation, the literature review, the empirical study, limitations and recommendations.

4.2 CONCLUSIONS ON SCIENTIFIC ORIENTATION

In Chapter 1, arguments were presented as to why it is necessary for organisations to use effective methods for the selection of candidates and the need to conduct validation studies for such tools. It was argued that for organisations to become effective and efficient, changes in the selection process need to be adopted. Psychological assessments are deemed to be the most scientific tool to enhance the selection of appropriate candidates that would increase productivity for the organisations. In South Africa, learning potential and personality trait measurements are widely employed for the purpose of selection processes. The requirements of South African labour laws make it incumbent on the organisation that uses these measurements to ensure that they are fair, valid and reliable. Organisations are finding it necessary to justify the expenditure associated with the use of such measurement.

4.3 CONCLUSIONS ON LITERATURE REVIEW

The specific theoretical objectives of the literature review were to conceptualise learning potential, personality traits and work performance and to conceptualise the role of the first two in predicting the third. In Chapter 2, the study presented a conceptualisation of both the dependent and independent variables and their relationship. The first independent variable of the study was learning potential which was discussed based on dynamic assessment, a measurement method which includes instructional intervention during the testing process. It is viewed as a mechanism to alleviate the effects of environmental variables which influence performance and distort the measurement of latent capacity. The major theoretical foundation of this approach was conceived by the Russian psychologist Vygotsky, who had, as his

underlying assumption, argued that individual acquisition of cognitive competence is the result of social interaction.

The approach promises to yield culturally fair results, provide useful comparisons of results in a multicultural population; be a suitable tool for assessing people from a disadvantaged educational system and lastly, measure learning potential irrespective of the cultural, population and social group of candidates (De Beer, 2006). The APIL SV, which was designed to assess an individual core or fundamental capabilities and potentialities (Taylor, 1994) was used in this study to assess learning potential.

The second independent variable presented in Chapter 2 was personality, based on the traits theory. The focus of this theory is on the enduring characteristics of a person; therefore the proponents of this approach advocate that traits predict certain behaviours (Crowne, 2007). For the measurement of personality traits, a normative version of the OPQ 32i model was used. It follows the general OPQ model of personality which was originally developed in the United Kingdom between 1981 and 1984. It provides a less complicated framework of explaining complex patterns of personality; furthermore, OPQ is available in many languages and can be used in many countries (Brown & Bartram, 2009).

The third explored dependent variable was work performance; various models and measurements of work performance were discussed. The department in the study used an integrated performance management system, where supervisors have the final say in the allocation of a performance rating. It was noted that organisations were aware of the value derived from managing performance in terms of increasing both individual and organisational performance, and a number of case studies have provided solid support for integrated performance management as the reason for increased performance (Whitford & Coetsee, 2006). Chapter 2 also outlined the impact of supervisory biasedness, such as central tendency and leniency on the measurement of employee's performance.

4.4 CONCLUSIONS ON EMPIRICAL STUDY

It will be recalled that specific objectives of the empirical study were to determine if learning potential as measured by APIL SV predicts work performance; and to determine if

personality traits as measured by OPQ 32i predict work performance. The empirical study was described in Chapter 3 in the form of an article. Descriptive statistics, such as the measures of central tendency (mean), standard deviation, minimum and maximum values of the variables were calculated to provide information about the dependent and independent variables. The Pearson Correlation Coefficient was also calculated to establish the direction and strength of a linear relationship between the variables. For the purpose of prediction, multiple regression analysis was used to understand what independent variables are related to the dependent variable and the forms of these relationships.

The results were disappointing as there was no significance found for the correlations. Previous studies had found a moderate to strong relationship between measurement of learning potential and work performance. Nevertheless, there was no significant correlation between the dimensions of APIL SV and work performance. The results show strong inter-correlations between dimensions of APIL SV. Supervisory rating biasedness, application of performance appraisal and range restriction could have contributed to the nature of the APIL SV result. Based on the results of the first objective, it was concluded that there is no statistically significant relationship between learning potential as measured by APIL SV and work performance, thus accepting the null hypothesis.

The results for the second objective also indicated no statistically significant correlations between personality as measured by the OPQ 32i and work performance. Therefore the null hypothesis that there is no significant relationship between personality as measured by OPQ 32i and work performance was accepted. Similarly, previous studies on these variables had found no, or low, correlations between personality traits measurements and work performance.

4.5 LIMITATIONS

The chief limitation of the study was the use of convenience sampling, as this method of sampling does not use random selection of population elements, which tends to render it unreliable in drawing important conclusions about the population.

More than 96% of the respondents received a work performance rating of 3 and 4, which resulted in a low standard deviation. According to Nzama et al. (2008), a relatively small standard deviation may be an indication that a restricted range may have negative influence on the magnitude of correlation. The closeness of work performance rating also signifies the restriction error, in that the supervisors might have failed to make distinctions between the performances of subordinates. The application of a bell-curve in the rating of work performance in the organisation might have contributed significantly to the results of this particular study. The use of parametric statistic was not appropriate because the criterion measure (performance rating) does not meet the normal distribution requirements.

4.6 RECOMMENDATIONS

Considering the unsatisfactory results of the APIL SV, the department may consider conducting further validation studies on the battery with multisource performance ratings consisting of supervisor rating, self-rating, peer rating and job competency assessment. The criterion results must be properly moderated and validated. The department should consider abandoning OPQ 32i as even SHL has discontinued it. As it may be difficult to find a specific instrument for every particular occupational group, the department should consider using a personality measure for the purpose of job, team and organisational fit. All supervisors must be properly trained to conduct performance appraisals so as to eliminate biasedness. A future longitudinal study should be based on a better sample selection that would be more representative and randomly selected. If data does not meet the normal distribution requirements it is appropriate to use non-parametric statistics.

4.7 CHAPTER SUMMARY

In Chapter 4 the researcher provided an overview of the study's conclusions on scientific orientation, literature review, empirical research, limitations and recommendations.

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