

Remedying unemployment through affirmative development: The validation of the prediction model and qualitative assessment of an employment accelerator programme

Marinus Bertus De Kok



*Thesis presented in partial fulfilment of the requirements for the degree of MCom (Psych) in the
Faculty of Economic and Management Sciences at Stellenbosch University*

Supervisor: Prof Johan Malan

December 2019

Declaration

By submitting this thesis/dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety, or in part, submitted it for obtaining any qualification.

Date: December 2019

Verklaring

Deur hierdie tesis/proefskrif elektronies in te lewer, verklaar ek dat die geheel van die werk hierin vervat, my eie, oorspronklike werk is, dat ek die alleen-outeur daarvan is (behalwe in die mate uitdruklik anders aangedui), dat reproduksie en publikasie daarvan deur die Universiteit van Stellenbosch nie derdepartyregte sal skend nie, en dat ek dit nie vantevore, in die geheel of gedeeltelik, ter verkryging van enige kwalifikasie aangebied het nie.

Datum: Desember 2019

ABSTRACT

This thesis investigates the role and response of the human resources practitioner in the context of the current South African socio-economic reality, specifically as it relates to income inequality, poverty, and unemployment. A range of current issues and challenges facing the country are thus discussed, with due reference to the nation's political past. A need for, and pressure towards, economic equity is identified and discussed critically in relation to relevant legislation and its implications and consequences for organisations and the human resource fraternity, particularly in terms of selection, and the use of psychometric assessment. An appropriate organisational response to these specific challenges seems to be the implementation a multi-stage selection procedure that involves a large affirmative development component and rests upon the use of learning potential assessment. Learning potential assessment has gained much popularity in South Africa and is thus discussed thoroughly.

The research-initiating question thus involved identifying whether such an approach would have practical value and, if so, what ground still needs to be covered to achieve justification and meaningful application thereof. The resulting research objectives included the delineation of the current literature on learning potential assessment, including that of Stellenbosch University; finding and investigating appropriate examples in practice; and evaluating available approaches to answer the research-initiating question aimed at informing research and practice going forward.

The researcher subsequently identified Harambee Youth Employment Accelerator as a progressive non-profit organisation following a model that closely resembles the multi-stage selection model proposed by scholars of the Department of Industrial Psychology at Stellenbosch University. As such, the researcher conducted an extensive evaluation of the Harambee programme in terms of a theoretical evaluation of the Harambee approach, with consideration of available literature and other information; the validation of the predictive validity of the Harambee prediction model; and explorative data analyses of available measurement data to identify linkages that may serve as impetus for future research.

Correlational and multiple-regression analyses were conducted on a sample of candidates who have successfully completed the Harambee programme. The results supported the predictive validity of the Harambee prediction model. The qualitative theoretical evaluation of the programme considered the benefits of the Harambee programme and the similarities to the multi-stage selection model; identified possible areas of growth and improvement; and provided impetus for future research. The explorative analyses, however, did not identify any unexplored links worthy of further investigation.

The findings and discussion show a need to advance current basic research in developing a learning potential competency model and using this model to create more effective measurement and affirmative development programmes within the framework of an integrated organisational response.

OPSOMMING

Hierdie tesis ondersoek die rol en reaksie van die menslike hulpbronbestuurder en bedryfsielkundige in die konteks van die huidige sosio-ekonomiese realiteit in Suid-Afrika, met spesifieke verwysing na ongelykheid, armoede, en werkloosheid. 'n Reeks vraagstukke wat met laasgenoemde kwessies verband hou, word bespreek met verwysing na Suid-Afrika se politieke geskiedenis. Die nood en druk rondom ekonomiese gelykheid, die relevante wetgewing, en die implikasies vir menslike hulpbronbestuur, spesifiek met betrekking tot die keuringsfunksie en psigometriese toetsing, word dus krities ondersoek. 'n Gepaste organisatoriese respons ten opsigte van hierdie uitdagings, blyk die gebruik van 'n tipe keuringsmodel te wees wat bestaan uit meervoudige fases, 'n groot opleiding- en ontwikkelingskomponent bevat, en berus op die toetsing van leerpotensiaal. Die toetsing van leerpotensiaal het onlangs meer gewild geraak in Suid-Afrika, en word as sulks deeglik bespreek.

Die navorsingsinisiërende vraag handel dus of só 'n benadering praktiese nut het, en indien dit het, wat die aard van die vordering is wat nog gemaak moet word ten opsigte van navorsing en praktyk om die gebruik daarvan te regverdig en dit doeltreffend toe te pas. Die daaropvolgende navorsingsdoelwitte sluit dus in die bestudering van navorsingsuitsette wat tans beskikbaar is, insluitende dié van die Universiteit Stellenbosch; die ondersoek van toepaslike voorbeelde in die praktyk; asook die evaluering van die beskikbare benaderings op soek na antwoorde op die navorsingsinisiërende vraag, ten einde toekomstige navorsing en praktyk te informeer.

Die navorser het Harambee, 'n onderneming wat spesialiseer in die bevordering van werkskepping onder die jeug, geïdentifiseer omdat hulle tans in die praktyk 'n model toepas wat tot 'n groot mate strook met die meer-stadia keuringsmodel, voorgestel deur navorsers van die Departement van Bedryfsielkunde aan die Universiteit Stellenbosch. Die navorser het 'n deeglike bestudering van Harambee se model onderneem, deur middel van 'n teoretiese evaluering van die Harambee benadering, die validering van die voorspellingsgeldigheid van hul voorspellingsmodel, en verdere verkennende navorsing op die beskikbare data, met die oog op toekomstige navorsing.

Korrelasie en meervoudige regressie-ontledings is uitgevoer op 'n steekproef van kandidate wat die Harambee program suksesvol afgehandel het. Die resultate daarvan bevestig die voorspellingsgeldigheid van hul voorspellingsmodel. Die kwalitatiewe-teoretiese evaluering het die voordele van die Harambee program oorweeg, asook die ooreenkoms met die multi-stadium keuringsmodel, die geleenthede vir verbetering en groei geïdentifiseer, en nuwe impetus vir verdere navorsing verskaf. Die meer verkennende analises het wel egter nie veel opgelewer nie.

Die bevindinge van dié studie dui op die noodsaaklikheid van die uitbreiding van die basiese navorsing in die veld van leerpotensiaal, en die gebruik van die uitgebreide strukturele model van leerpotensiaal om meer doeltreffende metings en regstellende ontwikkelingsprogramme te skep, binne die raamwerk van 'n geïntegreerde organisatoriese benadering.

ACKNOWLEDGEMENTS AND DEDICATION

It has been a long and often strenuous journey on the road to the completion of my studies, however it has certainly been beneficial and worthwhile in every step on the way. It is with much delight that I celebrate the culmination of years of work and the conversion of ‘musts and intentions’ into quality results. Although there have been many other amazing people, experiences, and events that have come and gone alongside this study in life, love, business, music, and ministry; handing in this thesis however will always stand out as a highlight amongst many others, in what has been an incredible life-journey so far. I hope that this shows that one can always achieve one’s dreams by taking persistent (even if only incremental) action, and never giving up. However, if nothing else, let this thesis be a resounding confirmation of the old saying that “it is never too late to finish well.”

This research has been done with the intention to foster a real-life connection between research in industrial psychology (a field which has always meant a lot to me) and life-changing practices in the South African context. I hope that this will certainly be something real achieved by this research and also in my professional endeavours moving forward.

Although there are, without a doubt, many who have helped me along the way, in various forms, including many close friends and relatives, with encouragement, interesting conversations, and other inputs, the following contributors to the success of this study, and to so many other things in my life, do however stand out in particular:

Firstly, and not for the sake of observing custom, I would like to thank my Lord and Saviour Jesus Christ for divine guidance and close personal relationship that pulled me through times when I would have otherwise failed. Alongside this acknowledgement, I would like to thank all those church leaders, friends, and musicians who have added tremendously to my life and growth, singling out Arno Mattheus, all those involved with the #imagine and Regeneration bands, and the NG Church Durbanville Bergsig, my spiritual home.

My parents, Ernest and Magda De Kok – as always, words fail. Thank you for your love, guidance, and inspiration. With regard to my studies, thank you for the financial input into my long university career, and certainly the subtle prodding along the way. This would not have been possible without you and your continued full support. Thank you also to Nico and Maureen Lerm, my parents in law, who have been a wonderfully loving addition to my life.

To all the lecturers and staff at the Industrial Psychology Department of Stellenbosch University, a big “thank you” is certainly in order. I cannot imagine that one could find, anywhere in the world, people who care more sincerely about the academic and personal development of their students. You maintain professionalism and genuine concern in every action and interaction. I would like to single out Professor Johan Malan, my supervisor, for your input, unending patience, and considerable time applied hereto; also, your contagious passion for this field and making a

meaningful contribution through it. Likewise, Professor Callie Theron, a seemingly infinite source of wisdom and insight, for your patience, time, understanding, and passionate interest in our field of study, and the future of our country. Billy and Michelle Boonzaier, thank you for your continued belief in me and your continued motivational inputs. Any conversation with either one of you always leaves me inspired. Mr Gawie Cillie, thank you for your supportive interest in my career and business pursuits, not to mention the urgent late-night telephonic labour law guidance!

Thank you, Professor Martin Kidd, for your technical guidance and assistance.

Harambee is a wonderful entrepreneurially minded organisation of which I have also become a satisfied client. Rob Urquhart and Mosoue Sekonyela – thank you for the inspiring work done by yourselves and your company. Thank you kindly for your participation, patience, and time investment in this study. It is one of my deepest hopes for this study that it will facilitate an on-going relationship between you and our university and that the hard-fought research done here will make a meaningful contribution to your practice. Others in the Harambee ranks who contributed greatly to this thesis are Talent Zhou, Dave Fair, Nyameka Mankayi, Helen Smith, Takalani Salimane, Tshepo Makhanye, Daisy Monaheng, Xola Qwase, Misheck Zvirahwa, Sihle Ndlovo, Gina Stoltz, Thiru Govender, Sylvester Moepya, and Sivuyisiwe Prusent. There were also others with whom I interacted and who helped behind the scenes – thank you for your contributions even if not listed here.

Thank you to Pieter and Lizette De Villiers from Shadowmatch, Louis Nel from Media Works, and Terry Taylor from Aprolab for the time taken to entertain my questions.

Warranting a particularly special mention, is Jerusha Perumal, my dear friend and understanding business partner. I appreciate our mutual commitment to helping each other “get there.” I am looking forward to what the future holds.

Saving the best for last, I would love to thank my beautiful and loving wife Yvette, who has come into my life with this study already “on-going,” and who has stood by me and motivated me throughout the whole process and through all the trials that life has thrown our way. Thank you for the wonderful person you are, for your pure spirit, and the difference you make to my life every day. As I have said before: “In the end all of this is for you and Marisa, and any other additions to our family that we may be blessed with.”

I would like to dedicate this thesis to all the people of South Africa, who simultaneously inspire and frustrate me so! Ours is a country of great beauty, great riches, and great potential. This is my modest contribution towards the hope of a brighter and better future, indeed shared by us all.

TABLE OF CONTENTS

CHAPTER 1	1
INTRODUCTION.....	1
1.1 The Initiation of the Research.....	1
1.2 The Context, Role, Purpose, and Paradigm of the Industrial/Organisational Psychologist/Human Resource Management Professional	3
1.3 The Research Aim and Objectives	6
1.4 The Structure of this Thesis.....	8
CHAPTER 2.....	10
THE SOUTH AFRICAN CONTEXT AND ASSOCIATED HUMAN RESOURCE CHALLENGES	10
2.1 Gross Income Inequality.....	10
2.1.1 Inequality on a global level	10
2.1.2 Inequality in South Africa.....	11
2.1.3 Inequality – consequences, causes and remedies	13
2.2 Unemployment and Poverty	16
2.2.1 Youth unemployment and poverty.....	21
2.3 Economic Dependency.....	23
2.4 The South African Political History and Legacy	25
2.5 Economic, Governmental, Labour Market, and Societal Issues and Outcomes	28
2.5.1 Employment and labour market outcomes	28
2.5.2 Education, skills, and human capital	31
2.5.3 Economic and other macro-level outcomes.....	41
2.5.4 Social, cultural, and psychological outcomes	44
2.6 Government Attempts to Rectify the Problems	47
2.7 Social and Economic Policy, and Legislation Changes, Post-1994.....	49
2.8 Legislation Aimed at Transformation and Equality	54
2.9 Consequences of Inappropriate and Lacking Action	65
2.10 Incentives to Act toward Holistic Positive Social Change	71
2.11 Remedies and Opportunities to Consider in the National Interest.....	73
2.12 The Related Challenges and Reaction of the HR Professional within the Human Resource Management Paradigm.....	81
2.12.1 Selection, prediction, and adverse impact	83

2.12.2 The development of a multi-stage selection model using learning potential	90
2.13 The Considered Response to the Needs of the HR Practitioner	91
CHAPTER 3.....	93
LITERATURE REVIEW.....	93
3.1 Intelligence Testing and the Advent of Dynamic Testing.....	94
3.2 Theoretical Forerunners and Underlying Theory of Learning Potential Assessment	99
3.3 The Mediated Learning Experience and Instrumental Enrichment Concepts Evaluated and Applied.....	113
3.4 An Integrated Understanding of the Founding Theories of Learning Potential	116
3.5 Notable Learning Potential Tests.....	117
3.6 Learning Potential Testing: Toward an Application in the South African Context	121
3.7 Notable Learning Potential Measures Originating from South Africa.....	126
3.7.1 The Learning Potential Computerised Adaptive Test (LPCAT).....	127
3.7.1.1 The psychometric properties of the LPCAT	130
3.7.2 Taylor's approach to learning potential testing	131
3.7.2.1 Psychometric evidence for Taylor's assessments.....	141
3.7.4 Stellenbosch studies: What constitutes learning potential?	143
3.7.4.1 De Goede (2007).....	147
3.7.4.2 Subsequent revision of the De Goede (2007) model	151
3.7.4.3 Further research into affirmative development.....	158
3.7.5 Approaches currently used in practice.....	159
CHAPTER 4.....	161
HARAMBEE YOUTH EMPLOYMENT ACCELERATOR	161
4.1 Background and Conceptualisation	161
4.2 Harambee's Process	163
4.2.1 Demand contracting	164
4.2.2 Sourcing and screening	165
4.2.2.1 Phase One assessments	166
4.2.2.2 Phase Two assessments	168
4.2.2.3 The corporate group – Phase two.....	169
4.2.2.4 The corporate group – Phase three	169
4.2.2.5 Retail and hospitality group – Phase two	170

4.2.2.6 Step-up programmes	170
4.2.2.7 Bridging programme	172
4.2.2.8 Cognitive training (Coglab)	173
4.2.2.9 Evaluation.....	174
4.2.2.10 Feedback.....	177
4.2.2.11 Placement into jobs	177
4.2.2.12 Employment journey survey.....	178
4.3 Benefits of the Harambee Programme.....	178
4.4 Profile of Harambee Candidates.....	179
4.5 Harambee's Philosophy Around the Creation of their Model.....	181
4.6 Harambee's Strategy and Goals – Current and Future	181
4.7 Harambee Measurement Tools and Outputs: Shadowmatch.....	183
4.7.1 Shadowmatch introduction and premise.....	183
4.7.2 Habits.....	186
4.7.3 Attitudes.....	190
4.7.4 Other Shadowmatch measures	192
4.7.5 Critical habits/core profile	193
4.7.6 Benchmarks	193
4.7.7 Matching and scores	195
4.7.8 Psychometric properties: Habits as separate factors.....	197
4.7.9 Pairing Habits.....	198
4.7.10 Shadowmatch and psychometric measurement	199
4.7.11 Utility of results: Shadowmatch testing and validation	200
4.7.12 Shadowmatch personal development programme and other applications	202
4.8 Numeracy and Literacy Assessment.....	202
4.9 Learning Potential Testing	202
4.10 Tracking of Matric Marks	203
4.11 Harambee and the Multi-Stage Selection Model.....	203
4.12 Harambee as Research Partner	204
CHAPTER 5.....	206
RESEARCH METHODOLOGY	206
5.1 Research approach	206
5.2 Research Design and Statistical Analysis.....	210

5.2.1 Validation of the Harambee prediction model	210
5.2.2 Explorative data analyses	210
5.3 Data Gathering and Sampling	211
5.4 Operationalisation.....	215
5.5 Statistical hypotheses	217
CHAPTER 6.....	219
RESULTS OF THE STATISTICAL ANALYSES AND DISCUSSION	219
6.1 Reporting of Results	219
6.1.1 Descriptive statistics.....	219
6.1.2 Correlational analyses.....	220
6.1.3 Multiple regression analyses	227
6.1.4 Further results from the statistical analyses	232
6.1.5 Differences between the sub-groups in the sample	232
6.2 Discussion of Results	235
CHAPTER 7.....	240
EVALUATION OF THE HARAMBEE MODEL, RESEARCH LIMITATIONS, CONCLUSIONS, AND RECOMMENDATIONS.....	240
7.1 Harambee Prediction Model Evaluation.....	240
7.2 Theoretical-conceptual Assessment of Harambee Youth Employment Accelerator	242
7.3 Future- and Improvement-oriented Suggestions	248
7.4 Implications for the Multi-stage Selection Model	250
7.5 Limitations of the Current Research	251
7.6 Impetus and Contribution to Current and Future Research.....	252
7.7 Conclusions.....	253
ANNEXURE A: THE EXPANDED LEARNING POTENTIAL COMPETENCY MODEL	264

LIST OF TABLES

Table 2.1. Inequality in South Africa 2006 – 2011	12
Table 2.2. South African employment statistics – Q1, 2016	19
Table 2.3. The South African economically active population by gender and race group	29
Table 2.4. Complete workforce representation levels by race and gender per occupational levels	30
Table 2.5. Global Competitiveness Index – South Africa's scores on sub-indexes and component pillars	42
Table 2.6. Relevant rankings from the WEF Global Competitiveness Index	43
Table 3.1. Mean differences in TRAM scores across racial groups	142
Table 4.1. Daily transport costs in relation to money available per day	164
Table 6.1. Descriptive statistics for all variables in the Harambee sample	219
Table 6.2. Correlation analyses of the set of predictor variables and the Coglab criterion variables	220
Table 6.3. Correlation analyses of the set of predictor variables and the weekly bridging scores as criterion variables	221
Table 6.4. Correlation analyses of Shadowmatch habits and attitudes with the various Coglab scores	222
Table 6.5. Correlation analyses of Shadowmatch habits and attitudes with the weekly bridging scores	225
Table 6.6. Intercorrelation analysis of the predictor variables	226
Table 6.7. Intercorrelation analysis of the criterion variables	227
Table 6.8. Multiple regression analysis of the set of predictors on the Coglab Analytical score	228
Table 6.9. Multiple regression analysis of the set of predictors on the Coglab Conceptual score	228
Table 6.10. Multiple regression analysis of the set of predictors on the Coglab Final Score	229
Table 6.11. Multiple regression analysis of the set of predictors on the Coglab Difference score	229
Table 6.12. Multiple regression analysis of the set of predictors on the Coglab Pre-Test Score	230
Table 6.13. Multiple regression analysis of the set of predictors on the Coglab Weekly Average score	230
Table 6.14. Multiple regression analysis of the set of predictors on the Weekly Total Average score on the bridging programme	231
Table 6.15. Multiple regression analysis of the set of predictors on the Weekly Sub-Total Average score on the bridging programme	231

LIST OF FIGURES

Figure 2.1. Number of employed persons and unemployment rate (2004 to 2014)	17
Figure 2.2. Unemployment amongst youth and adults	22
Figure 2.3. Poverty headcount by age	22
Figure 2.4. Top management in South Africa by population group	29
Figure 2.5. Poverty in relation to level of education	40
Figure 2.6. Poverty percentage according to population group	45
Figure 3.1. Hypothesised learning potential structural model	147
Figure 4.1. Harambee's process flow	164
Figure 4.2. Relationship between retention and take-home pay spent on transport	165
Figure 4.3. Corporate bridging programme: weekly scorecard	176
Figure 4.4. Employment in candidates' households	179
Figure 4.5. Barriers to seeking employment	180
Figure 4.6. Type of school attended by candidates	180
Figure 4.7. Reasons for not completing studies	181
Figure 4.8. Harambee supply and demand dynamics	183
Figure 4.9. Shadowmatch report output for 19 habits	186
Figure 4.10. Shadowmatch profile: poor match to benchmark.	195
Figure 4.11. Time results of Shadowmatch test-taker compared to benchmark	196
Figure 4.12. Conceptual and task efficiency compared to benchmark	196
Figure 4.13. Attitudes compared to benchmark	197
Figure 4.14. Matching results – good and poor match	197
Figure 4.15. Retention of candidates by profile matches	200
Figure 4.16. Learning potential versus numeracy scores	203

CHAPTER 1

INTRODUCTION

This thesis investigates the use of learning potential testing in selecting individuals from a disadvantaged background for affirmative development, with the aim of placing them in gainful employment. This is done by evaluating the prediction model of an existing employment accelerator programme, substantiated by a qualitative assessment of the programme itself. There is a strong intention behind this study to create a meaningful contribution to the existing research base and the ongoing quest to eliminate poverty and extreme inequality in South Africa, and as such, it provides a detailed analysis of the current socio-economic context, relevant legislation, and its implications for human resource management.

The thesis starts with explaining the thoughts, ideas, and questions that gave rise to the interest in the research, accompanied by a detailed analysis of the role of the industrial psychologist in practice – who stands to benefit from this research. This analysis guides the subsequent formulation of the research objectives and approach taken in this thesis, which are explained at the end of this chapter.

1.1 The Initiation of the Research

To introduce, clarify, and motivate the current research properly, with reference to the relevant aspects of the research field, it is imperative that the course of the initiation of the research, the thoughts behind it, and the process leading up to the conceptualisation, and later the formulation, of this thesis, are all understood by the reader:

The researcher's interest in the area of learning potential testing and the corrective development of human resources was sparked by the attention the subject receives in post-graduate courses in the Stellenbosch University's Industrial Psychology Department. The general departmental interest in this area of study emerged from an exploration of tools and approaches that may be beneficial in assisting in minimising adverse impact typically salient in selection scenarios involving people from the designated (previously disadvantaged) group, as defined by the Employment Equity Act (No 55 of 1998), as amended (Theron, 2010a). The research niche area of the department is also very much geared in this direction, focusing on, amongst others, areas such as the retention and career development of people from the designated groups; predictors of job-success amongst people from the designated groups; affirmative development of farm workers; and most significantly related to the current research, the development of an extended learning potential competency model (Industrial Psychology Department - Stellenbosch University, n.d.).

The starting point was thus essentially solving, or contributing to a solution, for the myriad of issues facing South African companies when it comes to compliance with, and effective implementation of, the laws surrounding the employment of designated groups in our country – with the intention of still contributing to bottom-line utility, and legitimately serving the needs of the South African economy and society going forward.

The research thus had an idealistic and optimistic origination, in that it is aimed at a scientific contribution that could be valuable in its application in industry and has the potential to contribute to the South African society in a meaningful way. The start of the research-initiating question is thus to be found in the notion that learning potential testing could somehow be used innovatively to select disadvantaged individuals fairly for the inclusion in some form of affirmative development programme, probably as a part of an expanded multi-stage selection model. This is explained further in a subsequent section.

The research-initiating question is thus not singular nor simplistic in nature, however, it may be summarised as below:

- What is the current situation in South Africa regarding the aforementioned factors (with reference to the current social, economic, and legislative environment) and what research needs does this present to the Human Resource Management (HRM/HR) and Industrial/Organisational Psychology profession?
- What is the appropriate response for this fraternity to current demands specific to the context faced in South Africa?
- Is this notion of the innovative usage of learning potential testing (in order to select designated individuals for development) a worthwhile pursuit?
- If yes, what remains to be done for this pursuit to become a fruitful reality in practice?

The above was seen to imply that it may be important to investigate the theory and current practice behind learning potential testing and affirmative development and furthermore understand what it is that needs to be done or understood for this practice to be applied successfully.

Further towards the goal of clarifying and motivating the present research, is the understanding of the context and paradigm within which the industrial/organisational psychologist or HR practitioner operates, and the motives in terms of which any endeavour in this field is justified. This means examining this context, the function, and the value of the industrial psychologist or HR practitioner closely; and understanding what meaning and value is contributed to the world at every level at which this profession operates.

1.2 The Context, Role, Purpose, and Paradigm of the Industrial/Organisational Psychologist/Human Resource Management Professional

It is of paramount importance that the context, vantage point, and functioning of the industrial/organisational psychologist or human resource practitioner (hereafter referred to as HR professional) be clarified before the research content is approached. The reason understanding one's paradigm and research angle is important is because, firstly, it will provide motivation that there is indeed value in pursuing research in the present field and area and, secondly, it provides a valuable point of approach, context, a source of focus, a general idea of an end goal, and in the final instance - a lens for interpretation, when selecting, evaluating, and/or applying any facet of any research endeavour.

The HR professional operates in the formal sector of the economy in various relevant roles and positions. Although this is usually considered to be in the private corporate business environment, the HR professional certainly also operates in the public sector or non-governmental organisational (NGO) sphere. It is however important to explore the functioning (actual and intended) of the broader context in which the HR professional finds him/herself, as the effective HR professional should remain mindful of the complexities of the environment in which he/she operates.

Organisations form and exist to achieve goals not achievable by independent individuals. They thus exist as an amalgamation of people, processes, and technology (Van der Westhuizen, 2015). Looking firstly at the value of business and other enterprises in the world, it is understood that organisations of all sizes, both public and private, are meant to contribute to society by:

- Combining resources to provide goods and services that people need and/or desire in their daily functioning;
- Providing rewards or desired outcomes to stakeholders, for example entrepreneurs, investors, and/or the tax-paying public (as the case may be);
- Providing work and remuneration to the people of a nation, thus fuelling economic activity; as well as
- Providing tax revenue that enables government spending (in the case of the private sector) (Theron, 2010b; Burger, 2012).

The successful operating of business and other enterprise in a country contributes to economic growth and prosperity – this in turn allows individuals of a nation the opportunity to build and improve their lives (De Goede, 2007). Another important function of private and public organisations is that, to improve the functioning of the environment they operate in, they invest in building economic infrastructure and developing people so that they will be more capable of achieving their goals and strategies. This investment further fosters future growth and prosperity.

Private businesses are able to do all of the above through using funds retained in the form of profits generated through operating activities (De Goede, 2007), whereas public enterprise is responsible for the efficient usage of tax revenue. Optimisation and efficient use of scarce resources are thus core directives in any form of enterprise.

Organisations have different products and services and also different visions, missions, and goals. They also use widely divergent strategies and methods to achieve the aforementioned, and also employ a unique combination of human resources. The capitalist ideological system that characterises the Western economy recognises that all organisations are operating and competing in a defined marketplace consisting of limited resources in every facet of their activity. Organisations are thus forced to compete on a myriad of platforms and subsequently strive to ensure that they stay ahead in terms of resource optimisation, to ensure their continued profitability and/or survival, as well as the continued achievement of their organisational goals.

Although based on an idealised view of the operation of our society and the organisations active therein, one could make the moral argument that the role and responsibility of individuals and organisations (including government) include responsible custodianship over scarce resources available, accompanied by the equitable and sustainable management thereof. Organisations should therefore achieve their goals and seek benefits for stakeholders, while still protecting the health and wellbeing of current and future generations and engaging in activities in a way that promotes peace, stability, sustainability, and shared growth and prosperity. Any organisation, apart from facing the burden of relevance of their actions in their operational context, should also thus arguably contribute to national (and international) societal goals, while operating with a respectful reverence toward the interest of individuals and the collective. This view, as idealised as it may be, is, to a certain extent, actually expected from organisations in reality. Van der Westhuizen (2015) refers to the existence of the expectation that individuals have of organisations to provide value-adding products and services that satisfies human needs and desires, on the condition that the organisation engages sensibly with both natural and human resources. This expectation represents a usually unwritten psychological contract (save for where it is explicitly stated by relevant laws, interest groups, and the public) that is well understood by individuals and organisations alike and that has, in the modern society, come much closer to the surface.

In a response to this expectation (or obligation) more companies have adopted an approach referred to as the 'triple-bottom-line'. Profit, together with a return on funds employed, and shareholder/stakeholder value, are essential and measured parts of economic value that organisations strive to create, as mentioned earlier. However, organisations as subsystems, interdependent on a larger 'supra-system', can add social and environmental dimensions to the criteria through which they define and measure success. Having individuals, government, and

business focused on all these elements can certainly help to create a sustainable society (Van der Westhuizen, 2015).

Organisations, as mentioned earlier, operate due to the amalgamation of the efforts or labour of people. Labour, as the life-giving factor of production, through which the other factors of production are activated and mobilised, is a critical element in determining the effectiveness and efficiency of the operations of any organisation, and thus requires dedicated attention and study (Burger, 2012).

HR professionals find and justify their place in the organisational system by aligning the human resources strategy to the organisational strategy and contributing to the achievement of organisational goals through the management of the human resources employed by, and available to, the organisation (Theron 2010b; Van der Westhuizen, 2015). They thus contribute to resource efficiency and competitive advantage through the effective and efficient management and optimisation of the human resources function of the organisation. The HR professional contributes to this advantage by managing and manipulating the human resource element of the company in such a way that it operates efficiently and provides returns greater than the cost thereof. The organisation is, once again, mainly a system through which people strive to achieve a collective organisational goal, and the quality of the people and their work in that organisation will logically determine, to a significant extent, the success of the organisation (Burger, 2012; De Goede, 2007). It is here where we find the paradigm of the industrial psychologist/HR professional.

Work plays a substantial role in the lives of humans, as it contributes to a sense of purpose, meaningfulness, and achievement, and facilitates interaction with others during a process of striving for collective goals (Mahembe, 2013). The HR professional must understand the functioning and performance of people in the workplace and must thus be informed through reliable psychological understandings of the behaviour of human beings at work, in terms of the systematic expression of a complex nomological network of interacting variables, which characterise the individual and the working environment - which includes a clear understanding of the wider context (Burger, 2012; Theron, 2010b). The HR professional must work to manage the people of a specific organisation towards the organisational goals effectively and efficiently. This is done, firstly, through regulating the entrance of employees into the organisation, through optimal recruitment and selection practices, secondly, through managing and developing employees, and thirdly by creating a work environment and structures that are conducive to the optimum performance of the individuals selected. The goal of research in the applied field of industrial psychology should subsequently be to support and inform the function explained above by building valid and tested theory and through empirical scientific research that suits and

addresses relevant needs of the professional industrial psychologist in practice (Burger, 2012; Van der Westhuizen, 2015).

The research-initiating questions that formed the foundation of the current research project should be seen as aiming to achieve exactly what is explained above, namely addressing an expressed need in the South African organisational environment by investigating theories, tools, methods and approaches that practicing industrial psychologists can apply in an effort to better achieve their purpose – which is to contribute to the goals of the organisation, which should ultimately be responsibly aligned to national goals and the greater good.

1.3 The Research Aim and Objectives

To further understand the need for and relevance of this research, it is necessary to analyse some specific complex and problematic realities facing the South African society and economy. The following chapter reports on significant problematic indicators in the South African society and economy that underlie the adverse impact experienced in selection in South Africa. Key issues include significant inequality in the dispersal of income (indicated by a Gini coefficient of around .7) (Forslund, 2016); large scale unemployment (approximately 27 percent by the narrow definition) (Statistics South Africa, 2014); and extreme poverty (as indicated by 46 percent of South Africans living below the poverty line) (Paton, 2014). These indicators are significantly higher among the youth. This results in the dependency of the majority of South Africans on a small number of employed providers, and state assistance financed by a limited tax base (Nolutshungu, 2011; Statistics South Africa).

The South African political history, which was based on racial segregation, has led to a number of structural problems that have been exacerbated by failed attempts at rectification, and are still prevalent along racial lines. Legislation that is in place to facilitate positive socio-economic change, has also largely failed and brought about an array of adverse effects. A detailed discussion of the relevant legislation and its impacts is presented.

In the context of corrective legislation, and economic and societal imbalances, the human resource practitioner faces challenges within the organisation, and specifically in the selection function. Psychometric testing specifically has faced much scrutiny, suspicion, and criticism, as mean group differences on predictor measures have often been interpreted as representing bias against the previously disadvantaged group. In response to the pressure to develop measures that are ‘culturally fair’ there has been the firm suggestion that affirmative development is a rather urgent need, since sub-group variances in predictor performance can arguably be ascribed to actual differences in the distribution of critical dispositions and attainments between members of the respective groups due to past and present disadvantage. The appropriate organisational response to this seems to be to implement a version of a multi-stage selection procedure that

involves a large development component and rests upon the use of learning potential testing (Theron, 2010a).

The research initiating question thus involved identifying whether a multi-stage selection procedure could be shown to have practical value and, if so, what ground still needs to be covered to achieve justification for its utilisation and to enhance the meaningful practical application thereof.

The researcher subsequently identified Harambee Youth Employment Accelerator as a progressive non-profit organisation following a model that closely resembles the multi-stage selection model proposed by scholars of the Department of Industrial Psychology at Stellenbosch University. As such, the objectives of this research include the empirical validation of the predictive validity of the Harambee predictive model, supported by a qualitative assessment of the Harambee programme in terms of the existing body of knowledge, mainly in relation to learning potential and, explorative data analyses of available measurement data in order to identify linkages that may serve as impetus for future research. The aim of the research is thus to use the Harambee programme as a case study in order to draw inferences that would inform the practical application of the multi-stage selection approach in a manner that would allow it to make a meaningful impact on the South African society and economy and also alleviate pressures experienced in the practice of human resource management and industrial/organisational psychology in South Africa.

The research objectives of this thesis subsequently include:

- A critical evaluation of the South African social and economic context in order to clarify its implications for organisations, specifically in the context of relevant legislation
- Delineating the current literature on learning potential assessment, including that of Stellenbosch University, and discovering the potential applications of learning potential assessment in responding to the organisational challenges identified.
- Finding and investigating appropriate examples in the approaches of organisations utilising learning potential assessment within the context of a multi-stage selection model.
- Conducting an empirical validation of the predictive validity of the Harambee predictive model, supported by a qualitative assessment of the Harambee programme in terms of the existing body of knowledge on learning potential assessment and affirmative development.

1.4 The Structure of this Thesis

Chapter 1: Introduction

- This chapter explains the initiation of the current research within the context of the role and paradigm of the industrial psychologist. A brief overview of the thesis is provided, and the research objectives are preliminarily defined.

Chapter 2: The South African Context and Associated Human Resource Challenges

- Detailed reference is made to social and economic factors that necessitate this research, and some proposals regarding the general direction of social research and public policy going forward are provided. The implications of the aforementioned for organisations and the human resource function are explained and the proposed remedy to be considered, namely the multi-stage selection process, is defined.

Chapter 3: Overview of Learning Potential Assessment and Development

- A detailed literature review on the use and applicability of learning potential testing in Industrial Psychology is provided. A detailed history of learning potential assessment is provided along with a delineation of currently available measurements and recent research.

Chapter 4: The Harambee Youth Employment Accelerator

- Harambee is an organisation that employs a model, the Harambee Youth Employment Accelerator, that resembles what has for years been contemplated in the learning potential research niche area of the Department of Industrial Psychology at Stellenbosch University. Harambee is introduced as research partner in terms of their relevance to the proposed remedy of a multi-stage selection programme. Their programme is discussed in its entirety, focussing specifically on their prediction model.

Chapter 5: Research Methodology

- The research approach of evaluation research is discussed, along with technical aspects of the empirical analyses. Correlation and multiple regression analyses are used to evaluate the Harambee prediction model for predictive validity.

Chapter 6: Results of the Statistical Analyses

- The outcomes of the statistical analyses are noted, interpreted, and discussed.

Chapter 7: Evaluation of the Harambee Model, Research Limitations, Conclusions, and Recommendations

- The theoretical assessment of the Harambee model is presented. The limitations of the current research, and recommendations with respect to future research are also discussed.

CHAPTER 2

THE SOUTH AFRICAN CONTEXT AND ASSOCIATED HUMAN RESOURCE CHALLENGES

South Africa is a nation with a particularly unique situation and background that has led to certain unfortunate current realities that are facing the society and economy. Although these realities are certainly not all unique to the country, the very well-known and understood effects thereof impact the lives of all South Africans every day. These include gross wealth and income inequality, large scale unemployment, extreme poverty, poor literacy, inefficient governing, and a tough business environment (Ramphele, 2012). These factors combine to result in a national economy that is non-competitive in the international arena and an accompanying highly complex development context (Oxfam, 2016). These also provide several immense challenges for the management of human resources. Below is a delineation of these problems, their probable causes, possible solutions, and also, why and how they serve as impetus for the current proposed research.

2.1 Gross Income Inequality

Income inequality is a by-product of the Western capitalist economic system and is thus highly prevalent across the world. Although this phenomenon is inherent within the system, and a fair degree of inequality should exist (as it creates rewards for skill, innovation, risk, and entrepreneurship). Extreme income inequality, on the other hand, is not acceptable, should not be allowed to be perpetuated, and should actively be fought (Oxfam, 2014a).

2.1.1 Inequality on a global level

The World Economic Forum (WEF) listed, in the Outlook on the Global Agenda 2014, widening income disparities as the second most relevant issue facing the world today, following (by a narrow margin) rising tensions in the Middle East and North Africa. The 2015 Agenda, goes on to categorise deepening income inequality as the number one top trend, followed secondly by persistent jobless growth, and thirdly by an international lack of leadership. According to Oxfam (2014b) half of the world's prosperity is owned by only one percent of the populace. The wealth of these people amounts to more than \$110 trillion – sixty-five times the wealth of the bottom half of the world's population – the half that owns less than one percent of total wealth (Jones, 2014). A popular fact from these reports that is frequently noted elsewhere is that the eighty-five richest people in the world (based on known wealth in official Forbes lists) collectively own more than the entire poorest half of humanity. This wealth gap has also been growing since the global financial crisis in 2008/2009. Despite an increase in poverty in many countries in the world, in 2013, the world's population of official billionaires has increased by 210 to 1426 people. Ten percent of the global population holds eighty-six percent of the assets in the world and the poorest 70 percent hold just three percent. Inequality is a problem in all parts of the world, and not only in developing

countries such as South Africa, Brazil, Mexico, Argentina, and Turkey, but often even more so in large economies like that of North America, China and India. Today, seven out of ten people live in countries where the wealth-gap has widened since 1988 (Jones, Oxfam).

Inequality also exists between countries. Truly staggering amounts of wealth are accumulated among the rich elite, small percentages of which could eliminate poverty and service delivery issues on a large scale. For example, a one and a half percent tax on billionaires in 2014 could have raised \$74 billion that could have delivered health services and covered the annual gaps in education in the poorest 49 countries. This would have saved the lives of 29 million people and secured schooling for every child in those countries. Eradication of poverty thus seems impossible without addressing income inequality (Oxfam 2014b); although it must be said that the views and economics of organisations such as Oxfam are not universally agreed to and supported (for example Nelson, 2017), and that there is indeed evidence that global capitalism has resulted in decreased poverty and improved aggregate living standards across the world. Nonetheless, inequality is arguably a reality, and is an issue that has found its way into the global spotlight – many people are starting to take notice that the rich getting richer is not helping to solve socio-economic problems facing the modern world. There seems to be a growing discontent in public discourse, accompanied by events of mass action, when it comes to the *status quo* surrounding income inequality. Income inequality has thus become a matter affecting global public opinion and has become the centre of policy debates (Oxfam, 2014a). According to the WEF Global Outlook Agenda 2014, growing inequality is an issue of fundamental importance. Of the top ten trends mentioned in the report, respondents were least happy with the media coverage of income inequality.

One of the reasons extreme inequality is also an important issue, is the human and moral dimension of it. For example, in the 2014 Pew Global Attitudes Survey (as cited by WEF, 2015a), in the seven Sub-Saharan African nations (including South Africa) polled, over 90 percent of participants regard the gap between the rich and the poor as a major concern. Across the world, religion, literature, folklore, and philosophy show remarkable confluence in their views that inequality is inherently unfair and morally wrong. This concern is furthermore prevalent across different cultures and societies, signifying a fundamental human preference for fairness and equality (WEF, 2015a).

2.1.2 Inequality in South Africa

Although there should not, based on the above, be an expectation of a completely equal South African society, widespread systematic inequality is a particularly serious problem in the country. Le Roux (2014, p. 1), with reference to the Oxfam (2014a) report on inequality, states that “South Africa is the most unequal country in the world” as far as the ownership of wealth is concerned.

This statement, albeit extreme, seems to be well supported, for example, by Lincoln (2011) and Oxfam (2016), who also list South Africa amongst the top-rated countries for inequality in the world. The two richest South Africans (according to Forbes) have the same wealth as the poorest 50 percent of our population (or roughly 26.5 million people) (Le Roux). South Africa had a national population of about 55 million in 2015 (World Bank, 2016). The wealthiest 10 percent of our population holds about 71 percent of our country's wealth, according to a global wealth report by the Credit Suisse Research Institute (Masote, 2014). In South Africa, 63 000 people are amid the top one percent wealthiest in the world (Masote), of which 47 000 are dollar millionaires (Malala, 2014).

Income/wealth inequality amongst the citizens of a country is measured according to an index known as the Gini coefficient. Based on the Lorenz curve, it is typically expressed as a value ranging between zero and one –as a decimal value (though often multiplied to be a value between zero and one hundred). A Gini equal to zero would imply a completely egalitarian distribution of wealth amongst the citizens of a country, where each has the exact same percentage of wealth (perfect equality) and the other extreme of the scale would imply that one single person owns all the wealth in a country (perfect inequality) (Theron, 2010a). For example, South Africa has a Gini coefficient of .6314 (Quandl, 2014). This can be translated to say that 63.14 percent of wealth would have to be redistributed in order to achieve perfect equality. This is a very high value, however some sources, such as those cited by Burger (2012), assign an even higher value to it – at least as high as .65, and some even as high as .68. The United Nations Development Programme (as cited by Van der Westhuizen, 2015), rated the South African Gini coefficient at .58 in 2011, ranking 123 out of 187 countries. Statistics South Africa (2014), reports in Table 2.1 that the national Gini coefficient has improved by coming down from .72 to .69 between 2006 and 2011, which in the end still estimates it even higher than other sources.

Table 2.1.
Inequality in South Africa 2006 to 2011

Inequality indicators	2006	2009	2011
Gini coefficient (income per capita including salaries, wages, and social grants)	0.72	0.70	0.69
Gini coefficient (expenditure per capita, excluding taxes)	0.67	0.65	0.65
Share of national consumption of the poorest 20% (per capita)	4.4%	4.4%	4.3%
Share of national consumption of the richest 20% (per capita)	64.1%	61.4%	61.3%

Note. Adapted from “Poverty trends in South Africa”, by Statistics South Africa, 2014, p. 14.
Copyright 2014 by Statistics South Africa.

The World Bank estimated the real South African Gini coefficient at approximately .59 in 2014 however this is disputed by Forslund (2016) who claims this figure is not realistic since it takes into account public spending on health and education as ‘incomes in kind’ that are directed at the poor. Without this adjustment, the figure is reported to be as high as .77. Considering income taxes, subsidies, social grants, and indirect taxes the Gini coefficient is .695, according to Forslund.

Van der Westhuizen (2015) points out that inequality separates South Africans more than any other issue, including race, and Oxfam (2016) also refers to remaining historical and new patterns of inequality that are both present in the country. According to the 2010 Development Indicators Report released by the Department of Planning, Monitoring, and Evaluation on behalf of the Presidency, between-race inequality decreased from .532 in 1994 to .331 in 2008. Within-race inequality, averaged across all race groups, increased from .349 in 1994 to .618 in 2008.

2.1.3 Inequality – consequences, causes and remedies

South Africa, through inequality, seems a contradictory society, where people living in close proximity to each other, have drastically different wealth, opportunities, and quality of life (Malala, 2014; Oxfam, 2016). Inequality also tends to enhance and multiply existing social issues including crime, violent conflict, gangsterism, and mental and physical illness (Oxfam, 2014a). The most notable effects, according to Oxfam (2014b), is stunted societal and economic growth, the prevention of poverty reduction, erosion of democracy, and pulling apart of social cohesion and security. Inequality has a debilitating and demoralising effect on those in the lower tiers of society – who face high barriers to entry into the economy, continuously fail to share in economic growth, and suffer the most when recessions hit (Ramphele, 2012). Inequality causes the wastage of talent and human capital because social mobility is disrupted, and opportunities are hoarded in the top tiers of society. Corak (as cited in Oxfam, 2014a) plotted the Gini coefficient against the degree to which an individual’s income is determined by their parents. In low Gini countries, such as Denmark, only 15 percent of a young adult’s income is determined by that of their parents. In the high Gini countries, such as Peru (comparable to South Africa), two thirds of a person’s income is related directly to what their parents produced in the past. This relationship is aptly known as the ‘Great Gatsby curve’ (Oxfam, 2014a).

Furthermore, income inequality is damaging to the economy and financial system. According to Andrew Haldane, an Economist with the Bank of England, there is “rising evidence that extreme inequality harms, durably and significantly, the stability of the financial system and growth in the economy. It retards development of the human, social and physical capital necessary for raising living standards and improving well-being” (Oxfam, 2014a, p. 2). There is a robust body of recent evidence that shows that any argument postulating that tackling inequality will be bad for

economic growth, is unfounded. International Monetary Fund (IMF) economists have also laid bare how inequality has contributed to the 2008/2009 global financial crisis (Oxfam, 2014b).

Known salient inequalities based on gender, race, and religion are also exacerbated by a growing income gap. Globally, women find themselves on lower economic tiers. There is a strong linkage between economic and gender inequality and the impact is magnified when these two aspects are considered next to each other, for example, in Ethiopia, the poorest rural women are six times more likely not to attend school when compared to the richest men in their country (Oxfam, 2014b).

Although inequality has many contributing factors, including economic growth rate, demographic trends, saving behaviour, macroeconomic trends, and government policies (including taxation and pension provisions) (Jones, 2014), according to Oxfam, growing income inequality has only two major overarching drivers. The first is market fundamentalism, which currently is the prevailing ideological world view of economics. It entails the Western *laissez faire* approach to the economy, which insists that the economy should be governed as far as possible solely by the laws of the marketplace – thus with an insistence on the reduction of government intervention. This means deregulation, privatisation, and lower social expenditure. Financial and goods markets are however not autonomous, spontaneous phenomena functioning according to their own inherent laws. Markets are social creations whose rules are created by institutions and regulated by governments – which should be accountable to both the participants and citizens. Where the rules governing markets are in favour of the poor and middle classes, there is growth and diminishing inequality. The second driver of inequality is the capture and biasing of power and politics by the rich elite and/or well-connected individuals through inappropriate political influence or expensive lobbying campaigns (Oxfam, 2014a; 2014b).

Inequality in South Africa, like Latin America, stems not only from differences between owners of capital and workers, but from a large divergence of incomes between workers. The richest decile has a per capita income 60 percent higher than that of the second richest decile in the United States of America (USA). This difference is 160 percent in Latin America and 208 percent in South Africa, according to a study by the Inter-American Development Bank (as cited by Bhorat, Leibbrandt, Maziya, Van Der Berg & Woolard, 2001). Holmes (2014) also examines the massive disparity between the incomes of the top management of the biggest companies in South Africa versus the rest of the population. Notably, their remuneration is exponentially higher than is often reported since their salaries and benefits apparently only make up a small part of their total packages. When executives' short-term incentives (cash bonuses), profit from long term incentives (stock options), and dividend pay-outs are considered, they make substantially more. Top earnings by these 'supermanagers' is seen as a big driver of inequality. For example, in the United States, these individuals make up 70 percent of the top 0.1 percent wealthiest (Piketty, as

cited by Holmes). In 2012, the highest paid South African Chief Executive Officer (CEO) earned 51 000 times what one receives on the child support grant programme (Holmes). The number of people in South Africa who take home over R100 000 per month has grown from 5 000 in 2013 to over 11 000 people in 2016, according to BankServAfrica's Disposable Salary Index (BDSI) data (as cited in Fin24, 2016). According to the BDSI, while the base is small, this group now makes up just less than 2 percent of their total sample. They further report substantial remuneration increases in the formal sector for those in the upper end of the scale who have kept their jobs in the current economic conditions (Fin24).

The premium for tertiary studies is a further powerful force in wage inequality. One may argue that this premium is not necessarily a negative thing in and of itself, however, that is assuming that socio-economic preconditions do not affect one's chances of attaining that education in a severe and disproportionate manner (Oxfam, 2014b; WEF, 2014a).

Solutions to income inequality may include appropriate regulation and policy to redistribute wealth and empower the poor. Minimising corruption at all levels of government will also contribute to benefits accruing to the poor. Protected spaces for inclusive governance and accountability are also required (Oxfam, 2014b).

Progressive taxation is also required to ease the burden on the poor and make funds available for redistribution. In developing countries, the tax system is often the most regressive and far from reaching its true revenue-raising potential. These countries' tax systems are often subject to undue influence and impacted by a global lack of coordination and transparency in tax matters. Developing nations offering tax incentives such as tax holidays, tax incentives, and free trade zones, in order to attract foreign direct investment, end up losing out on a large amount of tax revenue. Large multinational companies have also been found to avoid taxes by exploiting international loopholes. It has been estimated that Sub-Saharan Africa lost on average \$63.4 billion between 2008 and 2010 this way – more than twice the amounts received in aid (Oxfam, 2014b).

Social protection benefits are also needed to help reduce inequality. In South Africa, social grants to primary caregivers are seen to target women and children effectively. This is elaborated on in a subsequent section of this thesis.

Creating employment and paying living wages to employees also help to reduce the so-called 'working poor' according to Hartley (2012). For example, in the United States of America after the Second World War a tacit agreement between labour, big business, and government recognised the utility of paying high wages and government provided guidelines to link wages to prices.

Productivity-based wage increases align the interests of labour and business. (Oxfam, 2014b). Wage levels are also discussed in a later section.

The provision of free and effective healthcare services and high-quality primary and secondary education are however the two biggest methods of helping people increase their social mobility. Improving the quality of education through investing in trained teachers, facilities, and materials is critical. In Organisation for Economic Cooperation and Development (OECD) countries, the spending on this ‘virtual income’ alone reduces inequality by an average of 20 percent (Jones, 2014; Oxfam 2014a, 2014b).

It seems that inequality is a serious concern in a society that hopes to alleviate social and economic issues and promote economic growth. Collective understanding and action is needed for these problems to be rectified. There exists a fundamental relationship between inequality, unemployment, and extreme poverty.

2.2 Unemployment and Poverty

Unemployment and poverty are two related topics that are well known to be highly prevalent in South Africa. Unemployment is described correctly by Lindiwe Mazibuko, formerly of the Democratic Alliance, as a “national emergency” (Hartley, 2012, p. 101). Unemployment in South Africa is amongst the highest in the world – rated in the top thirty countries in the world for unemployment (CIA, 2012).

In 2014, Statistics South Africa published a report on poverty trends in South Africa between 2006 and 2011. In Figure 2.1 it is shown that the unemployment rate has been hovering steadily above 24 percent for a half decade from 2004 to 2012.

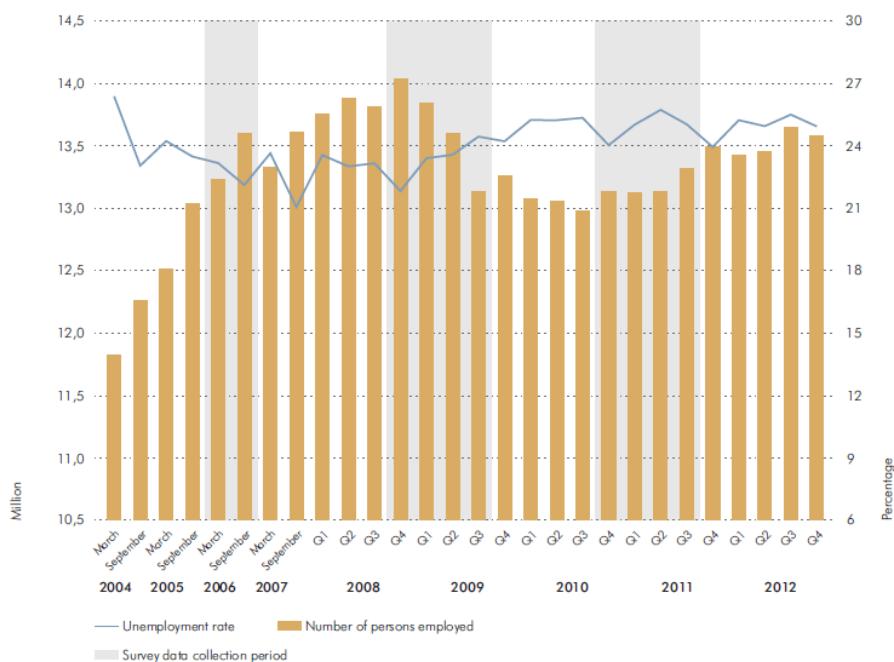


Figure 2.1. Number of employed persons and unemployment rate (2004 to 2014). From “Poverty trends in South Africa”, by Statistics South Africa, 2014, p. 16. Copyright 2014 by Statistics South Africa.

The unemployment rate, according to the narrow definition of unemployment, was 24.74 percent in 2013, just 0.13 percent down from the previous year (Quandl, 2014). Using the broader definitions of unemployment, thus including discouraged job seekers, the rate of unemployment rate could be as high as 37 percent based on 2010 figures (Burger, 2012).

According to Adcorp (n.d.), the primary source of employment data in South Africa is Statistics South Africa’s Quarterly Labour Force Survey, which is a survey of the labour market activities of a sample of individuals aged between 15 and 64 years of age. The size of the sample is 30 000 households which is then extrapolated to a population comprising of 49 million people (based on the 2011 estimate in this case). Consequently, there are some reliability issues. The estimations of total employment, for instance, have a statistical confidence around 34 percent. The data also do not discriminate between increasingly significant non-traditional employment types, such as contract, temporary, and agency employment amounting to approximately 2.9 million employees or 30 percent of the workforce. Furthermore, the definition of an ‘employed’ person is that the individual worked for at least one hour during the reference week, which arguably does not amount to truly gainful employment. Due to the continuous revision of the Statistics South Africa methodology, the identification of consistent long-term trends is difficult. Certain types of data are not collected every year and there are inexplicable jumps in employment estimates. Despite this, the data correspond closely with that of Adcorp (n.d.), and as such, are discussed and compared for the specific year below. However, Adcorp – a large diversified employment services firm–does

have considerable higher estimates of informal sector employment. Statistics South Africa base their figures loosely around the 2011 census, which also does not account for the 2-3.5 million immigrants since that census was conducted. This refers to mostly legal, but unchecked immigration from less economically attractive sub-Saharan African countries. This is from Zimbabwe mainly, however also from the Democratic Republic of Congo (DRC), Somalia, Angola, Nigeria, Malawi, Mozambique, and many others. Workers from these countries are often perceived by employers to have higher standards of literacy and education, and a better work ethic, than South Africans. These immigrants are often desperate enough to work for a lower wage and are less inclined to join a trade union. This makes them more attractive in a labour market where semi-skilled workers are already abundantly in supply. South Africa has seen serious incidents of xenophobia in 2008 and again in 2015—specifically linked to competition for job opportunities (Adcorp; Nolutshungu, 2011).

The South African Labour Market Index, for the first quarter of 2016, by the union Solidarity, shows that the local labour market weakened in every key metric to a new low since the 2008/2009 financial crisis. According to Gerhard van Onselen, economic researcher at the Solidarity Research Institute (SRI), the waning in the index indicates a deteriorating labour environment with sluggish wage growth, poor net employment, and retrenchments across most sectors. Solidarity mainly ascribed the lowered levels of job and wage security in the first quarter of 2016 to the depreciation of the Rand from December to February of that year; the threat of a credit rating downgrade; and major political scandals within the context of slow growth, growing costs, and general uncertainty in the business environment (Adcorp, n.d.). Statistics South Africa (2016) announced that the unemployment rate rose significantly, by 2.21 percentage points, to 26.7 percent in the first quarter of 2016, as seen in Table 2.2.

Table 2.2**South African employment statistics – Q1, 2016**

	Jan-Mar 2015	Oct-Dec 2015	Jan-Mar 2016	Qtr-to-qtr change	Year-on-year change	Qtr-to-qtr change	Year-on-year change
	Thousand				Percent		
Population aged 15 to 64 years	35 799	36 272	36 431	159	632	0.4	1.8
Labour Force	20 994	21 211	21 377	166	383	0.8	1.8
Employed	15 459	16 018	15 663	-355	204	-2.2	1.3
Formal sector (non-agricultural)	10 796	11 180	10 963	-217	167	-1.9	1.5
Informal sector (non-agricultural)	2 483	2 684	2 573	-111	90	-4.1	3.6
Agriculture	891	860	876	16	-15	1.8	-1.7
Private households	1 288	1 294	1 251	-43	-37	-3.3	-2.9
Unemployed	5 535	5 193	5 714	521	179	10.0	3.2
Not economically active	14 805	15 061	15 054	-7	249	0.0	1.7
Discouraged work-seekers	2 397	2 279	2 449	171	53	7.5	2.2
Other (not economically active)	12 408	12 782	12 605	-178	197	-1.4	1.6
Rates (%)							
Unemployment rate	26.4	24.5	26.7	2.2	0.3		
Employment/population ratio (absorption rate)	43.2	44.2	43.0	-1.2	-0.2		
Labour force participation rate	58.6	58.5	58.7	0.2	0.1		

Note. Adapted from “Quarterly Labour Force Survey, Quarter 1, 2016,” by Statistics South Africa, p. 6. Copyright 2016 Statistics South Africa.

Over 355 000 jobs were lost in this quarter, with 159 000 newly unemployed entering into the job market, or rather, working age population. The expanded unemployment rate in the reference period also increased by 2.5 percentage points between the fourth quarter of 2015 and the first quarter of 2016 to 36.3 percent (Adcorp, n.d.; Statistics South Africa, 2016). Statistics South Africa manager in labour statistics, Desiree Manamela, does note that the emphasis is on annual statistics and not quarterly (Gernetzky, 2015).

As mentioned earlier, in the WEF report, Outlook on the Global Agenda 2015, structural unemployment was rated the second largest issue facing the world today. In Sub-Saharan Africa, 81 percent of respondents believed that structural unemployment should be their government’s top priority (WEF, 2015a). Loane Sharp, a labour economist (as cited by Ryan, 2015), estimates that unemployment could rise to 40 percent by the year 2022 in the region.

Employment of adult labour market participants has been shown to be the main single contributor to household income (per capita), household poverty avoidance, and household inequality. Unemployment of such adults thus imposes a harsh cost on households (Bhorat, et al., 2001). According to Quandl (2014), 28.7 percent of the South African urban population lives in 'slums,' or 'squatter camps' as they are referred to more commonly in South Africa. Conway-Smith (2014) however claims this figure has decreased to 13.6 percent. It must be noted that figures available, particularly those quoted in the popular press, seem to be rather divergent, when it comes to matters of inequality, unemployment, and poverty.

Paton (2014), commenting on figures from the Statistics South Africa poverty trends analysis, mentioned earlier, mentions that the number on South Africans living with less than R620 per month has decreased in the reported period from 57 percent in 2006 to 46 percent in 2011. This amount represents the upper bound poverty line, which is a rate per month that allows one a certain minimum desired lifestyle. The number of people living below the lower bound poverty line of R321 per month, known as the food poverty line, has also seemed to come down from 27 percent to 20 percent during the same period. Although this is certainly a positive trend, it means that there are still 23 million and 10.2 million people living below the two respective poverty measures (Paton, 2014, p. 1). As far as food poverty is concerned, one in four South Africans suffer from hunger, according to Le Roux (2014). Statisticians usually base the poverty line on the resources needed to meet nutritional requirements, namely 2100 calories per day, as well as the average amount spent on non-food essential items. Statistics SA proposed a poverty line of R960 per person, in 2015 prices, however, most academic research has drawn the line significantly higher (Paton, 2015). According to initial research by the National Minimum Wage Research Initiative (Finn, as cited by Paton, 2015) a new poverty line of R1319 per person on April 2015 prices as suggested by the South African Labour, Development, and Research Unit at the University of Cape Town (UCT), is more appropriate. This represents a 'subsistence' level of living, rather than what would be required for a 'decent' standard of living. Based on this amount, earning R4125 per month will ensure that wage earners and their dependants close the 'poverty gap' and escape extreme poverty. This amount is R3042 if Statistics South Africa's figure is applied in the same way. Reaching the proposed (R4125) threshold means wages of at least the newly implemented minimum wage of R20 per hour if working close to 50 hours per week, taking overtime payment into account. In the labour market 58.79 percent of employees currently earn less than R4104 per month. In domestic services, 95 percent of people are below this threshold, and 89.5 percent in agriculture. Almost half of manufacturing earns less, 63 percent in construction, and 60 percent in the trade sector. This means that a national minimum wage of only R3000 per month would result in 40 percent of all employed people in South Africa getting a pay increase (Paton, 2015, p. 1).

Remuneration is seemingly under pressure in general. According to Adcorp (n.d.), in their 2011 labour market report, their Remuneration Index shows, on average, that employees' annual increases are less than increases in CPIX (an inflation measure indicating the consumer price index excluding mortgage costs, targeted by the reserve bank), with the exception of employees in the highly-skilled bracket. The Remuneration Index has declined year-on-year by 3.7 percent. For most South African workers, rises in their annual cost of living are higher than their salary increases, thus resulting in a growing number of working poor South Africans – parallel to international trends (Adcorp).

2.2.1 Youth unemployment and poverty

South Africa has a large youth population, with 20.2 percent of the national population being between 15 and 24 years of age. The 25 to 54 age group, which is a much wider age range (29 years versus 9 years), contains only 38.2 percent of the population. When one factors in those who are younger than 15, it becomes apparent that almost half of the population is younger than 24 (CIA, 2014, p.1). This trend is consistent across Africa, with half of the population of the continent's one billion people being 17 or younger. Predictions show that the active African population between the ages of 15 and 64 will triple between 2005 and 2060 (WEF, 2014b).

A most notable issue surrounding poverty and unemployment is its prevalence amongst young South Africans. Youth unemployment has also generated a newfound interest in the media and in social reports and there is broad agreement among government and civil society organisations that youth unemployment is an enormous problem and needs to be tackled urgently (Gernetzky, 2015). Gernetzky notes that labour participation among the youth deteriorated by a larger margin when compared to that of adults, despite an improvement in education profiles. For the youth, unemployment rates for those with less than a secondary education increased from 27.7 percent in 2008 to 41.9 percent in the first quarter of 2015. For those with matric, unemployment rates increased from 32.5 percent to 36.6 percent, while for those with tertiary education, unemployment rates increased from 15.5 percent to 21.2 percent. According to the 2014 National and Provincial Labour Market Report, total unemployment among young South Africans (15-34 years of age) rose significantly between 2008 and 2014 from 32.7 percent to 36.1 percent, while consistently being more than 20 percentage points higher than unemployment in the older adult population. The report included that many youths had never worked before and reported a high incidence of long-term youth unemployment (SAPA, 2014; Statistics South Africa, 2014). Recent figures placed the unemployment rate of youth between 15 and 24 years at 50.3 percent (Statistics South Africa, 2016). According to Nolutshungu (2011) 2.7 million of these youths are unemployed for more than a year, and 74 percent of them are under the age of 24; 2 million are permanently discouraged and 2.1 million are somehow underemployed. This means that the unemployed are typically young, previously disadvantaged, have never been previously

employed, and desperately seeking work in the formal sector. Nolutshungu emphasises the importance of a first job to build up a record of accomplishment. A first entry into the labour market also has many other advantages, including the building of experience, the generation of income, and the building of a professional network. Figure 2.2 clearly indicates that unemployment is consistently much more pervasive amongst the young South Africans (Nolutshungu).

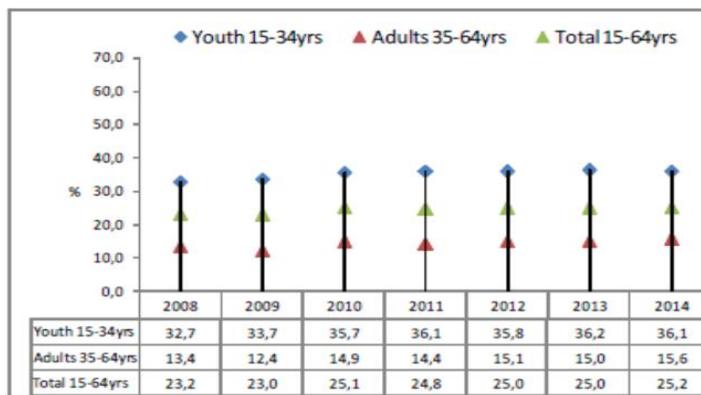


Figure 2.2 Unemployment amongst youth and adults. From “Poverty trends in South Africa”, by Statistics South Africa, 2014, p. 7. Copyright 2014 by Statistics South Africa.

Poverty measures also indicate that the youth are struggling disproportionately compared to the rest of the population. More than 50 percent of those between the ages of 18 and 24 are living in poverty. Figure 2.3 also shows poverty prevalence amongst age groups in the population (with the top line in the graph indicating the poverty trends in 2006 and the line below, indicating these trends for 2011).

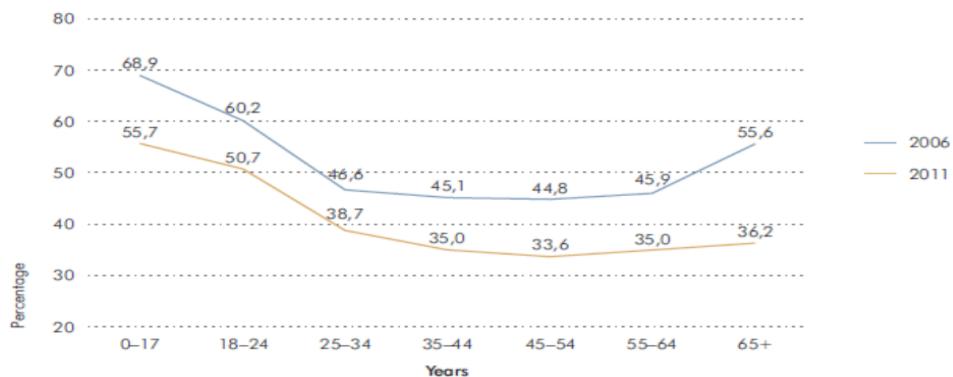


Figure 2.3 Poverty headcount by age. From “Poverty trends in South Africa”, by Statistics South Africa, 2014, p. 29. Copyright 2014 by Statistics South Africa.

It is once again clear that the youth are suffering disproportionately in comparison to the rest of the population and that this issue needs particular attention. One can see that poverty is significantly worse for both the youngest cohorts (Figure 2.3).

2.3 Economic Dependency

The factors discussed above combine to create a society where a large proportion of the population are dependent on their household until a very high age (Simkins, as cited in Bhorat, et al., 2001). More worrying however is the dependence on a welfare system that is funded by the state through a small contingent of taxpayers. Professor Matthew Lester, in a presentation at a Sanlam business event on April 25, 2013, explained the approximate make-up of the South African society based on the 2012 population demography of around 50 million people. These 50 million people can be divided roughly into 1.4 million disabled people (of whom 27 000 work), 2 million orphaned children (largely due to HIV/Aids), 10 million children dependent on governmental child support, 8 million other minors, 2 million old age pensioners, 4 million unemployed, and 10 million individuals who are otherwise not economically active. The last quarter of the population not yet mentioned make up the portion that is charged with supporting the rest of the population, directly, or through payment of income taxes. This includes 9 million people employed who are earning below the tax threshold. There are then 4 million taxpayers of which 3.3-3.5 million earn R50 000-500 000 per annum. The remaining approximately 150 000 people earn more than R500 000 per year. South Africa thus has a limited tax base, as more people are dependent on social grants and public services than those who pay income taxes, as can be seen by the ratio of taxpayers to social grant receivers discussed above (Nolutshungu, 2011). Only nine percent (378 307 people) of the population pays 54 percent of income tax, and 48 percent of taxpayers (earning between R120 001 and R400 000 per year) pay 42 percent of all income tax (as per the communication from Professor Matthew Lester, mentioned above).

According to Paton (2014, p. 1), the number of people benefitting from social grants has increased from 2.6 million in 1997 to 16.6 million in 2012. The number of grant recipients jumped 46 percent from 2006 to 2011 alone. This has happened along with large increases in spending on NGO's and social workers. According to finance minister Pravin Gordhan, in the 2012/2013 financial year, social spending translated to a transfer of R3 940 per family per month (Hartley, 2012). The South African social assistance budget increased at an average of 11 percent per year between 2008 and 2013, (and 7.5 percent onwards), facilitating a three-fold increase in the number of recipients of grants. More than half of South African households receive social assistance and for 22 percent grants are the main source of income. This means that a total of 16.9 million South Africans benefit from grants with total expenditure of about R129 billion per year currently (Kahn, 2013; Ferreira, 2016).

Ferreira (2016, p.1) delineates the eight categories of social grants paid in South Africa (excluding grants paid out in special circumstances). The two categories that have the largest recipient base, by a large margin, include the grant for older persons (3.1 million recipients, as of 30 September 2015) and the child support grant (11.9 million recipients). This is followed by the disability grant

(1.1 million recipients). The grant for older persons pays R1 500 per month for people over 60 years of age, and R1 520 for people older than 75. The child support grant pays R350 per month to the primary caregiver of a child 18 years or younger. The applicant should generate less than R39 600 (if single) or R79 200 (combined income if married) in income per year. The applicant must further be a South African citizen, permanent resident, or refugee, and has to reside in South Africa, and not be in the permanent care of a state institution. For most grants, the applicant's income and assets are assessed to certify that social grants are only paid to those who do not earn enough to support themselves. This 'means test' is conducted when the application is captured, using bank statements and government records. The grant money is loaded onto a South African Social Security Agency (SASSA) card, although it may be requested to be paid into a bank account (Ferreira).

The South African social support system is widely criticised to be fostering state dependence and creating a disincentive towards self-sustenance and employment seeking. Sipho Zikode, the former acting head of the Small Enterprise Development Agency, is quoted as saying that although the government's social grants system is well intentioned, it has had negative consequences. The most notable is that it is stifling potential entrepreneurs because it has encouraged the attitude that there is a way to survive without working, overcoming obstacles, and following ambitions (Stones, 2015). Research by the Department of Economics at Stellenbosch University also mentioned a concern that fewer people now find it worthwhile to remain active in the labour force past the inception age for the old age pension (Ferreira, 2016).

There are also serious concerns regarding fraud in the social grant system. According to SASSA spokesman Tshediso Mahlaku, however, the introduction of the finger biometric system in the payment of social grants in 2012 has led to a significant reduction of fraud within the system – eliminating almost 300 000 fraudulent grants (Ramphele, 2012).

The system has, on the other hand, also received much praise for its role in the reduction of extreme poverty and (although to a significantly lesser extent) income inequality (Ferreira, 2016; Oxfam, 2014). According to Statistics South Africa (as cited by Paton, 2015), social grants were responsible for dramatically reducing self-reported hunger. While an estimated 13.4 million people experienced going to bed hungry in 2002, this decreased to 6.6 million by 2011. This has also been the case with hunger among children, as reported by their parents. There has been consistent research evidence that grants (mainly referring to the child grant) are well targeted at the poorest households and specifically women (Ferreira; Oxfam). The overwhelming majority (96 percent) of child grant beneficiaries are women. The grants have helped to empower women by enhancing their power over household decision-making in household financial matters. The grants have also been shown to have a positive effect on school attendance and healthcare as well as reducing high-risk behaviours among teenagers who receive pocket money from grant

proceeds. As far as the rather pervasive criticisms of dependency and abuse go, research by the Southern Africa Labour and Development Research Unit (SALDRU) shows that there is limited empirical evidence to support concerns that people stop seeking employment when they receive a social grant. The Centre for Social Development in Africa (CSDA) further lists research that grant recipients do not desire to be dependent on cash transfers and continue to value paid employment. Although there is misuse of grant monies, for example by abusing alcohol and drugs, the CSDA report shows that the funds are predominantly used for food and some basic non-food essentials (Ferreira).

Another issue surrounding the payment of social grants in South Africa is the question of affordability and sustainability. Top government officials including former President Jacob Zuma and former Finance Minister Nhlanhla Nene have warned that the financial pressure created by the expanding grant system is unsustainable in the long term. World Bank statistics from 2009 puts South African social expenditure of 4 percent of its Gross Domestic Product (GDP), on par with Ukraine, but below Malawi and Ethiopia (about 4.5 percent) and far behind Mauritius (nearly 8 percent). This is still at the high end of the scale though, with Jamaica (below 1 percent), Poland (just over 1 percent), and Argentina (1.5 percent) being much more typical. Grants, although increasing, seem to be maintaining a stable relationship to GDP, as the payments do not keep up with inflation (Ferreira, 2016; Kahn, 2013). A long-term fiscal study by the treasury showed that current levels of social expenditure will be sustainable providing that the economy grows by 3 percent per annum, although it did provide a very narrow margin for additional spending. The current economic growth is however far short of this required level (Ferreira; Van der Westhuizen, 2015). It is however ironic to note that the South African economy has itself become somewhat dependent on the stimulation that grant pay-outs provide business. According to Johan van Zyl, then Chief Executive Officer of Sanlam, in a talk at a business event (November 5, 2013), 90 percent of social grants pay-outs make their way to businesses within one day. In the hypothetical scenario where the social grant programme is cancelled immediately and entirely, the South African economic growth rate would fall to negative 5 percent.

2.4 The South African Political History and Legacy

It would be naïve not to refer to the legacy created by the South African political history in talking about the causes of the current problems mentioned above. This is a history of racial segregation that was led by the unfairly discriminating Apartheid system. The implication of this historical political system, and subsequent inadequate remediation, is that the above-mentioned issues have a distinct inherent racial bias (Ramphele, 2012). Burger (2012, p. 3) sums up this part of South African history:

Apartheid was a system of legal racial segregation enforced by the National Party government of South Africa between 1948 and 1993, under which the

rights of the majority 'non-white' inhabitants of South Africa were curtailed and a minority rule by White South Africans was maintained. The system of Apartheid was designed to benefit Whites and disadvantage Blacks. Blacks is a generic term which refers to Black Africans, Coloureds, Indians, and Chinese who have been South African citizens prior to 1994, now called the previously disadvantaged group.

A myriad of discriminatory legislation (of which some prominent laws are discussed below) prohibited the disadvantaged group of people from participating in the economy in the same way the advantaged group were. They were prevented from acquiring skills and were forced into unskilled work (Burger 2012; Maidza, 2012; and Van Heerden, 2013). It is worthy to note that segregation and discrimination stretches even further back into the national history, with the Black African population group being the lowest per capita income group since 1917. Racial segregation can also be traced further back to colonial times. The advent of Apartheid in 1948 (coinciding with the coming to power of the National Party) merely institutionalised this segregation on a national level (Bhorat, et al., 2001; Maidza, 2012). According to Bhorat et al., at the macro level, 'grand-Apartheid' attempted to create black nation-states and to give them economic content by the development of homelands, and the policy of industrial decentralisation. At the intermediate or meso-level, Apartheid promulgated separation between race groups through influx control, urban settlement patterns, forced population removals and relocations, and separate schools – among other measures. At the micro level, 'petty Apartheid' enforced segregation between individuals of different race group through measures such as separate amenities, and prohibition of interracial marriages and sexual relations, for example. At a macro level, Apartheid had a greater detrimental effect in fiscal terms; at the meso-level apartheid measures likely had the greater effect on the labour market; on the micro-level Apartheid could be seen to have had the greatest individual psychological effect (Bhorat, et al.).

According to Lipton (as cited in Bhorat et al., 2001), one of the first actions of the new 1948 government was to overturn the 1946 Fagan Report, which had argued that Black urbanisation should be considered to be a natural outcome of industrialisation and that it should be regulated instead of prevented. The Sauer Commission witnessed a reversion to the Stallard principle of spatial separation of the races, where Blacks had to reside in rural areas and only work in urban areas when required by Whites. In a move towards tightening influx control, labour bureaux were established through the 1968 Bantu Labour Regulation Act to govern the movement of Black labour. The Bantu Labour (Settlements of Disputes) Act of 1953 barred Africans from unions and strike activities, limiting bargaining activities to a separate system of 'works' and 'liaison' committees. A series of complementary laws halted the upward mobility of Black workers. The Industrial Conciliation Act of 1956 further maintained the racial division of labour. In reaction to employer resistance, a 1959 amendment to the Act allowed the state to overrule an Industrial

Council agreement, thus giving the state almost complete control of the employment practices of private sector employers. White workers were advantaged in the public sector and replaced Black workers. The government also strongly promoted the employment of Whites in state-controlled enterprises, and in the expanding bureaucracy, revitalised public relief programmes to guarantee short term employment for Whites, assisted Afrikaner business, and assisted commercial (White) agriculture through several measures (Bhorat, et al.).

The Bantu Education Act of 1953 segregated South Africa's education system, which meant that Black students had vastly inferior developmental opportunities than White students. (Burger 2012). The Act required that African education be mostly self-funded, through tying expenditure on African education to revenue earned from taxes paid by Africans. According to the South African Institute of Race Relations (as cited by Bhorat, et al., 2001), in the early years of National Party rule, expenditure on African education decreased in per capita terms, declining from 13 percent of White levels in 1953, to 10 percent in 1961. This caused a severe disadvantage for African school leavers. The 'civilised labour policy' then further gave preference to White workers. If a Black worker was allowed a job, upward mobility was curtailed, and bargaining power reduced. Thus, from pre-employment to employment, African workers faced a barrage of laws that sought to thwart their ability to accrue human capital, increase wages, gather relevant work experience, and negotiate improved wages and working conditions (Bhorat, et al.; Burger, 2012).

The economic cost of the Apartheid measures could have been borne with relative ease, as long as the economy was still fairly underdeveloped, inward looking, and growing rapidly. These costs grew with time, especially after the 1960's economic boom. Economic growth in the period 1961 to 1970 exceeded 5 percent, sustained by large capital inflows, a high gold price, and abundant cheap labour. With this boom, came a higher demand for skills and the state resorted to encouraging immigration, upskilling employed Whites, and enticing women into the labour market. It however became increasingly difficult to continue relying on a small base of White workers and so some jobs were reclassified to allow some Blacks to be trained in the less skilled components of 'White jobs'. Racial divisions were sternly adhered to and no Black worker was allowed to supervise a White worker (Bromberger; Lipton, as cited by Bhorat, et al., 2001).

In 1973 the first oil shock began an era of protracted recession along with a structural crisis in the South African economy. Economic growth rates dipped below population growth rates for most of the following period and per capita income declined by 15 percent from 1974 to 1993. During this period, restrictive legislation was relaxed, and Black trade unions were allowed, resulting in large scale growth in membership. Real wages started to rise for the Black workforce. This change was however negated by continued poor economic growth exacerbated by the relative costs of capital and labour. Between 1976 and 1990, unemployment increased by 32 percent, and by 1994 about half of the economically active population were incapable of finding formal sector employment.

The Apartheid government insisted on promoting White interests at the expense of Black workers and long-term economic interests – also causing social and welfare backlogs to accumulate for the new democratic government to redress (Bhorat, et al., 2001).

Political resistance to Apartheid drove the National Party to ever more desperate measures to maintain power. This led to explosive (and some now famous) clashes between the oppression and the resistance. Government's policy responses vacillated between oppression and reform. Faced with chronic crisis, and a hostile international community, political reforms began in 1990, resultant in a democratically elected government in 1994. This saw the African National Congress (ANC) become the ruling party under President Nelson Mandela. The new government was charged with dealing with large scale unrest, and a population deeply divided in terms of geography, income, living conditions, personal relations, and political opinion. The task of unifying the nation and redressing the harsh inequalities lay ahead. The 1994 government had to deal with poverty as national phenomenon. Post-1994 euphoria saw optimistic expectations on this. Within the first two years, government had to come to terms with the scale of the problem and in 1996 tabled a more formal macroeconomic and growth strategy, which is elaborated on in a later section of this thesis (Bhorat, et al., 2001; Van der Westhuizen, 2015).

South Africa is currently in its 23rd year of democracy, and there seems to still be serious past issues that are still prevalent – compounding in causing complex situation of inter-linking social and economic problems.

2.5 Economic, Governmental, Labour Market, and Societal Issues and Outcomes

This history of segregation has had a considerable effect on the modern South African society, and various forms of imbalance remain. There are several known problems facing the South African economy and society. These issues are complexly interlinked with one-another as well as with income inequality, poverty, economic dependency, and the legacy of racial segregation—as discussed above.

2.5.1 Employment and labour market outcomes

In the employment context, the remaining imbalances in the South African society are seen clearly. Apartheid can be considered a definite determining causal factor for the significant concentration of Black people in the lower levels of organisations (Du Plessis; Kahlenberg, as cited by Van der Westhuizen, 2015).

The equality of the workforce is usually discussed in relation to the relative national economically active population (EAP) by population group/race and gender. Table 2.3 is a delineation of the distribution of the economically active population by gender and race, according to the Statistics

South Africa Quarterly Labour Force Survey, of the third quarter, 2015 (as from the 16th Employment Equity report for the period 2015-2016) (Commission for Employment Equity, 2016).

Table 2.3

The South African economically active population by gender and race group

Population group	Male	Female	Total
African	42.1%	35.3%	77.4%
Coloured	5.4%	4.6%	10.0%
Indian	1.7%	1.0%	2.7%
White	5.6%	4.3%	9.9%
Total	54.8%	45.2%	100.0%

Note. Adapted from Statistics South Africa Quarterly Labour Force Survey, of the third quarter, 2015 (as from the 16th Employment Equity report for the period 2015-2016, p. 12). Copyright 2016 by Commission for Employment Equity.

This shows that there is indeed a large majority of Black/African people in the EAP, followed by the Coloured, White, and then Indian groups – this distribution is largely mirrored in the full national population. This however, does not translate to their respective representation in the workforce, especially at higher levels. White people are drastically overrepresented in the top management structures (Figure 2.4) with the White group representation more than six times their EAP and the Indian group more than three times their relative EAP.

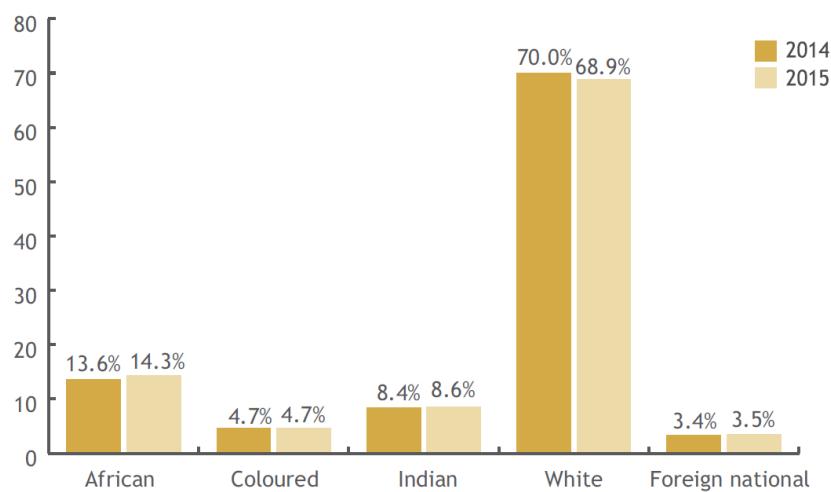


Figure 2.4 Top management in South Africa by population group. From Statistics South Africa Quarterly Labour Force Survey, of the third quarter, 2015 (as from the 16th Employment Equity report for the period 2015-2016, p. 15). Copyright 2016 by Commission for Employment Equity.

This trend continues down throughout the different levels of employment, through senior management, middle management, and down to skilled employees, with White South Africans representing significantly higher proportions of these higher tiers of employment than their percentage of the EAP justifies. The lower the occupation level, however, the clearer the shift of employment levels in the category toward the designated group, particularly Black Africans. Table 2.4 clearly shows this race and gender inequality in the national workforce.

Table 2.4***Complete workforce representation levels by race and gender per occupational levels***

	Male				Female				Foreign employees		Total
	A	C	I	W	A	C	I	W	Male	Female	
Top Management	5 801	1 837	3 747	33 052	2 632	944	1 291	7 423	1 748	303	58 778
	9.9%	3.1%	6.4%	56.2%	4.5%	1.6%	2.2%	12.6%	3.0%	0.5%	100.0%
Senior Management	19 313	6 517	9 584	56 392	10 466	3 873	4 821	25 450	3 330	998	140 744
	13.7%	4.6%	6.8%	40.1%	7.4%	2.8%	3.4%	18.1%	2.4%	0.7%	100.0%
Professionally qualified and experienced specialists and managers	118 663	29 605	29 046	134 586	129 228	27 061	22 202	94 022	12 129	4 578	601 118
	19.7%	4.9%	4.8%	22.4%	21.5%	4.5%	3.7%	15.6%	2.0%	0.8%	100.0%
Skilled technical and academically qualified workers, junior Management, supervisors, foremen, and superintendents	593 122	110 149	56 388	215 274	478 619	101 888	50 822	186 165	23580	6550	1 822 557
	32.5%	6.0%	3.1%	11.8%	26.3%	5.6%	2.8%	10.2%	1.3%	0.4%	100.0%
Semi-skilled and discretionary decision-making	1 104 195	141 872	36 844	66 180	739 236	152 152	37 363	91 552	48 856	5941	2 424 191
	45.5%	5.9%	1.5%	2.7%	30.5%	6.3%	1.5%	3.8%	2.0%	0.2%	100.0%
Unskilled and defined decision-making	656 760	74 398	7 019	10 152	416 156	69 270	4 212	4 984	36 746	7 512	1 287 209
	51.0%	5.8%	0.5%	0.8%	32.3%	5.4%	0.3%	0.4%	2.9%	0.6%	100.0%
Total permanent	2 497 854	364 378	142 628	515 636	1 776 337	355 188	120 711	409 596	126 389	25 880	6 334 597
	39%	5.8%	2.3%	8.1%	28.0%	5.6%	1.9%	6.5%	2.0%	0.4%	100.0%
Temporary employees	307 417	43 765	6 761	20 649	284 844	41 672	6 487	19 884	14 876	6 188	752 543
	40.9%	5.8%	0.9%	2.7%	37.9%	5.5%	0.9%	2.6%	2.0%	0.8%	100%
Grand total	2 805 271	408 143	145 389	536 285	2 061 181	396 860	127 158	429 480	141 265	32 068	7 087 140

Note. Adapted from the 16th Employment Equity report for the period 2015-2016, p. 86. Copyright 2016 by Commission for Employment Equity.

Furthermore, one can see a distinct male bias in employment representation, especially in the higher categories. Commentary in the 16th annual Employment Equity Report by the Commission for Employment Equity (CEE) for the 2015/2016 period mentions a slight decrease of White representation on Top Management level from 2014 to 2015 from 70 percent to 68.9 percent in total, with Africans increasing from 13.6 percent to 14.3 percent. The representation of the Coloured group remained the same and the Indian group rose by 0.2 percent. Overall representation shifted by 0.5 percent between females and males, to the benefit of females. The representation of people with disabilities increased from 1.7 percent to 2 percent at this level.

Senior management also showed decrease in White representation. On this occupational level, the total racial representation is 58.1 percent White, 21.2 percent African, 7.4 percent Coloured, 10.2 percent Indian, and 3.1 percent foreign national. The designated groups have a larger representational share in lower categories, such as Professionally Qualified, and the Skilled Technical levels. On the Skilled Technical level, Africans represent 58.8 percent and Whites 22 percent of the workforce. There are notable low levels of representation of people with disabilities throughout (CEE, 2016).

The Employment Equity report, as in previous years (with reference to those separate reports cited by Van der Westhuizen, 2015, and Theron, 2010a, for example) criticizes the South African private sector harshly for this apparent poor transformation, despite the fact that incremental changes toward representivity are made. In the 2015/2016 report, the commission headed by Tabea Kabinde again espouses representivity as the goal for designated groups at all levels, reaffirming commitment to employment equity and affirmative action in this regard. In other words, the aim seems to be that the workforce at every level of employment is to show nearly exact numerical representivity of each population group. The report continues to criticize that "the South African labour market continues to be racialised and gendered. It remains hierarchical with Blacks concentrated at the lower levels and the White group occupying decision-making positions" (CEE, 2016, p. 79). In the same commentary, the chairperson goes on to accuse the private sector of seemingly having "unwritten quotas in the representation of designated groups to keep them at a certain rate." According to the report it will take many years for equitable representation in the labour market, with transformation occurring at the current rate, especially at upper levels of management, where the "White group have a tight grip." According to the Institute of Race Relations (as cited in Fin24, 2004, p.1) government has said previously that "race will remain an issue until all echelons of our society are demographically representative." This philosophy (and accompanying policies) is discussed further in a later section of this thesis.

2.5.2 Education, skills, and human capital

South Africa has a particular problem with poor education as well as a national shortage of many essential and scarce skills. It seems however that the issues in the education system are also deeply affected or biased by race and income levels. The post-Apartheid government inherited a segregated education and training system that comprised of fifteen education departments that the Apartheid government created along regional and racial lines. This caused structural chaos that wasted funds, produced inefficiency, and resulted in poor graduate outputs. The current education and training system is however still characterised by low education standards, insufficient provision for early childhood development, declining grade 12 (Matric) pass-rates, decreasing enrolments at Further Education and Training (FET) colleges, lacking resources, unqualified teachers, high teacher-student ratios, weak management, and poor teacher morale

(Rasool and Botha, as cited in Van der Westhuizen, 2015, p. 13; World Bank, as cited by Ramphela, 2012). The National Planning Commission Diagnostic Review in 2011 labels this substandard education as one of Apartheid's greatest crimes and goes on to admit that post-Apartheid attempts to improve the quality of education for poor children have mostly failed (Ramphela).

The Minister of Basic Education, Angie Motshekga, announced that the matric pass rate for 2015 was 70.7 percent, down from 75.8 percent in 2014. She ascribed the decline to a number of factors, amongst others, that matric enrolments for 2015 were higher than in earlier years, which placed pressure on resources, and the exams were set to a tougher standard. A policy was also implemented to transfer more failed learners to grade 12 as 'progressed candidates'. Of the 65 671 candidates who were progressed, 58 656 wrote the exams, and 22 060 (37.6 percent) passed. If only non-progressed candidates had completed the exams in 2015, the pass rate would have been 74.1 percent, according to the minister. The Department of Basic Education said in 2015, 667 925 full-time candidates registered for matric, while 644 536 registered to take the National Senior Certificate exam. For the 455 825 pupils who did pass their matric finals, 166 263 (36.4 percent of those passed and 25.8 percent of those registered) met entry requirements for a bachelor's degree (Vermeulen, 2016, p. 1). According to Rusznyak (2014), it seems that there has been a legitimate increase in matric pass rates since 1994, and these pass rates are not due to misrepresentation or the fact that papers are getting progressively easier. The hype surrounding the pass rate may however incentivise under-performing schools to discourage weaker students to write the exams – to improve statistics. The main problem with the official pass rate is, however, that it only includes pupils who sat for the exam, and therefore does not show that only an estimated 48 percent of students who began grade one twelve years earlier, actually complete grade twelve – with most learners falling out of school in grades ten and eleven. This 'cohort pass rate' was 42.2 percent in 2015 according to Equal Education (as cited in Mybroadband, 2016a, p. 1). These figures may however underestimate the rate by about three percentage points due to grade repetition, mortality, and the fact that the supplementary National Senior Certificate candidates were not included at the time, according to Elijah Mhlanga, spokesperson for the Department of Basic Education. This completion rate has increased from 28 percent in 2009 but is however still low relative to comparable developing countries such as Turkey (53 percent) and Brazil (67 percent). Also, around half of pupils who progress to university can be expected to drop out in their first year. Mhlanga said that this could be improved by steadily increasing the percentage of youth who attain matric, but crucially it must be accomplished by improving the quality of learning in earlier grades. The high dropout rates in grade ten and eleven are symptoms of the learning deficits that children accrue in earlier grades. Although factors such as financial limitations, family commitments, and gang involvement play a role in students dropping out, the foremost cause is weak learning foundations. Mhlanga said that the

department's interventions to improve foundational numeracy and literacy, especially reading acquisition, will be crucial. The next part of the solution would be to develop meaningful educational alternatives for those pupils who do not manage to achieve matric, for example a policy focus on FET colleges, learnerships, and apprenticeships (Gernetzky, 2015; Rusznyak).

Matric pass requirements are however notably low. Until 2009, South Africa had a two-tiered matriculation system, where students could choose whether their exam would allow them university study. Now, grade 12 learners in public schools all write the same examination, with various classes of passes. The pass rate in some subjects is as low as 30 percent – associated with a school-leavers certificate that does not allow further study. The highest level of passing, a National Senior Certificate (NSC) bachelor's pass, allows learners to pursue a university degree. It requires learners to obtain 50 percent in at least four designated more academically challenging subjects. Many learners who attain this passing level are turned away from universities as they do not meet the minimum admission competency for the degree programme for which they apply (Rusznyak, 2014).

Government statistics have also shown that only 14 percent of grade nine learners are suitably literate (Rusznyak, 2014). Investigating actual literacy levels, Spaull (as cited by Wilkinson, 2015, p. 1) analysed the South African data from the most comprehensive measurement of educational performance across several African countries, namely the Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ). These data were collected during the last quarter of 2007 from 9 083 grade six students and 1 488 grade six teachers in almost 400 schools across South Africa. Schools were divided into four wealth groups. To ascertain the socioeconomic status of schools, students were asked 'possession questions'. This includes questions such as whether a daily newspaper, bed, or piped water were available in the place where they resided during the school week. The study found that students in the wealthiest 25 percent outperform students in the other 75 percent of schools. Spaull commented that there are essentially two types of schooling systems in South Africa – mostly split along historical-school-system and socio-economic lines. According to Ernst Roets (as cited by Wilkinson, 2015, p. 1), deputy chief executive of Afriforum, Black children suffer most when it comes to education, because most dysfunctional schools are in townships. Only 4.1 percent of grade six pupils in the wealthiest 25 percent can be classified as functionally illiterate. A pupil is considered to be functionally illiterate if they are not able to read a short and simple text and extract meaning. In comparison, the percentage of pupils that are functionally illiterate ranges from 25.6 percent to 43.3 percent in the remaining 75 percent of schools. Regarding numeracy, only 8.4 percent of grade six pupils in the wealthiest 25 percent of schools are considered functionally innumerate. A pupil is considered to be functionally innumerate when they are not able to translate graphical information into fractions or interpret common everyday units of measurement. In comparison,

the number of pupils that are functionally innumerate ranges from 44.8 percent to 56.9 percent in the remaining 75 percent of schools (Wilkinson).

High schools showed similar trends. Trends in International Mathematics and Science Study (TIMSS) is a cross-national programme that evaluates mathematics and science achievement. In 2010 and 2011 they tested 11 969 pupils across 285 different South African schools. Of the 48 participating countries, South Africa ranked 47th for mathematics and 48th for science. The Human Sciences Research Council divided the participating schools into five groups according to wealth. The wealthiest 20 percent of schools significantly outperformed the rest on both mathematics and science, because 43.5 percent of these pupils scored an intermediate level score for science, in comparison to the 1.6 percent to 7.6 percent range for the remaining 80 percent of pupils. The trends were similar with mathematics, though with lower scores across the board. According to Elijah Mhlanga, (spokesperson for the Ministry of Basic Education mentioned earlier), much has been done since to improve school and learner performance, including the creation of a ministerial task team for mathematics, science, and technology. The Organisation for Economic Cooperation and Development (OECD), (as cited in Business Tech, 2015) ranked 76 countries' education for maths and science, based on a combination of international assessments. They ranked the South African Education System 75th, ahead of only Ghana. Asian countries excelled in the rankings, taking up the top five places. The UK and USA ranked 28th and 20th respectively (Rusznyak, 2014; Wilkinson, 2015, p. 1).

Towards understanding the South African education system, one must note that with the end of Apartheid came the imperative to abandon all tainted systems, including education. Outcomes-based education was formulated as the polar opposite to 'Apartheid style' education. Instead of an emphasis on content, the focus shifted to the students themselves. Instead of rote learning, everyone was encouraged to express an opinion. This had the adverse effect of diminishing the authority of knowledge, and opinions, regardless of weight of evidence or reason, were regarded equally. This consequently somewhat reduced the role of the teacher to a mere facilitator in a democratic classroom environment. This prevented pupils from moving far beyond what they already knew and provided very little incentive to read. However, discontent with the resulting low literacy levels resulted in numerous curriculum changes to bolster the knowledge base of the curriculum and encourage text-based learning (Rusznyak, 2014).

The management and functionality of schools are also often matters of contention. It seems that the return on investment on education is rather low in South Africa. At about 7 percent of GDP and 20 percent of total government expenditure, South Africa's public investment rate in education is among the highest in the world. Under the South African Schools Act of 1996, education is compulsory from the age of seven (grade one) to the age of fifteen, or the completion of grade nine (Business Tech, 2015). In 2015, a claim made in the media that 80 percent of South African

schools are dysfunctional was confirmed by Africa Check. The claim had indeed been confirmed on two separate occasions by the ministry of education, however, was later rejected, although the department was unable to provide evidence to counter the claim. Schools are classified in terms of functionality based on attendance by teachers and students. This categorisation has however been replaced by a system that profiles schools according to performance based on matric results or annual national assessment results (in the case of primary schools). The department has also mentioned that they monitor aspects such as curriculum implementation, school nutrition, and governance and management (Wilkinson, 2015).

The quality of teachers is also frequently noted as problematic in the South African education system (Ramphele, 2012). During Apartheid teachers only required a three-year certificate to be qualified to teach at a Black African school, however, the requirements have been raised and since 2002 newly qualified teachers have been required to have a university degree to be licenced to teach in South African schools. Nearly all teachers in South African public schools now have four-year qualifications, having done either a four-year initial teacher education qualification or completed a fourth year of study with the attainment of an Advanced Certificate in Education. Initial research has indicated that the supplementary teacher qualifications may have shown little effect on how some teachers in the most marginalised schools are teaching. Poor content knowledge of teachers remains a major hindrance facing the provision of quality education in South Africa. Research shows that the highest performing of South Africa's grade six learners achieve higher scores on standardised mathematics assessments than the poorest performing of South Africa's grade six teachers (Rusznyak, 2014). It has also been shown that more than half the teachers tested by the SACMEQ struggle with basic issues such as calculating percentages (Ramphele).

Poor quality and quantity of contact time with pupils is also a very worrying factor in the South African education system. The teacher to student ratio in Botswana, for example, is 13 000 primary school teachers to 330 000 children, whereas in South Africa, according to a 2009 study by the World Bank, as cited by Ramphele (2012), 232 160 teachers were employed for about 13 million learners – which means more than twice the average class size. Absenteeism is also a major problem. A Human Sciences Research Council study quoted by the National Planning Commission found 20 percent of teachers are absent on Mondays and Fridays. Absenteeism increases to about a third of all teachers towards the end of the month. Teachers in poor Black schools teach an average of 3.5 hours per day where former White schools teach for about 6.5 hours per day. Time lost by Black pupils over the twelve-year period of schooling thus amounts to about three years, making it impossible for them to compete with their wealthier and/or White counterparts (Ramphele).

Studies from abroad suggest that teacher performance and the quality of school leadership are the key variables in improving the quality of schooling. Unions are often blamed for the educational problems in South Africa. More than 80 percent of South African teachers are unionised. The South African Democratic Teachers Union is the largest (over 240 000 members) and insists that teachers can sacrifice contact time for union activities and is very much inclined to block any performance management endeavour. South African teachers are also among the highest paid in the world, however the gross underperformance tolerated by government undermines the ability to develop high levels of skills and human capacity. A culture of low expectation breeds mediocrity in education, leaving school leavers ill-prepared for the demanding knowledge-driven global community (Ramphele, 2012).

From the above, it is clear that the output of our education system is also still along racial and socio-economic lines with the current school system impacting very negatively on Blacks and poorer students. Only 31.4 percent of Black South Africans over 20 have matric against 76 percent of Whites. In 2011, 98.8 percent of White matriculants passed as opposed to 66.1 percent of Blacks. Pupils leaving school before matric are also mainly Black and the number of Black people attaining further education is only 2.9 percent as opposed to 21 percent of Whites. Of the Black population over 20 years old, 2.3 million have never even attended any school. Of all people with a university degree or higher qualification, some 47 percent are Black Africans and 41 percent are Whites—strongly disproportionate to their composition of the labour force (EAP). This can be argued to serve as a strong explanation for why the higher levels of the labour market do not reflect the racial composition of the EAP. The data however still obscure even more differences, because qualifications are not equal in value to the labour market as it depends on the content and subject of degree, quality of institution and academic achievement. It appears that Black students are furthermore averse to choosing high level degree programmes and occupations. For example, in 2007, the registrations with the Engineering Council of South Africa were 65 Blacks, 5 Coloureds, 51 Indians, and 221 Whites (Hermann, 2013).

South Africa does have a vibrant higher education sector though, with nearly 900 000 students enrolled at the 23 state-funded tertiary institutions, including eleven universities, six universities of technology, and six comprehensive institutions. There are currently 450 registered private Further Education and Training (FET) colleges, which cover training provided from grade ten to twelve, and career-oriented education and training. According to the 2011 census, the percentage of people aged twenty or older who have a higher education qualification increased from 8.4 percent in 2001 to 12.1 percent. The number of those who matriculated increased from 20.4 percent to 28.5 percent over the same period. Those who had no schooling at all decreased from 17.9 percent to 8.6 percent. There had been a moderate increase in people aged between five and twenty-four attending private institutions rather than public ones – 16 percent in Gauteng, 7.5 percent in the Western Cape, and 6.4 percent in the Free State (Business Tech, 2015, p. 1).

Roets (2015) postulates that privatisation of education is an indication that there is a dissatisfaction with the quality of public systems and that those who can afford to, subsequently privatise. In terms of public schools, the South African Institute of Race Relations has found that, while South Africa has seen a 9 percent decline in the number of public schools between 2000 and 2010, during the same decade, however, the number of private schools increased by 44 percent.

Due to the problems with education and training, South Africa faces a critical skills shortage, across the skills spectrum, with a contrasting oversupply of unskilled labour. This causes problems for the government and the private sector in implementing growth strategies, fast-tracking service delivery, and producing good quality products and services. This is due to a combination of factors, including lack of access to education and training opportunities, and immigration of skilled individuals (Department of Higher Education and Training (DHET), 2014a).

Statistics South Africa previously closely monitored the racial identity of working age South Africans, however has stopped measuring the number of workers emigrating and returning. South Africa's White population peaked at 5.9 million in 1973, but declined to 3.9 million in 2009, since then however it has risen to 4.3 million, due to more than 400 000 White South African expats returning since the apex of the financial crisis in 2009, when the permanency of their international employment was threatened. Most of these returnees bring vast international experience in various key professions. The former expatriates are often specifically targeted by employment agencies, who note that medium sized firms are often the most likely to employ them. South Africa has virtually no unemployment in highly skilled professions, with job prospects looking good for skilled people of any race. This drop in the White population meant that people who were highly skilled, due to ample education, training, and employment opportunities in the past, left the country, leaving high volumes of vacancies in skilled positions, and often with a coinciding breakdown in succession planning and/or processes. The reason for the drop in the White population in the 1970's and 1980's was that many of them left out of disdain for apartheid and/or fears for the future. Post 1994 people were pushed out by BEE, crime, and a deteriorating political environment (it is estimated that 841 000 Whites left between 1995 and 2005) (Ryan, 2015, p. 2).

According to Adcorp (n.d.), the number of unfilled positions for highly skilled workers across a wide range of professions in the country was as high as 829 800 in 2014. In contrast, a total of 967 000 elementary workers and 247 400 domestic workers are in excess of the nation's needs. The informal sector also now employs 6.2 million people – 1.5 million (31 percent) more than in 1995. Skilled employment categories suffering the greatest skills-shortages are senior management (216 200); professions including medicine, engineering, accounting, and law (178 400); specialised technicians and artisans (432 100) and agriculture. Furthermore, it seems that corporate South Africa is leaving positions vacant and focusing rather on the retention or

acquiring of highly skilled professionals in senior management. Due to these critical skills shortages, businesses are willing to pay a premium to acquire and retain these skills. The filling of these vacancies certainly presents a unique opportunity, as filling one would have a net effect the same as creating a brand-new job. According to Loane Sharp (as cited by Adcorp), this shortage has, to a large extent, been created artificially by the Immigrations Act of 2002, including two more recent amendments, prohibiting the use of immigration agents and quota work permits, which makes it exceedingly difficult for foreigners to find work in South Africa and for South African companies seeking foreign skills. The intention of the Act was to improve the domestic employment prospects of previously disadvantaged individuals by substantially restraining the attempts of foreign job seekers to contend for jobs in the local labour market. This has led to an over-inflation of wages in highly skilled occupations, in inflation-adjusted terms, by 286.4 percent since 2000 (Adcorp).

This skills shortage causes a significant limitation on the long-term growth of the economy, since legitimate commercial opportunities are often rendered unviable as a result, as some activities are conducted inconsistently and inexpertly. Governmental skills development initiatives are often based on an imprecise idea of the extent of the skills shortages. Sector Education and Training Authorities (SETAs) have consistently failed to produce reliable estimates of skills shortages in their respective sectors, and it is likely for this reason that the National Skills Fund has failed to disburse more than R3.5 billion in funds earmarked for skills development (Adcorp, n.d.). According to the CEE report cited earlier, when it comes to skills development in the workforce, there is strong bias toward the upskilling of the White group in upper levels of the employment tiers versus high amounts of skills development of the African group in lower levels; where 56.8 percent of unskilled and 49.4 percent semi-skilled have received training in the reported period (2015/2016) (CEE, 2016).

Policy makers have almost always recognised the benefit of education and skills development and it is at the forefront of concern, especially in developing countries. Educational attainment does however remain low in the Sub-Saharan Africa region. It is associated with easier transition into work, however it does not always reduce unemployment. Combined with experience however, education increases employment incidence and enhances occupational mobility. There is a large literature on the positive and significant effect of years of education on individual and household earnings (Garcia & Fares, 2008). Friedman (2015) does however warn that education alone has not historically guaranteed an improvement in employment and equality and it should not be labelled as a miracle cure to the problems of poverty and inequality – especially since doing so misdirects from other problems and to some extent amounts to victim-blaming. Education must be supplemented by appropriate macro-economic policy, economic growth, social upliftment, further developmental opportunities, and the availability of employment. Regression analyses based on studies by the World Bank in African countries on household

characteristics have however shown that education leads to high returns (income) for households. Simple ordinary least squares estimates of annual returns to one year of additional schooling range from 7 to 20 percent in Kenya, Nigeria, and South Africa, with an average of about 12 percent in Sub-Saharan Africa. Although there are concerns surrounding the accuracy of these estimates, even when correcting for bias due to unmeasured determinants that are correlated with schooling and earnings, the estimated returns are still high (Garcia & Fares, 2008). South Africa ranks highly in potential GDP rise (2.64 percent) if the country achieved a basic level of education during the lifetime of current 15-year-olds, according to the WEF Global Information Technology Report (2015) (Business Tech, 2015).

The quality of schooling is a strong predictor of the wealth it may yield in the long term. According to Ferreira and Litchfield (as cited by Bhorat et al., 2001), between one-quarter and one-third of income differentials between households in Chile can be attributed to variances in the educational attainment of the household head. The relationship between schooling and earnings is roughly linear in urban areas, but in rural areas the return to education rises significantly for people with some level of secondary education. The impact of primary schooling on income has also shown the effect of basic skills learned in school on family welfare. In some cases, there have been indications of a negative relationship between higher education and employment (for example in Ethiopia). Some plausible explanations for this unexpected result may be the higher qualified youth's higher reservation wage, and their return to job search. The reservation wage refers to the wage level that a person is willing to accept when selecting employment. In the case of educated youth, they may reject reasonable market-related wage offers, due to overvaluing their labour market standing based on the value they attribute to their higher education level. There is also evidence of skill mismatches and the negative attitude of job seekers toward certain jobs. It does seem that most workers in Sub-Saharan Africa enter the labour force in very similar occupations, however those with higher skill levels are more upwardly mobile and tend to be less likely to become stuck in 'dead-end' jobs. Technical and vocational training in Ethiopia has shown to increase the employability of youth and increased the probability of being employed by 25 percent in urban areas. Sub-Saharan Africa is the most illiterate region in the world, after Asia, with 18 percent of young men and 27 percent of young women being illiterate. In Burkina Faso and Tanzania, case studies have shown that low parental education, low household income, and a lack of access to schools are severe constraints to school enrolment. HIV/Aids and the neglect of children also fuel drop-out rates, making these children enter the labour force much younger. This leaves them vulnerable to exploitation and abuse and more likely of ending up in a lifelong cycle of poverty and abuse (Garcia & Fares, 2008).

Despite the high returns to education, there are however limits to the employment possibilities afforded by Matric alone. In 2010, a matriculant had a 9 percent chance of finding a job within a year (Pike, Sharp & Black, 2010). Solidarity, (as cited by MyBroadBand, 2016b, p.1) noted that

"a matric certificate does not seem to have a significant effect on a person's chances of finding employment." "Among working people with matric as their highest qualification, only some 30 percent earned more than R6 400 a month in 2011." Only 13 percent of Matric holders earned more than R12 800 per month. The South African labour market has already been flooded for decades by a vast oversupply of people with little or no training. It is thus notable that higher levels of education are certainly linked to higher earnings. Fewer than 5 percent of employees with no education earned more than R6 400 per month and 10 percent of those with incomplete secondary schooling, without post-school education, earned more than R6 400 per month. Earnings increase rapidly with higher qualifications, for example 50 percent of people who do not have matric, but who hold a tertiary diploma or certificate, earned more than R6 400 per month, and 25 percent earned more than R12 800 per month (30 percent with a matric in conjunction with the diploma or certificate). University degrees have a much higher impact on earning, with 80 percent of those with a university degree, higher diploma, or equivalent qualification, earning more than R6 400 per month. Over 50 percent earned more than R12 800 per month, and 68 percent of those with an honour's degree or higher earned R12 800 per month or more, while 38 percent earned more than R25 600 per month (MyBroadBand, 2016b, p.1).

It could thus be said that the lack of proper education is a large part of the cause of poverty, and conversely will be a large part of the solution. Figure 2.5 shows the poverty levels relative to education levels. It is thus apparent that higher levels of education relate directly to decreased poverty. The graph's legend indicates the naming of the lines in the same order as they appear on the graph.

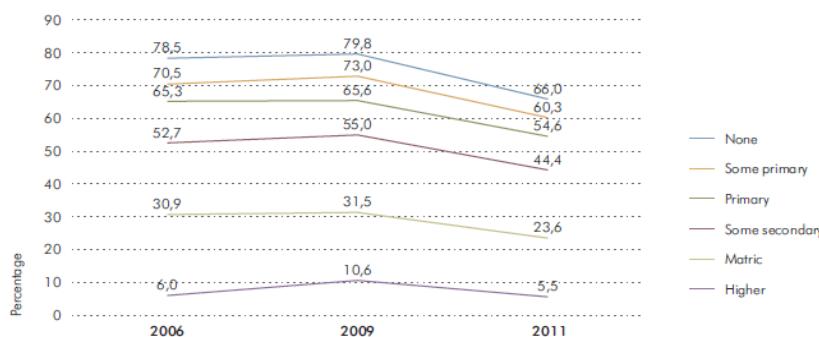


Figure 2.5. Poverty in relation to level of education. From Poverty trends in South Africa, 2014, p. 30. Copyright 2014 Statistics South Africa.

Education and training are enormously important in the battle against poverty and inequality. Business Tech (2015, p.4), quoting the WEF Global Information Technology Report (2015) clearly states that "there is no shortcut to improved learning outcomes in a post-2015 world economy where knowledge and skills have become the global currency, the key to better jobs and better

lives...We cannot inherit this currency, and we can only develop it through sustained effort and investment in people." Mmusi Maimane (2015), leader of the official opposition party in South Africa, says that education is key to being released from the shackles of poverty and that the same quality of education is needed for all youth despite their background. He says that measures such as Black Economic Empowerment (BEE – discussed in a later section of this thesis) are important, but no lasting structures can be built without a solid foundation, in this instance, education. He quotes Archbishop Desmond Tutu as saying that "inclusive, good-quality education is a foundation for dynamic, equitable societies" (Maimane, 2015, p.2).

2.5.3 Economic and other macro-level outcomes

The above factors all culminate into a tough social and economic environment. The South African economic context is stifled by inefficiencies created by the multiplied effect of all the issues mentioned thus far. This results in, amongst other things, a poor international reputation and competitiveness, decreased foreign investment, and hampered productivity of capital and labour. This means that the economy continually fails to achieve its full potential in terms of creating value and prosperity for stakeholders, particularly the general population.

The WEF Global Competitiveness Index is a report that is based on expert ratings of specific elements of a nation's economy and society that are relevant to the attractiveness of its business environment and competitiveness of its national economy in the global market. Countries are given an overall rating based on ratings of clusters of individual factors. From this report, it is apparent that the well-known issues, as discussed, are indeed causing damage to the South African economy. South Africa's ranking on the 2014-2015 overall index is 56th out of 144 countries, three positions down from the previous report (53 out of 148). The ranking has also slipped continuously from the previous years, from 52nd in the 2012-2013 report, which was also down from 50th in the previous period. The index consists of three sub-indices, namely basic requirements, efficiency enhancers, and innovation and sophistication factors. These sub-indices are further respectively divided into various pillars (WEF 2014b; 2015b). The breakdown in Table 2.5 shows our scores on the pillars that make up all three of the sub-indexes.

Table 2.5.

Global Competitiveness Index – South Africa's scores on sub-indexes and component pillars.

	Rank out of 144	Score (1-7)
GCI 2014-2015	56	4.4
GCI 2013 - 2014 (out of 148)	53	4.4
GCI 2012 - 2013 (out of 144)	52	4.4
GCI 2011 - 2012 (out of 142)	50	4.3
Basic requirements	59	4.3
Institutions	36	4.5
Infrastructure	60	4.3
Macroeconomic environment	89	4.5
Health and primary education	132	4.0
Efficiency enhancers	43	4.4
Higher education and training	86	4.0
Goods market efficiency	32	4.7
Labour market efficiency	113	3.8
Financial market development	7	5.4
Technological readiness	66	3.9
Market size	25	4.9
Innovation and sophistication factors	37	4.1
Business sophistication	31	4.5
Innovation	43	3.6

Note. Adapted from The World Economic Forum Global competitive index 2014-2015, 2015, p. 340. Copyright 2015 World Economic Forum.

It seems that South Africa's lacking in terms of basic requirements is what is thwarting the country's rating, as we are ranked 95th on basic factors and 43rd and 37th on the other two sub-indexes respectively. Labour, health, and education are three notable sore points when looking at the above outtakes from the report.

The report also mentions unemployment, specifically in the youth population. Table 2.6 is an adapted summary of rankings from the 2013-2014 and 2014-2015 reports, relevant to that which has been discussed above. It is notable that the productivity and cooperation in the labour market is ranked very low. South Africans' health is also a problem, with HIV/Aids prevalence and life expectancy being rated very low. The education system is also rated very low.

Table 2.6.***Relevant rankings from the WEF Global Competitiveness Index***

Indicator	2013-2014 Rank	2014-2015 Rank
	(out of 148)	(out of 144)
Quality of primary education	133	133
Overall educational system quality	146	133
Primary education enrolment, net percent	122	118
Business impact of HIV/Aids	143	136
Life expectancy	136	129
Cooperation in labour-employer relations	148	144
Pay and productivity	142	136

Note. Compiled from The World Economic Forum Global competitive index 2013-2014, and The World Economic Forum Global competitive index 2014-2015.

Other relevant indicators that show a very low ranking (and thus present a worrying picture) from the 2014-2015 report include:

- Favouritism in decisions of government officials, 104;
- Burden of government regulation, 120;
- Business cost of crime and violence, 133;
- Quality of electricity supply, 99;
- Inflation, 102;
- Gross national savings, 119;
- Business impact of tuberculosis, 136;
- HIV prevalence, 140;
- TB cases per 100 000 of population, 143;
- Flexibility of wage determination, 139;
- Hiring and firing practices, 143;
- Higher education and training: Quality of the education system, 140; and
- Quality of math and science education, 144 (WEF, 2015b).

South Africa thus has some serious basic issues causing the country to lag on competitiveness. Even though the country is ranked 33rd on GDP (USD 350.8 billion) (29th on previous report), it is also ranked at 75th (71st previous report) on GDP per capita (USD 6621 per person, in 2013) real terms, with the gap between these figures showing once again the income inequality in our country (WEF, 2015b).

Looking at other similar indicators of social and economic performance of countries, the Legatum Institute, a London-based think-tank and educational charity, focused on promoting prosperity, releases The Legatum Prosperity Index annually. This report offers insight into how prosperity is forming and changing around the world, beyond what indicators of wealth such as GDP may reveal. The report measures countries on eight sub-indices and then furthermore also creates an overall global ranking. On the 2015 report, South Africa was ranked 75th out of 142 on the overall index, and on the sub-indices as follows: Economy (95), Entrepreneurship and Opportunity (37), Governance (54), Education (83), Health (109), Safety and Security (112), Personal Freedom (54), and Social Capital (61). This places South Africa on the lower-middle tier of the index. The vast majority of sub-Saharan African countries are placed in the bottom third of the global rankings, however South Africa is far ahead, with Botswana at 77 and Morocco at 79 being the closest following rankings on the continent. This rating has however fallen steadily since 2009, when the country was ranked 67th (Legatum Institute, 2015). Once again it is evident that basic issues surrounding health, safety, and education are the particularly salient in South Africa.

South Africa has a Human Development Index (HDI) of .66, placing in the ‘medium people development’ category, in 2016. The HDI considers life expectancy, expected and mean years of schooling, and gross national income per capita. The country is ranked, according to this metric, as 116th in the world as far as human development is concerned; a position currently shared with El Salvador and Vietnam; behind the Philippines at 115. South Africa has climbed only two positions on this ranking since 2009 (United Nations Development Programme, 2016).

Mbeki (2011) further explains issues with the structuring of the South African economy. The economy has a strong built-in dependence on cheap labour and the exploitation of primary resources. This is strongly unfavourable to the development of skills in the general population, thus promoting inequality between citizens by creating and sustaining a large, marginalised underclass. There is also a strong bias towards importing technology and economic solutions. Mbeki argues the need for in-depth, and inclusive social and economic development.

2.5.4 Social, cultural, and psychological outcomes

The history of racial segregation in South Africa has caused long-term damage to the fabric of the society. The struggles and outcomes of this difficult path have been entrenched deeply into the make-up of the society and the national culture and psyche.

As far as the differences between races go, one can clearly see that the issues mentioned above have differential effects on different population groups. For example, the poverty levels as a percentage of the different population groups (Figure 2.6) differ greatly.

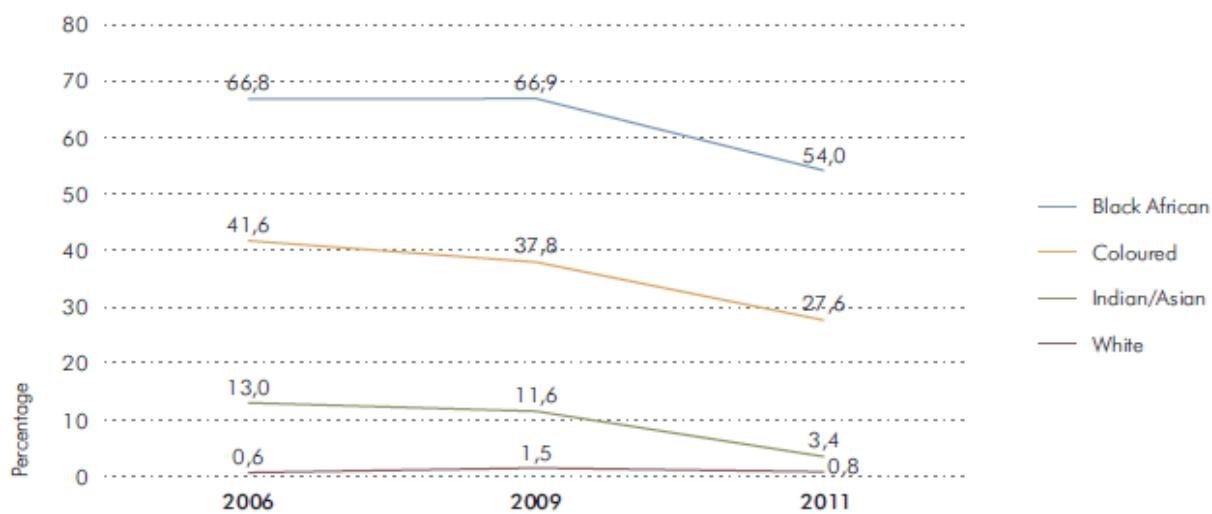


Figure 2.6. Poverty percentage according to population group. From Poverty trends in South Africa, 2014, p. 27. Copyright 2014 Statistics South Africa.

Although there is a downward trend in the figures of the members of the designated groups, they remain much higher than that of the White group. Black Africans are suffering the worst from poverty, by a large margin, followed by Coloured people, then Indians (with a very sharp percentage decline over the reported period), and lastly, Whites, who have seen a slight increase, but are, as mentioned, far below the other groups.

According to the Quarterly Labour Force survey, for the first quarter of 2016, mentioned earlier, the unemployment figures for the various population groups show similar trends as the poverty percentage above. Black Africans have an unemployment rate, by the narrow definition, of 29.7 percent, whereas this rate is 23.3 percent for Coloured people, 15.7 percent for Indians/Asians, and only 7.2 percent for Whites. Adding the total unemployed and non-economically active populations, roughly 20 million South Africans of working age are not involved in the formal economy, of this, roughly 17 million people are Black Africans (Statistics South Africa, 2016, p. 6). Bhorat et al. (2001) have produced, thorough their poverty measurement model, a poverty profile that is robust to changes in underlying measurement assumptions. The poor are more likely to be African and to live in rural areas. Multivariate models confirm the enduring significance of race as a fundamental factor structuring poverty and inequality. Race is of direct importance, even after controlling for indirect influence on access to education, location, and employment opportunities, which shows the magnitude of the project of redressing racial legacy. The poor have low levels of education and lack access to employment and are more likely to be found in female-headed households. They lack access to basic services and transport and are more vulnerable to illness and stunted growth (Bhorat, et al.). These rural areas are usually small towns. South Africa has about 500 towns with 50 000 inhabitants or less. These towns are home to about 3.3 million people, or 8 percent of the population, in total. Women often run these towns, as men

urbanise to look for work. Alcohol and spousal abuse is often rampant among those who stay. These towns often have very little economic activity, with urban dwellers earning 86.9 percent of all income and transferring money back home (Pike et al., 2010).

This combination of factors, as discussed, are all interlinked and have different effects and symptoms. Rather understandably, these create a hopeless situation of desperation for millions of people who arguably have little chance of creating a reasonably acceptable life for themselves, much less achieve prosperity. The result is diminished perceived instrumentality in terms of hard work leading to the achievement of success.

The youth struggle particularly. Dlamini (2014) describes, in an emotionally laden article published online by News 24, how South African youth, of all races, experience issues with unemployment, despite often even having strong qualifications. He describes our youth as a lost generation that experiences a feeling of hopelessness due to a lack of opportunities. He stresses that youth unemployment leads to poverty, crime, and drug abuse to the extent that this issue is a threat to our democracy. This sentiment is echoed by Le Roux (2014) and in the WEF Outlook on the Global Agenda 2014 and 2015 reports (WEF, 2014a; 2015a).

Although there is no intention to digress into social opinion or political commentary in this thesis, it is relevant to attempt to summarise, briefly, the cultural and psychological impact of the social factors discussed, in relation to the racial disparities faced by South Africa. The most notable problem with such an attempt is that, due to the varied and individualised social experiences of South Africans, one is bound to summarise it in terms of broad generalisations. Furthermore, since all South Africans (and, in general, population groups) have differing views and often conflicting agendas, true objectivity when discussing these matters is hard to accomplish and also, even if achieved, unlikely to be perceived as such.

Political analyst Steven Friedman (2015) starts to summarise this by saying that one needs to understand that if for hundreds of years there was a situation where one racial group dominated another that such a situation creates attitudes on both sides which do not disappear immediately upon political reform. For the one group it may lead to an attitude that some citizens are superior and on the other side, some people may end up permanently seeing themselves as inferior. This is certainly the case, as long-term racial prejudice and apparent continued racial disparity has created deeply entrenched superiority and inferiority complexes across the population with a resulting differing, yet mutual, sense of entitlement today. This has led to resentment, fear, and deeply held stereotypes which leads to widespread racist views and attitudes. The Congress of South African Trade Unions' (Cosatu) former secretary General, Zwelinzima Vavi, (as quoted by Fiedman, 2015) explains this by saying that South Africa is a racially divided country, where there is clash between the hopes of the majority who were oppressed as victims of apartheid versus, at times, the fear of the minority, who may feel that any form of transformation may be at their

expense. In the post-1994 euphoria an image was created of a united South Africa, a ‘rainbow nation’ where the past can be reconciled and where economic and societal transformation would bring about equality swiftly. For the large group of poor (Black) South Africans, this dream has however not come close to materialising. This causes understandable frustration when paired with the deeply held opinion (with reference to the CEE report, mentioned earlier) that White South Africa is jealously holding on to the national wealth. Among White South Africans, this may be the case to some extent, as people generally feel that they have worked for, and achieved, any prosperity that they are indeed benefitting from. Although, at least on the surface, most White South Africans understand the need for redress and transformation, the potential personal cost is feared or often treated with blissful ignorance, with those from the younger generations often refusing to attribute accumulated privilege to the ‘sins of their forefathers’ and/or take ownership of liability for it. The image of the rainbow nation has created the idea, to some extent, that the past indiscretions are bound to self-correct, given enough time; or perhaps for some, it has created the idea that this correction has already taken place.

There is also a frustration with corrective measures employed by government in order to facilitate redistribution and equality, as these are often perceived to be equal to the unfairly discriminatory measures of Apartheid and that many of these measures (discussed in a subsequent section of this thesis) have placed the goal of representivity above service-delivery, quality, and excellence.

In many ways, a new social uprising has shown that South Africa seems to be coming to terms with its past only now, which forces the need for a new and honest view on reconciliation and redress of past indiscretions and current problems.

2.6 Government Attempts to Rectify the Problems

Since the ANC have come into power in 1994, they have made many concerted efforts in an attempt to rectify the issues above. The period from 1994 to 2010 has, in general, shown relatively steady economic growth, capital inflows, rising asset prices, investment returns, and higher incomes. Crime rates have levelled off and HIV/Aids spread slowed down (Pike, et al., 2010). The national murder rate, although it is still high comparative to the rest of the world, has halved since 1994. Electrification of households has gone up from 50.9 percent in 1994 to 85.3 percent in 2012. People living in formal housing has also increased with more than 12 percent. Although some progress has been made on many fronts, the problems remain though, as is seen from the many statistics mentioned earlier in this thesis. The Gini coefficient has become higher, corruption is a major problem at all levels of government, only 33.6 percent of young people (those born after 1994) who are eligible to vote are registered, unemployment has in fact increased, and there are still wide racial disparities in the economy (Conway-Smith, 2014).

Although this may be the case, there has been significant change, especially in terms of the growth of the Black middle-class. This growth was investigated by Dürr (2013) after having attended the Soweto Wine Festival and witnessing firsthand this growing demographic. Dürr also quotes former president Jacob Zuma as lauding the current progress in terms of Black middle-class growth at the Forbes Africa forum in 2013. The African Development Bank describes the middle class in a developing economy as anyone earning more than \$2 per day. A study by John Simpson of the University of Cape Town's Unilever Institute of Strategic Marketing, defines middle class South Africans as those who earn between \$1 550 and \$4 800 (that is roughly between R22 000 and R70 000) per month or who meet certain criteria, for instance, having a white-collar job and owning a car. Around 40 percent of Black professionals work in the civil service, compared to 13 percent of Whites. This has led to the rise of income levels in Black families, which in turn has led to increased consumption. The study found that between 2004 and 2012, the number of Black middle-class families who possessed a DVD player increased from 30 percent to 63 percent; the number with computers at home increased from 19 percent to 45 percent; and of those owning microwave ovens from 60 percent to 92 percent. According to a well-known commercial bank, home and vehicle purchases by Black people have increased significantly more than for White people—namely a 19 percent versus a 7 percent increase. Lyn Foxcroft, a business consultant who studied wine consumption among emerging consumers in South Africa, notes that of the 8.3 million adults classified as middle class in 2012, 51 percent are Black, and 34 percent White, which is a significant shift from the 2004 proportions of 32 percent Black and 52 percent White. South Africa's middle class generally spends approximately R575 billion annually. The 4.2 million Black middle-class citizens spend a sizable part of this amount. Nearly half of them have a post-secondary degree and more than 50 percent of these families are sending their children to private schools. Former Finance minister Pravin Gordhan adds that since 1994, per capita national income is generally up by 40 percent (Dürr, 2013, p. 1).

Various factors have helped swell the ranks of South Africa's Black middle class, including, amongst others, credit availability, education, the government's Black Economic Empowerment (BEE) programme (discussed later), and general economic growth, which has resulted in increased job creation (Simpson, as cited by Dürr, 2013). The increased purchasing power certainly has a positive effect, with middle class spending hailed to some extent as the future redeeming feature of the South African economy (Dürr).

Despite this positive change towards redistribution of wealth and opportunity, there has, as mentioned earlier, not been a significant change for the large group of Black people living in poverty since 1994. This means that, although there has been some change, the current government and society have not succeeded in affecting social change in a truly meaningful way. Poverty, poor education, poor social mobility, and economic dependence is still a reality for more

than half of the South African population. Furthermore, 70 percent of Blacks in the middle-class face pressure to support less fortunate dependants and fulfil crippling family responsibilities (Dürr, 2013). This is often referred to as 'Black tax'.

Although it is (once again) not the aim of this thesis to digress into political commentary, it is notable that the ineffective remediation of the 1994 situation by the new government bears much blame for the current state of South Africa. When examining these factors and the attempted remedies, however, it is important to keep in mind that South Africa presented a very complex development situation in 1994, as it still does today. It is prudent to keep in mind that even with the benefit of hindsight it is tough to formulate an ideal picture of what the government should have done over the 24 years of democracy that the country has so far enjoyed. Furthermore, one may easily add perspective to this matter by contemplating what South Africa would have looked like today, had the 1994 election had a different outcome.

Below follows a brief description of the post-1994 governmental approach to the challenges faced, as well as a discussion and critique of social and economic policy employed. The focus is specifically on the attempts made to affect social change, economic redistribution, and employment equality.

2.7 Social and Economic Policy, and Legislation Changes, Post-1994

South African History Online (SAHO) (2016, p.1) provides a summary of the socio-economic policy of the post-Apartheid government, which is set out below along with specific actions taken to advance human resources:

The Reconstruction and Development Programme (RDP), which was part of the election platform of the ANC in the 1994 elections, was selected as the principal socio-economic programme of the new regime. The RDP recognized five major policy programmes, namely creating a strong, dynamic, and balanced economy; developing the human resource capacity of all South Africans; ensuring that no one suffers racial or gender discrimination in hiring, promotion, or training situations; developing a prosperous balanced regional economy in Southern Africa; and democratising the state and society. Although the RDP was regarded as the foundation of government development policy, it failed to deliver as promised, particularly in terms of economic growth, which impacted negatively on the policy itself. It was understood that the new government experienced complications in the implication of the RDP such as, a fiscal constraint due to the poor fiscal and economic legacy it inherited, and an organisational constriction due to the lack of an efficient public service, and the inability of the new government to build the necessary state capacity. The RDP is often criticised for ignoring the broadening of the tax base, rather focusing, far too narrowly, on fiscal judiciousness and the reallocation of existing revenues. Additionally, the government struggled with a lack of adequately trained managers, while policy co-ordination

and implementation methods used were not proven to be successful. Faced with these constraints, government then introduced the new macroeconomic policy framework called the Growth, Employment, and Redistribution (GEAR) strategy in 1996 to stimulate accelerated economic growth – which was essential to provide funds required to meet social investment requirements. The policy encompassed most of the existing social objectives of the RDP but was further aimed at “reducing fiscal deficits, lowering inflation, maintaining exchange rate stability, decreasing barriers to trade, and liberalising capital flows” (SAHO, 2016, p. 1). Under the GEAR policy, fiscal deficit, inflation, and government consumption targets were only partially met. These indicators did however show great improvement–bringing about greater macroeconomic stability, better reporting, and increased accountability. Tightening of the monetary policy and restructuring all government levels led to a reduction in government expenditure. This policy was largely criticised however, especially by COSATU, for its so-called neo-liberal approach. Despite the achievements, however, private investment, job creation, and GDP growth indicators were unsatisfactory during this time. Low levels of economic growth and private investment were insufficient to contribute to the reduction in unemployment hoped for, and the policy achieved very little success with the redistribution of wealth. While the GEAR strategy was appropriate for the achievement of macroeconomic objectives, it evidently fell short regarding the social challenges of the country, most notably poverty reduction and employment creation – as was envisaged. GEAR was replaced in 2005 by the Accelerated and Shared Growth Initiative for South Africa (ASGISA) as a further development on the first two developmental strategies followed post-1994. ASGISA acknowledged the challenges of “prolonged poverty driven by unemployment, low earnings, and the jobless nature of economic growth” (SAHO, 2016, p. 1). ASGISA envisioned to reduce poverty by 2010, halve unemployment by 2014, and recognised that the policies implemented to address these issues needed to be at the forefront of economic policy decision making. ASGISA built on the foundations of the RDP’s goals of “building a united, democratic, non-sexist, and non-racial society, and a single integrated economy” (SAHO, 2016, p. 1).

The Joint Initiative on Priority Skills Acquisition (JIPSA) was founded in 2006 as an initiative of ASGISA to address the supply of priority skills to the economy. It identified priority skills areas for urgent attention, including city, urban, and regional engineering and planning skills, as well as high-level planning and engineering skills for ‘network industries’ such as transport, communications, water, and electricity. Other areas include artisanal and technical skills, management and planning skills in health and education and mathematics, science, and language competence in public schooling. In addition, JIPSA made proposals to prioritise skills initiatives in the fields of “tourism, information and communication technology, business process outsourcing, and bio-fuels” (DHET, 2014b, p. 25).

After the removal of (then) president Thabo Mbeki, ASGISA was replaced with the New Growth Path (NGP) which was announced by then new president Jacob Zuma in his State of the Nation address in 2010. The New Growth Path was described as “a bold, imaginative, and effective strategy to create the millions of new jobs South Africa” needed then - and still needs today (SAHO, 2016, p. 1). The strategy set critical markers for employment creation and growth and identified where feasible changes in the structure and character of production could generate a more inclusive and greener economy over the medium- and long term. The plan provided ambitious targets for skills development in training of engineers and artisans, elevating workplace skills, increasing the role of FET colleges, and improving skills related to information and communication technology (DHET, 2014a). The NGP noted that structural unemployment remained extremely high, that poverty continued to afflict millions, and that the oppression of workers continued. In this regard, the NGP was intended to accelerate growth in the economy, and to do so in ways that rapidly reduced poverty, unemployment, and inequality. The NGP was regarded as a necessary policy to help bridge these structural challenges. In the beginning of 2013, the National Planning Commission (NPC) introduced the National Development Plan (NDP) 2010-2030 as South Africa's long-term socio-economic development roadmap. To address the country's socio-economic imbalances, the NDP identified, the key constraints to faster growth, among other things, and presented a roadmap to a more inclusive economy. The NDP highlighted certain skills needs, these included the professionalisation of the public service; the delivery of life skills programmes; fostering entrepreneurship; providing community development programmes in order to promote sustainable livelihoods; increasing the pool of mathematics and science teachers at all levels in the system; increasing the pool of scientists; increasing the number of engineers, technologists, technicians, and artisans to support the roll-out of public programmes; and increasing the number of health professionals (SAHO). The South African Government further adopted a National Infrastructure Plan in 2012 (Strategic Integrated Projects (SIP's)), which aimed to “transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services.” The plan also supported “the integration of African economies” (DHET, 2014a, p. 11).

The National Skills Development Strategy was launched in 2005, within the same development initiatives that guided the establishment of the HRDSA. The aim was to formalise skills development and qualification standards. Legislation that supported this was the Skills Development Act (No 97 of 1998), the Skills Development Levies Act (No 9 of 1999) and South African Qualifications Authority Act (No 58 of 1995). This established the National Skills Authority and the Sector Education and Training Authorities (SETA's) that would implement the strategies. Funding for skills development would come in the form of a one percent levy on the payroll of firms with a payroll greater than a determined threshold. This levy would then be used to fund both the National Skills Fund and various skills development grants at the discretion of the

SETA's. Companies may also make claims against the SETA's for internal and external training performed (Seesa, 2013a).

The Human Resource Development Strategy (HRDSA) for South Africa (2010) was created by the Human Resource Development Council of South Africa (HRDCSA) to address the country's human resource needs as a critical, though not sufficient, condition for the creation of employment, reduction of poverty, and improved equality. This HRD policy framework was grounded on broad-based and opportunity specific HRD strategies and policies that are synchronised with South Africa's economic development needs. It focused on the elements of HRD that impact significantly and positively on performance such as "educational attainment, skills development, science and innovation, and labour market/employment policies". The primary institution for "HRD coordination among government, organised business, organised labour, community representatives, professional bodies, research and academic representatives, and other relevant stakeholders" was the Human Resource Development Council (HRDC), established under the leadership and stewardship of the Deputy President. The Minister of Higher Education and Training is tasked with the management of the strategy along with other ministers of relevant portfolios (DHET, 2014b, pp. 6-7).

In conjunction with the various levels of strategy, government has funded and created various initiatives, programmes, and public-private partnerships to solve the problems identified. Some of these initiatives are discussed below.

A Youth Employment Accord, signed in 2013 by the government and a social partner has "a range of measures aimed at promoting youth employment, among them, set-asides for youth in specific industries, a large increase in internships in government, and the creation of youth brigades" (Gernetzky, 2015, p.2). National Youth Development Agency chairman Yershen Pillay said that much of the agency's focus over its first three to five years was to give expression to the accord through the establishment of a 'mass-based national youth service programme'. The focus of the agency is half on education and skills development and the other half is split between career guidance activities, youth service, and entrepreneurship. The Department of Higher Education and Training is seeking to capacitate the Technical Vocational Education and Training sector and has a number of programmes aimed at ensuring students gain access to work experience. A R400 million joint National Skills Fund and university initiative, the Resolution Circle Initiative, launched in 2011, provides workplace training, largely for students studying toward diplomas. CEO Willem Clarke said that, while the initiative often gives student access to higher levels of technology than they would be exposed to in the workplace, its existence reflects the lack of availability of practical training in the private sector. Many training workshops have been closed due to cost cutting of non-core activities in a tough economic environment (Gernetzky, 2015).

Government has also provided tax incentives to stimulate employment. The South African Revenue Service (SARS) (2014, p. 1), in explanation of the current Employment Tax Incentive (ETI) (implemented from 1 January 2014), notes that “a lack of skills, as well as perceptions regarding the restrictiveness of labour regulations make some employers reluctant to hire the youth”. The aim of the incentive is to reduce the cost of employing youth through a cost-sharing mechanism with government by reducing payroll income tax (Pay-As-You-Earn or PAYE) without affecting the wage received by the employee. Employers can get up to the value of 50 percent of the wages of a qualifying employee back in the form of a credit on their PAYE liability, although the incentive amount differs based on the salary paid to the employee and also when the employee was employed during the ETI programme. The original 24-month programme ended in December 2016, however various extensions have been announced. The programme essentially covers all private businesses and there are no limits to the amounts of qualifying employees that an employer can hire. The qualifications for employees include that they must have a valid South African identity document, be 18 to 29 years old, are not employed as a domestic worker, are not a connected person to the employer, were employed by the employer or an associate on or after 1 October 2013 and are paid the minimum wage relevant to that employer, or at least not less than R2 000 per month. There are penalties for employers paying employees less than the prescribed amounts and a penalty of R30 000 for an employer who displaces an employee to employ an employee who qualifies (SARS).

Government has also aimed to bolster the small and medium business sector. A R10 billion fund was created to help stimulate economic growth through the empowerment of small business operators. Former President Jacob Zuma and his (then) deputy Cyril Ramaphosa chaired a meeting of chief executive officers of major firms and leaders of labour unions to discuss long- and short-term measures to grow the economy and create work opportunities. The fund is a joint private- and public-sector endeavour for Small Business support. It was aimed to be established with roughly equal contributions by the partners. The focus of the fund is to provide venture capital-type funding and mentoring to the target groups, particularly Black entrepreneurs. The Department of Trade and Industry (DTI) also launched the ‘red tape reduction’ programme to help municipalities reduce the complexity of awarding contracts or offering services to small entrepreneurs. Compared to many countries South Africa would like to emulate, small business contributes most of the GDP. The South African economy relies on a few big businesses and state-owned corporations – and many of them are struggling (Ikaneng, 2016).

The Small Enterprise Development Agency (SEDA) aims to develop small, vibrant, competitive businesses to contribute to GDP. One aim is to set up SEDA branches across the country so that anyone who wants to start a venture can get non-financial support to help them grow and become sustainable. SEDA provides skills development, training, and mentoring at 47 incubation centres nationally, also providing people access to infrastructure they cannot afford such as offices,

machinery, the internet, and phones. They will also provide guidance with business plans, marketing, and finance, until the start-ups can face the harsh realities of the market. SEDA aims to have 150 incubation centres up and running by 2017, however face constraints due to budget issues. Furthermore, they need experienced people to mentor entrepreneurs. In its latest report, the International Monetary Fund (as cited by Stones, 2015) commended government's improved partnership with the private sector and social partners, noting that this could accelerate the implementation of reform and support economic growth (Stones).

The Industrial Development Corporation (IDC) spent R5.9 billion on 85 empowerment transactions in the 2014-2015 financial year. The IDC is planning to spend R23 billion, or 22 percent of its budget, to fund more than 100 Black industrialists within the next three years. R4.5 billion is to be spent on women- and youth-empowered businesses each. In the past 21 years, the IDC has provided R28 billion to Black-owned business, and more than R53 billion for general Black economic empowerment (Allix, 2015).

2.8 Legislation Aimed at Transformation and Equality

The most notable government attempts to correct past inequities, are the changes to legislation surrounding business, and particularly, labour.

The Employment Equity Act 55 of 1998 (EEA), as amended, is the primary statute that regulates equality and discrimination in employment. It was promulgated following South Africa's re-admission to the International Labour Organisation (ILO) after the 1994 election. The Act gives effect to sections 8 and 9 of the Constitution, which on the one hand requires every person to be treated equally and fairly in comparison to others, and on the other hand requires those who have been disadvantaged in the past to be treated differently based on their past disadvantage or current inequality. It thus prohibits direct and indirect discrimination on a selection of grounds, including, amongst others, race, birth, and ethnicity, and prescribes designated employers (as defined according to number of employees and company turnover) to follow a consultative process in order to enhance the representivity of their workforce in terms of the available EAP. This process involves consultation with employees and the analysis of the workforce to identify barriers to equitable employment and areas of the workforce profile where there is underrepresentation of the designated group. This is a rather lengthy process, which involves appointing an Employment Equity (EE) manager and committee, who must then set objectives in terms of time-based numerical goals and furthermore monitor and evaluate the execution of the plan. There are also annual or bi-annual reporting requirements, depending on the number of staff members employed by the business (ASL, 2013; Seesa, 2013a).

As mentioned above, there is a stipulation within the EEA that provides for individuals that have been previously disadvantaged to be provided with preferential treatment. This forms part of

reasonable affirmative action (AA) programmes implemented by a company, in line with the intentions of the Act. This involves identifying and remedying barriers to employment opportunities for this group and taking reasonable measures to advantage suitably qualified individuals from this group by providing them with reasonable accommodation and engaging in retention and development efforts. This includes striving toward numerical representation goals linked to the regional demographics and skills profile. Numerical targets are to be justified in detail in the EE plan by the company. The Act stipulates that a person is suitably qualified for a job based on a combination of formal qualifications, prior learning, relevant experience, and/or the capacity to acquire, within a reasonable timeframe, the capacity to perform the work (Seesa, 2013a). The following extract from a speech made by Nelson Mandela in October 1991 is noteworthy in this regard, as it explains, rather clearly, the intention behind the EE law, specifically as it pertains to affirmative action (ASL, 2013, p.7):

The primary aim of affirmative action must be to redress the imbalances created by apartheid. We are not asking for hand-outs for anyone, nor are we saying that just as a white skin was a passport to privilege in the past, so a black skin would be the basis of privilege in the future. Nor ... is it our aim to do away with qualifications. What we are against is not the upholding of standards as such, but the sustaining of barriers to the attainment of standards; the special measures that we envisage to overcome the legacy of past discrimination are not intended to ensure the advancement of unqualified persons, but to see to it that those who have been denied access to qualifications in the past can become qualified now, and that those who have been qualified all along but overlooked because of past discrimination, are at last given their due. The first point to be made is that affirmative action must be rooted in principles of justice and equality.

The aims of this legislation are thus, in its core, indeed laudable and justified, as there certainly should be some form of redress of the past injustices that were caused by Apartheid. The EEA is however not the only legislation that affects the business world by driving transformative change. Broad-Based Black Economic Empowerment (BBBEE) is a further part of the transitional laws meant to bring previously disadvantaged South Africans into the mainstream economy. The main aims of this legislation include fostering Black ownership of land and other productive assets and enhancing Black people to senior levels of management. Originally, Black Economic Empowerment (BEE) legislation focussed solely on the Black ownership of business interests, however this approach was scrapped for the broad-based approach, which aimed at improving the lack of skills and meaningful economic growth among Black people (Seesa, 2013a).

BBBEE works on a balanced scorecard approach by which companies are rated on relevant items and then ranked on BBBEE levels according to this score. There were seven elements in terms of the previous legislation, namely ownership, management and control, employment equity, skills development, preferential procurement, enterprise development and, socio economic development. Companies have different rating requirements based on a turnover threshold. Exempted Micro Enterprises (EME's) are small businesses (turnover under R5 million under the previous codes) and are automatically awarded a level four BBBEE status. A Qualifying Small Enterprise (QSE) had a turnover range between R5 million and R35 million. Under the previous codes, QSE's could choose to be rated on four of the seven categories. Generic enterprises with a turnover exceeding R35 million face a more cumbersome rating process. There are some industry specific sector codes that vary the requirements for a select number of industries. Furthermore, start-ups are automatically on level four for the first year and there are special requirements for NGO's, although Black owned start-ups can draw a fair amount of advantage by applying for a higher rating (Seesa, 2013a).

The driving force behind BBBEE is arguably the preferential procurement element. Under this category, companies are required to evaluate the BBBEE status of their suppliers to do business with higher BBBEE rated companies. The BBBEE level of the supplier determines the amount of the spend towards that company that may count toward the BBBEE rating of the purchasing company. Furthermore, to receive points on the employment equity element, the company must have complied with the EEA and submitted the appropriate EE reports and implement an EE plan. In order to qualify for skills development points, the company must be registered with the appropriate SETA, have submitted a skills plan, pay the skills development levies as required and furthermore be seen to be developing priority skills. There are also other minimum requirements on the other scales, such as those referring to voting rights and economic interest under the ownership category (Seesa, 2013a).

Compliance with the BBBEE legislation is a rather technical process and has a large cost implication. The certification alone may cost a company between R15 000 and R50 000 annually, for a generic enterprise. Although this cost may be seen as negligible for a large firm, there are many smaller firms that are placed in this category, particularly in high turn-over, low profit margin industries, for example fuel retail (for which the Department of Trade and industry is currently devising a sector code).

Compliance to BBBEE standards was voluntary at first (and only incentivised through the awarding of government grants, tenders, public-private partnerships, and the preferential procurement mechanism), however the regulations started taking a relatively more prescriptive and punitive approach after 2014, with changes in the legislation. Government and public listed entities are now compelled to adhere to procurement policies, incorporate the BBBEE legislation

in the criteria for awarding of licences and permits, and report on compliance. Changes in calculations, and numbers of points needed, also make it more difficult for companies to attain any given level. These changes meant that companies could have automatically fallen as many as two levels in the higher levels and even three for lower rated companies. With the changes in the codes, the seven BBBEE elements were also reduced to five, with enterprise development fusing with preferential procurement and management control fusing with employment equity. The turnover thresholds were however increased. EME's could now have a maximum of R10 million turnover, QSE's are now between R10 million and R50 million and generic enterprises obviously being any business with a turnover more than R50 million. Ownership, skills development, and enterprise and supplier development are now considered priority elements. Non-compliance on certain minimum requirements on these elements will result in an automatic downgrade of the BBBEE status. The new codes provide incentives to support start-ups and small firms, as well as providing more incentives to perform skills development. This includes training unemployed Black people and absorbing Black people into employment at the end of learnership programmes (Seesa, 2013b; Werksmans, 2014; Maruz, 2014).

Adherence to the above legislation not only poses administrative and financial burdens on companies, but also creates notable pressure to contribute to Black economic transformation for companies, as they may be required by clients, state, or general consumer opinion, to conform to it (Maruz, 2014). Although government has still currently taken a stance leaning more towards championship, mediation, and advisory, it is clear that this may likely change to a more forceful approach, noting for example, the strong opinions expressed by the CEE, mentioned earlier, as well as pressure that is applied by empowerment advocates. There have been penalties levied for non-compliance and fraud and the newer legislation takes a firmer stance against common fraudulent practices such as fronting and misrepresentation (Benjamin, 2013; Seesa, 2013a; Werksmans, 2014).

Under the legislation explained above, management does experience immense pressures to transform the workforce and this has led to worrying consequences in terms of the generic and sweeping approach often taken with the interpretation and application of the laws (Hermann, 2013). De Lange (2015, p.1), for example, reports on the strict application of these laws in the state-owned enterprises. Eskom, South Africa's national electricity provider, is said to be reducing the number of White engineers by 1 081 and White artisans by 2 179 to conform to government requirements and ensure that these two key job categories become "completely reflective of the national and regional demographics" by 2020. De Lange cited a top Eskom manager who told Rapport that Eskom was transforming too rapidly, commenting that "it will be catastrophic if our affirmative action targets now lead to the estrangement of people whose skills we need." There have also been some other high-profile and rather unsettling cases of this type of over-application of the EE laws (Hermann, 2013). Since management is obliged to meet employment

equity targets, practices such as allocating token positions to Black employees, training affirmative action hires to replace existing employees, paying unrealistically high salaries to Black managers, or appointing less qualified people are often unavoidable. These practices result in numerous negative consequences for organisations and individuals from both the designated and previously advantaged groups (Coetzee, 2005). According to the Solidarity Research Institute (as cited by Van der Westhuizen, 2015), a 2007 report released by Deloitte and Touche pointed out that 81 percent of businesses struggle to find suitable staff and 76 percent reported that finding and appointing employment equity candidates posed a significant problem.

The EE and BBBEE legislation have far-reaching consequences for business and individuals. Despite the growth in the African middle class mentioned earlier, it is obvious that there is still a large number of South Africans who are unemployed or not economically active, suffering poverty and not sharing in any form of prosperity that the economy generates. This leads to a point where one must pose serious questions about the strategies employed by the current government, in philosophy, theory, and execution, with particular reference to the legislation discussed above. Hermann (2013) emphasises that AA in South Africa (and by extension BBBEE) remains a controversial issue and honest and thoughtful debate is mostly absent. Government visions are laid down as the norm and any opposition is often labelled as counterrevolutionary hindrances in the way of transformation, harking back to apartheid, or as racist – particularly when such opposition is from White South Africans, who have some obvious objections to the status quo that are often understandable and justifiable. Simply criticising affirmative action is however not appropriate, especially without examining one's intentions behind the discussion. Simple criticism is however not the issue at stake, since the issues with the policies and associated practices discussed above are deeper than simple approval or disapproval of them or speaking in terms of replacing, 'fixing', or scrapping them. These economic policies and statutes mentioned above are individually and collectively not capable of resolving the issues at hand, and there are clearly other large issues at stake (Hermann, 2007; Macozama, 2007).

Arguably, government has the largest role to play in addressing social and economic issues as well as regulating, incentivising, and collaborating with the private sector in this regard. EE and BBBEE have been widely criticised for not establishing meaningful social and economic change in South Africa. Macozama emphasizes that transformation is urgent and that the problems discussed in this thesis need urgent resolve. The "economic question" (Macozama, 2007, p. 178) was at the centre of exclusion in the Apartheid years and will subsequently be at the centre of the debate when discussing any form of remediation. The first question of transformation must thus be to include, in the economy, those who have previously been left out. Although the Employment Equity Act has opened the job market, removing barriers for those who were previously excluded from work, BBBEE and EE have had rather many "elitist consequences" (Macozama, 2007, p. 177; Ramphela, 2012). Macozama goes as far as saying that this should be expected, as socialist

outcomes are not to be expected from a capitalist system. The idea behind BEE was to transform the South African economic context by presenting an opportunity for those who had been marginalised and left out to be empowered to participate and share in the abundance of the economy. In an ideal world, BBBEE and EE would bring an end to discriminatory employment practices, promote equal opportunities in the workplace, and transfer skills. It would give all Black people the opportunity to better their lot and be economically active citizens. However, very little progress has been made for the ‘ordinary’ Black South African. A real issue in this regard is the large BEE deals with individuals who were well connected politically with large corporations from the inception of BEE. These Black people, who were advantaged under the previous regime, became first beneficiaries of affirmative action and BBBEE. These individuals are making massive financial gains in comparison to low earnings of a large majority of Black South Africans. Other ways of marginalisation under the new regime include remediation based on political and union affiliations, nepotism, cadre deployment, corrupt recruitment practices, as well as membership of a family or ethnic group (Govender, as cited by Hermann, 2013; Macozama).

Transform SA (2014) quoted Gwede Mantashe, Secretary-general of the ANC, as saying, at the annual Black Management Forum in Sandton, that the presence of Black people in the top hundred richest South Africans means that there has been redistribution of wealth. He also criticised society’s attitude toward successful Black people and commented that successful Black South Africans are often assumed to be corrupt or have some connection to the ANC. This statement shows that the ruling party does value creating a Black elite and that rumours of corruption are certainly pervasive.

Mbeki (2011, p. 1) is also strongly critical of BBBEE in this regard, as it is said to “promote a class of politicians dependent on big business”; and therefore, the interests of “big business” is promoted “in the upper echelons of government”. He goes as far as accusing BEE of being the brainchild of big corporations that served to create a buffer group within the political class, using their marginal assets, to protect the interests of “big business” and maintain the status quo in which South African organisations operated at the end of Apartheid (Mbeki, 2011, p. 1). He notes further that BBBEE promotes an anti-entrepreneurial culture among the Black middle class by legitimising an environment of entitlement; and affirmative action promotes incompetence and corruption in the public sector as ruling party allegiance and connections serve as entry and promotion requirements instead of tough criteria. It is for these reasons, amongst others, that prominent political and business leaders have called for BBBEE to be scrapped. Their main argument is that BBBEE has not achieved its aim, which is to share the country’s wealth with previously disadvantaged sectors of society and to promote the development of productive and sustainable Black business, particularly in the small and medium sectors. BBBEE also seems to have failed to create viable Black businesses, which are capable of producing quality products and services that can compete at reasonable prices. BBBEE companies often bid for tenders and

then outsource the work at cheaper prices to established companies (Maidza, 2012, p. 2). Trevor Manuel, former Minister of Finance, and minister in the presidency, has also long been a critic of BBBEE, expressing his frustration at corruption in particular. The South African Institute of Race Relations, in its December 2012 submission to Parliament on the BBBEE codes introduced alongside the new Bill, insisted that BBBEE should be scrapped, not reformed, quoting objections from the trade union federation Cosatu and the South African Communist Party to BBBEE as it stands and the fact that it has indeed only benefitted a Black elite instead of addressing more wide-spread economic inequalities. There seemed to be agreement that BBBEE is not working and that something had to be done, "if not for economic reasons, then just to satisfy an increasingly angry public who are not seeing changes to their circumstances, despite BEE being introduced in 2003" (Benjamin, 2013, p. 3). The Black Business Council told Parliament that BBBEE had not been successful, although they did not agree that it had to be scrapped (Benjamin). One of South Africa's best-known Black entrepreneurs, Richard Maponya, blames the country's lack of entrepreneurial activity on BEE. He is of the opinion that it fostered a culture of entitlement and expectation that has robbed matriculants and university graduates of their incentive to start a business. Other local business giants echo his sentiments, such as Sam Motsuenyane, who also built his business empire throughout the Apartheid system. This entitlement culture started brewing in 1976, according to Maponya: "our youngsters believed that when the ANC takes over, we are going to grab whatever belonged to a white man and give it to black people" (Xulu, 2012, p.1). He does agree that BEE was necessary to an extent. It was created to benefit the majority, however it was abused so that it only empowered a few who were connected through, for example the tender system that seems to reward loyalty. It has left a feeling of resentment and indebtedness of government to the people. Outgoing CEO of FirstRand, Sizwe Nxasana, says that the government, not the private sector, is to blame for disappointing levels of Black ownership in the country. Former President Jacob Zuma accused the private sector of failing to transform when he told parliament that Black ownership of JSE-listed companies was only 3 percent. Nxasana does not agree that 3 percent is a true indicator of transformation – it is the consequence of an unwise BEE policy that emphasised equity ownership by a well-connected few rather than broad-based empowerment. The JSE argued that if trade union investment funds, pension funds, such as the Public Investment Corporation, and corporate share ownership schemes were considered, then there is 23 percent Black ownership of JSE companies. Nxasana does not necessarily agree with this either, but he believes that there has been more financial transformation of the private sector than is generally recognised. He further recognises a dire need for more Black entrepreneurs to build businesses and create jobs because for a long period BEE focussed on equity ownership and less on enterprise development and fostering entrepreneurship. He does not agree with Black business legends such as Sam Motsuenyane, Richard Maponya, and Herman Mashaba that BEE has "disincentivised people

from starting their own businesses”, although it certainly “has not created enough incentives” (Barron, 2015, p. 2).

Similarly, as with BBBEE, AA, as part of employment equity, has faced strong criticism. Roets (2015) mentions that affirmative action is illegal in terms of international law, which requires the legislation to have a sunset clause. The International Labour Organisation (ILO) has developed a definition for Affirmative Action in that it should be temporary and remedial in nature, otherwise it could be deemed to be in violation of Resolution 111 of the ILO, which prohibits any form of discrimination (Hermann, 2013). International analysis conclusively shows that South Africa is swimming upstream in terms of economic empowerment, with more countries rather looking at the development of people and the creation of human capital, thus enabling people to enter the labour market, rather than merely shifting around existing resources. Internationally, the focus is moving away from race and ethnicity, rather looking at the socio-economic status of people when it comes to any form of empowerment. The aim of affirmative action is usually to protect minorities and to help them participate in the economy fairly. It functions as a temporary measure to bring about equality by removing direct and indirect obstacles. Afterwards, members of the society should be able to advance as equals, without state interference.

Affirmative action in South Africa, with the focus on representivity, is criticised for not promoting diversity, but instead promoting uniformity. This means that, ultimately, all organisations, institutions, and undertakings, whatever their nature, must similarly reflect the national racial composition at all levels, which means that mostly only Black Africans would be selected, and all levels and groupings need to be Black controlled throughout. This is a near impossible and never-ending endeavour, considering that organisations tend to draw employees from the groupings coming forth in their community and organisation. Fully adopting this view makes it impossible for minority institutions to exist. The national population is inherently made up of a multitude of communal identities, none of which reflect national population composition or national interests. A pluralistic democracy is required to protect the freedom and integrity of the minorities and create balance in the society. In such a democracy, the majority has the right to rule, but the obligation to tolerate, and create and maintain conditions in which minority communities can survive and flourish. Absolute representivity is thus incompatible with the principle of equal recognition and multi-communalism in a pluralist democracy (Roets, 2015).

Affirmative action has faced criticism that educating and empowering people to be able to compete on an equal basis has been abandoned in favour of the principle of representivity, which in its essence implies that the goal of racial equality would be attained the moment perfect and absolute racial representivity of population demographics becomes a reality in the workforce, regardless of whether those Black employees were only put there because of their race and not merit. This is a seemingly narrow attempt to quick-fix the equality predicament on a formal level,

while functional equality is disregarded. The fact of the matter however is that even in the hypothetical scenario where all Whites who are overrepresented in the national workforce were to be replaced immediately, the labour market would be representative of race but virtually nothing would change in terms of equality. In South Africa, with a Black African majority to be represented, and also the vast majority of Black African people who would, despite perfect representivity, still be outside of the formal economy, affirmative action will never succeed if it has to be engineered relative to White people. In other words, it cannot provide a sufficient remedy if the focus is only on redistributing benefits currently held by Whites. The question should not be whether Black Africans are making progress relative to White people – it should be asked whether they are making progress at all, and as a collective. This begs the question of when Affirmative Action would then stop. Further exploration of the figures of population groups and underlying unemployment towards explaining the above shows that even with a figurative ‘handing over’ of the jobs of White people was possible (which it is not due to specialist knowledge or people working for themselves, or because they create jobs for others), the difference in overall unemployment is zero. If Whites are suddenly reduced to their respective proportion of the EAP in the labour force it equates to rising the unemployment rate amongst them to the average national rate. If their jobs are distributed proportionately amongst the other races then the unemployment rate between the races would drop by 2.6 percent for Black Africans, 2.2 percent for Coloureds, and 1 percent for Indians, respectively. White people thus lose over 400 000 jobs in this hypothetical scenario. The national unemployment rate however remains the same with no new jobs being created, just jobs being redistributed. If all overrepresented White jobs are transferred to Black Africans only, then they benefit by only an additional 0.3 percent reduction in unemployment over the above scenario. If all White jobs were to be eliminated and handed over proportionately to the other races, then Black Africans have a decrease of 12 percent in unemployment to 16.7 percent (which is still high by international standards). Coloureds will fall from 24.5 percent to 14 percent and Indians fall from 11.7 percent to 6.7 percent. In terms of unemployment Whites then jump from 5.9 percent to 100 percent in this scenario. The average unemployment remains 25.5 percent, however. Like the above scenario, if all White jobs are shifted to Black Africans without any difference being made to the other population groups, Black unemployment only drops by a further rate of 1.7 percent to 15 percent. So even in this extreme and unrealistic case affirmative action still does not solve the severe problem of Black unemployment. Transferring all of the approximately 4 million jobs to Black Africans and leaving all but the Black African population completely jobless still leaves Black African unemployment at a rate of 0.5 percent. This scenario is based on 2012 data on unemployment as per the narrow definition and will look even worse when the broader definition of unemployment is used, and one considers that a large portion of the non-active population is jobless as well. Transferring jobs and resources thus appears not to be the solution (Hermann, 2013).

Another issue concerning representivity is that the South African labour market cannot be representative because the skills supply is not representative. This is a major issue as arguably the most important dimension of the input side of the labour market is the skills of the participants in that market. If the education of the designated group is not improved radically, understandably, their standing in the labour market is unlikely to improve (Hermann, 2013).

As mentioned earlier, South Africa is seen as going against international tendencies with affirmative action. Contrary to what many may believe, affirmative action has also been applied in the form of group preferences and quotas in other countries besides South Africa, with programmes tied to goals and timetables for ethnic representation being implemented as far back as the 1940's (Sowell, 2004). Sowell has investigated empirical data into the effectiveness of affirmative action, as far as tangible and sought-after results go, in India, Malaysia, Sri Lanka, Nigeria, and the United States, amongst others. Sowell, taking a very critical view at affirmative action around the world, mentions that controversies surrounding affirmative action policies are usually dominated by assumptions, beliefs, and rationales and that factual, empirical analysis conversely receives very little attention in policy debates (Sowell).

Although countries differ vastly, there are many parallels to be drawn, and South Africa has even modelled its AA approach on that of other countries. During the early days of affirmative action, the South African government sent a special delegation to Malaysia to learn about affirmative action, pointing to their model as an example of empowerment of their indigenous population. Malaysia also has a heterogeneous population with racial divisions. The Bumiputra ('sons of the soil') are the original inhabitants. They form 61 percent of the population and believe the country to belong to them. In the Malaysian case, the majority are also the ones singled out for advancement, in their case, against 24.6 percent Chinese, and a 7.1 percent Indian population. Malaysia also has a colonial history, stretching from 1924 until after World War Two. Affirmative action is also in their constitution. In 2008, the ruling party lost considerable support in the national elections. The party was characterized by ethnic polarisation, corruption, racial domination, and religious intolerance which made the Chinese and Indians feel like second-rate citizens. Malaysians and other races all responded to opposition canvassing votes on affirmative action. Malaysian politicians and international political authors believe that affirmative action is responsible for many of the country's structural problems and slowing economic growth. In 2010, Prime Minister Razak expressed hope that phasing out affirmative action will stimulate foreign investment and that the country's objectives of social remediation could only be reached if the economy was grown considerably. The ruling party is worried that they will lose supporters if affirmative action is substantially revised. Many civil servants owe their jobs to affirmative action and many people in the governing party elite are beneficiaries of government contracts. Thus, although the economy is rejecting affirmative action, the symbolic politics of it and the advancement of people in the ruling party are maintaining it. The Bumiputra have been making

good progress with employment and training, thanks mainly to the improvement of the primary education system in poor areas. Former president of Malaysia, Dr Mahatir Mohamad, said after his retirement that affirmative action had benefitted a small group of elite Malaysians over poor Malaysians. Ninety percent of inequality in Malaysia is within the designated group. Skilled workers have also moved to other countries. There are thus many worrying similarities here with South Africa (Hermann, 2007).

In the USA, people are also moving away from affirmative action, with affirmative action already banned in some states. Many of the authors opposing affirmative action are Black Americans. Most of the battles around affirmative action are regarding university entrance (Sowell, 2004).

Sowell (2004) further notes a typical trend in affirmative action programmes in that they are always initially conceived as a temporary application with a limited scope, but in almost every instance end up being broadened in terms of their applicability and extended long after their intended expiration date, with some programmes (for example affirmative action in India) continuing indefinitely. Sowell argues that a temporary programme could not be thought to be able to address inequality that has been instituted over a much longer period. Ethnic inequality is a universal theme across many modern societies, multidimensional in nature, often pervasive over centuries, and few, if any, societies have ever even approximated the notion of 'proportional representation' (or representivity) across different occupations, institutions, or income levels.

One also cannot control the reactions of the preferred and non-preferred group members according to some grand design. Both groups confront laws and policies as incentives or constraints, and not as predestination, and react in their own ways, often 're-designating' themselves (as members of the other group individually or collectively), and/or altering attitudes and behaviours towards achievement and members of the other groups. Fronting in organisations is also common in settings such as China, Malaysia, Kenya, and Poland. There is also extensive evidence that affirmative action policies end up failing to benefit the originally intended target population, with benefits often being distributed to better positioned individuals in the intended preferred group. Furthermore, members of the preferred groups who lack complementary factors needed to take full advantage of the preferences often feel less incentive to acquire them. As a result, the development of job skills may be de-emphasised. Both groups may thus feel inclined to slacken their efforts which may result in a net loss of benefits rather than only a transfer of benefits (Sowell, 2004).

Despite affirmative action, all population groups can grow, and many have done so against the odds. In the USA for example, it was not due to a transfer of benefits from the rest of the population, but an increased contribution from these minorities to the growing prosperity of American society, benefitting themselves and the society. Education, skills, and experience helped them take on more challenging work. Better education and improved skills can benefit

society as a whole and also be a source of greater respect for the group as a whole, from others, who see them becoming more productive contributing members of society. Affirmative action could lead to actual achievements being underestimated (Sowell, 2004).

Affirmative action generates resistance from the masses if it only benefits elites, and furthermore the economy will reject interventionist programmes not directed at growth. The modest benefits of affirmative action, concentrated on those already more fortunate, with little or no benefits to those who are truly disadvantaged, have in the past however often been blamed on insufficient zeal, or even bad faith, on the part of those administering affirmative action. It could be argued that in South Africa, issues with the remediation of past inequalities are often incorrectly directed as race and redistribution issues, even though the attempts at redress are doomed to fail due to the errors in ideological reasoning behind it. This fosters a negative and adversarial racialised climate in South Africa that is not contributing to the improvement of the issues discussed in this thesis (Hermann, 2007).

Thus, these failures can further serve as impetus for reform that could be reason enough to terminate the programme (Hermann, 2007). Mangosuthu Buthelezi of the Inkatha Freedom Party (IFP) echoes the views of the United Nations on the matter, namely that if affirmative action is no longer affirmative, it becomes discriminatory, and it collides with the spirit of the Constitution. The absolute exclusion of Whites was never the intention. He believes that affirmative action should focus on the socio-economic position of a person, rather than race. He furthermore proposes a sunset clause to affirmative action, which should thereafter be applied non-racially, and merit and quality should be the decisive factors in economic decisions. Providing jobs are the fastest way to empower the marginalised and the poor. Where affirmative action has noticeably reduced the incentives of both the preferred and non-preferred groups to perform at their best, the focus should rather be to encourage work ethic, and the value of excellence among South Africans so that we may increase productivity, capture a global competitive edge, and escalate the pace of economic growth. Mr Buthelezi feels that it is time we have an honest discussion, reach a final settlement on economic matters, achieve fairness and justice for the present and immediate future, and set the foundation for a future where race will never again be part of our political discourse (Hermann, 2013).

2.9 Consequences of Inappropriate and Lacking Action

It is evident from the above that South Africa has some very serious social and economic issues. As mentioned earlier, these problems tend to cause and compound other social and economic problems. Not taking appropriate action will cause worsening poverty, crime, unrest, and political issues. The debate on how to solve unemployment in South Africa has seemingly reached an impasse, which is only perpetuating and exacerbating the problem (Solidarity, as cited by Adcorp, n.d.). All the above will further degrade our business environment and the economy as a whole,

causing South Africa to become even less competitive as a nation. This means that organisations will face increasing difficulty when it comes to generating value and prosperity. This will place additional burdens on employment and the national tax base, and further worsen income and wealth inequality. Businesses are likely to struggle with insufficiently skilled employees and will experience strain through ineffective and inefficient business operations in addition to having to cope with increasingly burdensome legislation.

The psychological affliction caused by the *status quo* is also worthy to note. Van der Westhuizen (2015, p.4) explains that disadvantaged South Africans have been denied basic necessities and the development or establishment of the “tools needed for self-efficiency,” these include “autonomy, incentive, responsibility, self-respect, community of support, health, education, information, employment, capital, and responsive support systems.” South Africans faced with poverty and financial strain as a result of this suffer highly depressing circumstances. This, in combination with fear of crime and violence, poor healthcare, and lacking social resources leads to a state of despair, helplessness, and meaninglessness. This psychology of defeatism further contributes to an ideology of victimology. It is this psychological state, combined with resentment and anger towards a perceived oppressive system, and/or race, and/or social class, combined further with an entitlement mentality that is caused by unrealistic redistribution expectations caused by promises of the transfer of prosperity based solely on past racial disadvantage – and not the generation of new value – that ignites the revolutionary hankerings of the general populace (Hermann, 2013).

Political issues, as described by Sparks (2014), will also continue to be fuelled by dissatisfaction caused by the *status quo*. It is thus necessary to mention the current government and political situation as something that is contributing greatly to the problems mentioned above. Sparks describes a dangerous convergence of a political and economic crisis in South Africa. According to the erstwhile finance minister Pravin Gordhan, state expenditure is overtaking revenue generation, and unless something is done to reduce expenditure and increase revenue, the point will be reached where the government will be unable to fund both its infrastructure programmes and its bloating welfare payments. Government is spending excessively on an expensive cabinet and civil service growth, as well as on the haemorrhaging state-run enterprises. Government instability, corruption, and abuse of office is also exacerbating the current problems – referring specifically to political instability within the ruling party and tri-partite alliance, frequent chaos in parliament, actions at the executive level that seriously harm the economy, credit ratings’ downgrading, and strong evidence of state capture (Ramphele, 2012). The unstable political environment is further prohibiting economic growth which will place continued downward pressure on employment, which in turn leads to more social frustration. This manifests in protests, crime, strikes, and general unrest, particularly amongst the disillusioned youth (Sparks, 2014). The

aforementioned, combined with the remnants of historical segregation, racial stereotypes, group identity politics, and highly prevalent general economic desperation, makes for a highly pressured social situation.

Ramphela (2012) shares her approach to the shortfalls of the ‘struggle government’ as modern day political party and delineates a value driven approach to improving the South African situation. Governance is understood as the exercise of authority with three basic dimensions: political, economic, and institutional. Good governance is always associated with a significant development dividend. South Africa has indeed shown a decline in performance, as a well-governed country. The National Planning Commission’s Diagnostic Report of 2011 lists issues that signal the trend towards the kind of decline that brought down the Hapsburg Empire in Europe and the post-colonial states in Latin America and Africa. Indicators to watch are: “rising corruption; weakening of state and civil society institutions; poor economic management; skills and capital flight; politics dominated by short-termism; ethnicity or factionalism; and lack of maintenance of infrastructure and standards of service” (Ramphela, 2012, p. 125). Ramphela also makes specific mention of the massive problem with governmental corruption and the culture of impunity that seems to be taking root at every level of government. Corruption is a tax on the poor and renders the citizen as irrelevant. She also makes mention of various blunders concerning the delivery of basic services. The RDP programme mentioned earlier was unsuccessful and not long enough sustained, and 87 percent of houses built were unsafe for inhabitants. Health, education, and social development sectors are undermined by inappropriate policies and ineffective leadership and management. Another serious issue is general mismanagement and appointing of managers without relevant qualifications and experience. All national departments have an average vacancy rate of 18 percent, with 46 percent being the highest. Approximately 19 percent of positions for senior managers and highly skilled staff were vacant. Officials are appointed to act temporarily in positions they are not qualified for – exceeding the 12-month maximum period. Government departments are also not following selection processes to check for criminal and financial background, or qualifications. Skills and competency deficiencies get larger as the positions get closer to the citizen (on the operational level). “The overall effect of the non-performance of the governing party is becoming obvious to all and is beginning to evoke desperation and rebellion among poor communities who have none the less undeniably been the pillars of the ANC’s electoral majorities” (Ramphela, 2012, p. 126). The ANC government however continually blames Apartheid and does not take responsibility for failures. Furthermore, voters who stand the most to gain from successful governance are the ones easily mobilised to continue providing support for the liberation movement-linked ANC, despite its failures (Ramphela).

There is no denying that the South African social and political discourse is currently highly tense, racialised, and adversarial. There are numerous serious protests and uprisings which are related to issues such as the delivering of free services (including tertiary education), racism, and lack of

economic transformation. Public debate has a revolutionary undertone and is highly focussed on matter of redistribution of resources, land reform, and even 'decolonisation'. The continuation of the current situation will mean the continued social and economic segregation of South Africans (Malala, 2014). In the political arena, the rapid rise of the Economic Freedom Fighters (EFF) to what can be described as the level of a third opposition party, can be seen as a symptom of a mounting sense of outrage across South Africa about serious corruption and abuse of our democratic institutions. The EFF often launches strong criticism towards the president and describes themselves in radical terms as a party focussed on the rights of Black Africans (EFF, 2016). They often make radical socialist statements based on appropriation of land without compensation and the criminalisation of Whites (Ramphele, 2012). Similar and increasingly radical groups have also started echoing these sentiments since the EFF has risen in stature. The EFF, that grew out of the dissatisfaction of their leader, Julius Malema (formerly the head of the ANC Youth League) with the current ANC government, has received much support from poor, unemployed, and younger Black voters which shows that this sentiment is shared by a large number of South African disadvantaged Blacks (Ramphele; Nolutshungu, 2011). It seems as if the youth have become more disenfranchised than ever and that the most violent unrest is coming from the younger generations. The youth are usually the most willing to take to the streets because they feel they have nothing to lose (WEF, 2015a). The World Economic Forum (2015a, p. 14) note that youth unemployment and poverty is a global issue and that "a generation that starts its career in complete hopelessness will be more prone to populist politics and will lack the fundamental skills that one develops early on in their career." African youth leave school too early and enter the labour market unprepared, limiting their economic contribution and increasing their vulnerability to poverty and economic hardship. A large portion of them never even go to school. The incidence of child labour in Sub Saharan Africa is the highest in the world. In 29 African countries for which data are available, 35 percent of children under fifteen work. This has a strong negative impact on future labour market experience and earning potential (Garcia & Fares, 2008). The youth are losing opportunities to develop and chances to gain experience and wealth by the day (Business Day Live, 2016). Later intervention allows further increases of the problems (WEF).

Angrier and surlier populations are more likely to turn on minorities within, and perceived enemies without (WEF, 2015a). Theron (2010a), warns of the growing frustration of those still left behind economically and socially. South Africa faces a real threat of serious social upheaval and even civil war. Former Minister of Labour Membathisi Madlalana is quoted as saying that the longer it took to implement employment equity in the workplace – the more negative the impact on growth and stability of democracy will be. He said that previously disadvantaged people would soon get frustrated with extending an olive branch, speaking of serious anger leading to a revolution of all Black people. Jimmy Manyi, former Director General of Labour is quoted in Business Day in August 2007 saying, "if whites thought Zimbabweans are militant, wait until they witness the

militancy of South African workers. If the workplace did not become more equitable and the Black majority continued to be marginalized, Zimbabwe could look like a Sunday picnic in comparison" (Hermann, 2013, p. 85). He has since been dismissed as government spokesman, but his espoused ideology remains alive and well. This dangerous mix between post-1994 expectations and government's failure to deliver is a serious social threat (Pike, et al., 2010). Despite the Truth and Reconciliation process, resentment and mistrust in our society remains substantial. Apartheid has left a "deep wound that is mined skilfully by political leaders especially during election campaign periods" (Rampele, 2012, p. 120). The psychological effect of Apartheid is that it is a high emotional trigger for those who experienced it, with an accompanying extreme fear for returning to it, and resentment stemming from it. Apartheid is a defining part of the identity of millions of South Africans—according to Sipho Nkosi (as cited in Hartley, 2012).

Hermann (2013) and Sowell (2004) warn against group preferences, politicising of disparities, and the promotion of group identity politics, which have often led to violence elsewhere in the world, particularly in Sri Lanka and India. Group identity politics is often used as a power tactic for leaders—and this also seems to be the case in South Africa. The continuation of this racial disharmony and class-based dissatisfaction is very likely to foster increasing social upheaval and violence. Van der Westhuizen (2015) refers to the social cohesion indicators in the South African Development Indicators report of 2010 that show a decline, despite many other indicators in the report of transformation and progress toward equality since 1994.

Mbeki (2011, p.1) predicts South Africa's "Tunisia Day", "when the masses rise against the powers that be", as happened in Tunisia. According to the article, which is written in rather extreme terms, this will happen around 2020, when the Chinese minerals-intensive industrialisation phase, which forces up the South African mineral prices, will be concluded. This means that the ANC government will have less to spend and will subsequently have to cut back on social grants. He compares South Africa to Algeria where government power politics led to civil war. Referring to issues such as lowered life expectancy, food imports, elimination of agricultural subsidies, and border control, Mbeki (2011, p.1) notes "the symptoms of a government out of its depth".

Stones (2015), quoting Sipho Zikode, former acting head of the Small Enterprise Development Agency, mentioned earlier in this thesis, highlights the issues surrounding the culture of entitlement mentioned above. He mentions that the youth have a survivalist attitude and a resulting lack of self-starting individuals with viable entrepreneurial ideas that are able to generate jobs and exports. The youth are also apparently "choosy" when it comes to jobs (Stones, 2015, p.4). They are not willing to accept low paying work and furthermore insist on being shown where opportunities for easy money are. He further makes mention of the "lack of ambition in the current generation." Saying that after the Apartheid barriers were removed, the view developed that "if nobody has to struggle any more, then nobody is willing to." "The ambitions of being a chemical

engineer or an architect aren't there anymore because now life must be easy." (Stones, 2015, p 4.). The system is thus seen as responsible for individual success and blamed for individual failure, with a loss of work ethic and a sense responsibility for one's own success (Hermann, 2013).

Affirmative action approaches also have a particularly negative effect on individuals in the formal sector. Those who benefit from the system, despite not being adequately qualified, may not (or have a decreased chance of) truly experience fulfilment, and those who are appointed on the basis of merit are often seen as being there due to their race (Barron, 2012; Hermann, 2013). As far as the previously advantaged group goes, according to Du Toit (as cited by Hermann) a Stellenbosch political science study found that 71.4 percent of the non-designated group in South Africa felt that Affirmative Action in South Africa turned them into second class citizens. Hermann (2007) found abnormally high levels of self-alienation among White Eskom employees describing their depths of helplessness, meaninglessness, normlessness, and isolation. This has an extremely negative effect on productivity and transfer of knowledge. Work contributes in determining a person's sense of fulfilling, self-esteem, identity, perceived 'place in society', and financial welfare. The psychological effects of affirmative action are thus, in this regard, similar to that of Apartheid, where the individual no longer feels that his/her behaviour determines the desired outcome, or that the values of equality, human dignity, fairness, respect, and non-discrimination apply to him/her. This may lead to the employee committing mild forms of sabotage towards the company, for example by withholding knowledge and thus negatively affecting succession.

Neil Bryan Bierbaum (as cited in Hartley, 2012) comments that self-sabotage and blaming the past is an unfortunate part of the national psyche in South Africa, where a sense of personal responsibility for one's own and the future of the country is needed at every level.

The summary of the situation in South Africa is thus a racially segregated past, that has left a deep effect on society in terms of social, demographic, economic, and psychological segregation that remains more than two decades after the fact. Outright failure by the new government to rectify the problems of the past together with a well-documented degradation into ineffectiveness, poor leadership, and blatant corruption has left the situation unchanged for the large part. Unmet expectations, group identity politics, together with deeply held but uninformed and flawed perspectives and values that spilled over from the past, creates a volatile political situation. A sense of entitlement, that is held across races and class groups further contributes to adversarial relations and slow social change. This clashes with an unrealistic desire for fast paced economic and social change, seen on the surface. There is a need for pervasive and comprehensive remedies, and no intellectual argument can make this issue disappear or seem irrelevant (Jefferey, cited by Hermann, 2013).

This situation is bound to lead to increased social issues and violent uprising. This, all amid an already constrained economic environment, where business is already burdened with increasing legislation, makes for an even less competitive national economy. Every South African, and especially the HR fraternity, is faced with a situation that demands understanding, and emphatic and coherent change. This is the only way to combat a situation that is decades, even centuries, in the making.

The HR professional faces certain strategic business concerns, in particular. The South African work environment is characterised by adversarial relations, lack of trust and communication, poor teamwork, the apparent absence of employee commitment and motivation to achieve organisational goals, and high staff turnover – especially among the designated groups (Thomas, as cited by Coetzee 2005, p. 12). This results in high recruitment costs, high vacancy rates, high salaries to prevent head-hunting, dissatisfaction, reduced engagement amongst all employees, and additional compensation and overtime due to affirmative candidates not being developed or optimally utilised (Cox & Morrison, as cited by Coetzee 2005, p.12).

2.10 Incentives to Act toward Holistic Positive Social Change

The situation described above is in its very nature threatening to the stability, sustainability, and prosperity of all South Africans. Despite the obvious need for change, it is still however salient to discuss why an individual should internalise the battle against unemployment, income inequality, the factors that cause it, and these issues that derive from it. It is of value to note why these issues should be of importance to the HR professional.

The first imperative for widespread social change is based on survival. There is arguably an interdependency of races in South Africa when it comes to creating a sustainable future in the country (Hermann, 2013). Professor Theron, from the Stellenbosch University Industrial Psychology department, emphasised the urgent need for change in South Africa at the Empowerment for Development conference held at Stellenbosch University in July of 2015. He emphasised the urgency of change for the sake of social security and growth. He also spoke at length on the moral imperative for social change and urged the audience to take the view of poverty and unemployment as experienced by those suffering from it every single day.

The second imperative to change is thus a moral one. There is a moral debt owed to those who have been excluded in the past and those who are currently suffering poverty and exploitation (Woolley, 2005).

As a third imperative, there are economic benefits, exceeding the costs, of investing in inclusive growth and employment generation, in the long term. When it comes to the business case for change, it can be said that investing in transformation of our society and in the emerging youth means investing in the workforce and consumers of the future, and ultimately in divergent markets

and the insights of a diverse workforce (Woolley, 2005). Apart from the all-round benefits available from a stable society and growing economy, there is certainly value in a vibrant and diverse workforce that will be more innovative and harmonious.

The mindful efforts required to ensure meaningful societal change will cost time and resources of government, business, and also individual citizens. Oxfam (2016, p.1) describes the imperative to seize the opportunity South Africa is presented with, namely, to become "a strong regional and global player", with "one of the largest economies in Africa with high levels of infrastructure, a strong financial sector" and "one of the most progressive and inclusive constitutions in the world". South Africa has the opportunity to harness the available, but currently wasted human potential available to build a prosperous future. The World Bank, as cited in a recent Business Day editorial, notes that South Africa needs to seize the "demographic window of opportunity," in which the working-age population peaks, with reference to the youth of the nation (Business Day Live, 2016, p.1). This window translates into a boom of economically active citizens. Ideally, countries whose working-age youth are becoming a larger proportion of the working adult population should be in a position to earn the benefits as more youngsters enter the workforce and start earning, saving, contributing to GDP, and paying taxes. Sub-Saharan Africa is one of the youngest regions in the world, as far as population demographics go. By 2050 the region could exceed the youth population of South Asia. East Asia has, through the right policies and institutions, been able to reap the rewards of the large cohort of young workers. Some suggest that up to a third of the Asian miracle growth is attributable to this demographic dividend yield (Garcia & Fares, 2008).

There is also a solid international movement towards a sustainable future for humanity. The 2015 Millennium Development Goals, developed by the United Nations, are to "eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/Aids, Malaria, and other diseases; ensure environmental sustainability; and promoting global partnership for development" (United Nations, 2016, p. 1). These goals were to be achieved by the target date of 2015 and were developed to form a blueprint for development, agreed to by virtually all the world's countries and all the world's leading development institutions. They have roused unprecedented efforts to meet the needs of the world's poorest. The UN is also working with governments, civil society, and other partners to build on the momentum generated by the MDGs and carry on with an ambitious post-2015 development agenda. The Sustainable Development Goals 2030 – adopted unanimously by 193 heads of state and other top leaders at a summit at the UN headquarters in New York, September 2015, have set 169 targets that build on the previous eight goals. These can be summarised into the following seventeen global goals: "No poverty; Zero hunger; Good health and well-being; Quality education; Gender equality; Clean water and sanitation; Affordable and clean energy; Decent work and economic growth; Industry, innovation and infrastructure; Reduced inequalities; Sustainable cities and communities; Responsible consumption and

production; Climate action; Life below water; Life on land; Peace, justice and strong institutions; and Partnership for the goals" (United Nations, 2016, p.1).

South Africa, as a UN member country should also spare no effort to join the international movement for development that will ensure a sustainable and dignified future for all humanity. Currently, the emphasis seems to be on short-term benefits. Government, companies, and individuals want to see large short-term gains and force compliance to short term targets. It is the argument developed in this thesis that it is in the national interest, and thus within the duty of individual organisations (and as such the HR professional), to seek opportunities to remedy the situation in South Africa, taking a long-term view in order to affect legitimate change.

2.11 Remedies and Opportunities to Consider in the National Interest

Although curing all the ills of the broader South African society is far beyond the scope of this thesis, there is a duty to explore possibilities for the sake of informing research in the social and business sciences as well as for the purpose of identifying opportunities in the scope of practice of the HR professional, and general business environment.

Due to the scope and nature of the issues facing South Africa, the implementation of any viable solution is hampered by the scale and level of integration and collaboration required for the needed levels of change to occur. The areas requiring change, are however, despite the seemingly impossible scale of change needed, surprisingly clear, and smaller efforts are certainly guaranteed to have a larger combined effect. South Africa needs to address the plight of the roughly 20 million unemployed and/or economically inactive citizens (adding all races together from the 2016 labour force survey). Black Africans make up approximately 17 million of this group, and the youth almost 9 million. Until these people are lifted out of poverty and have access to meaningful and gainful employment, the full reconciliation of South Africa remains a seemingly impossible task. Solid economic growth is required together with a flexible and efficient labour market in order to take advantage of growth. The benefits of economic growth need to be distributed with the goal of greater equality in mind. Large scale attitudinal change is required across racial boundaries. Education and training will play a crucial role in this change. The most important aspect of the required change will be that it will have to be highly innovative and will require a long-term investment mind-set.

The first step toward improving the South African social and economic landscape will have to involve large scale government reforms and a drive towards efficiency and effectiveness in service delivery. Government needs to eliminate corruption and ensure that there is a return generated on every tax Rand spent. In the WEF Outlook on the Global Agenda 2015, 86 percent of respondents to the survey on the Global Agenda agreed that there is a leadership problem in the world today. In Sub-Saharan Africa, 65 percent of respondents noted that they agreed, and

27 percent strongly agreed with this view. Reasons for this include that governments' mechanisms have been plagued for years by factual alignment, dynasty, and deep corruption. Leaders are usually forced to work according to the rules of the system and in South Africa this is arguably the case. Virtues of good governmental leadership include "a global interdisciplinary perspective; long-term, empirical planning; strong communication skills; a prioritisation of social justice and well-being over financial growth; empathy; courage; morality; and a collaborative nature" (WEF, 2015a, p. 15). South Africa desperately needs this kind of transformative leadership (Hermann, 2013). Business executive, Sipho Nkosi (in Hartley, 2012) speaks of the uniting vision that needs to be created in this regard, with our leaders fostering an emotional connection to inclusive progress for all South Africans.

Serious economic growth and large-scale job creation, paired with quality basic education and training, is also necessary. Government should create conditions necessary for the economy to grow (Garcia & Fares, 2008). An international growth panel chaired by Michael Spence, on which former Minister of Finance Trevor Manuel served, studied 13 countries with a 7 percent or more growth for 25 years in the post-World War Two period, and found that economic growth is an absolutely necessary, but not sufficient, condition for greater employment and broader development. Sustained growth is largely driven by rising productivity, according to Michael Spicer (in Hartley, 2012). Mauritius serves as a strong continental example in this regard. With no minerals and few resources apart from agricultural land and natural beauty, their economy is growing at 4 percent, despite challenges. This may be attributed to an ease of doing business, low taxes, and the importance given to private sector views when government shapes economic policy. This is created by a joint public-private steering committee that meets regularly to discuss national interests (Du Preez, 2015).

Business is certainly not without responsibility in this regard. Du Preez (2015) accuses the South African private sector of merely doing business as normal after 1994 and not sufficiently becoming involved in education and training. A multi-pronged strategy is required to soften ANC hostility toward the private sector and promote the value of a new dispensation where doing business is easier and where industry and government act as genuine partners in growth and transformation. Legitimate incentives (positive reinforcement) need to be provided for business to promote the right skills and commit to serious empowerment in different sectors. Government must create regulatory structures that encourage employment and economic stability, firstly by incentivising companies to create employment and then to invest in their workers (WEF, 2015a).

Adrian Gore, founder of Discovery Ltd delineates two approaches in Hartley (2012). The first is populist, immediate, and interventionist in nature, and would include employing people at any cost. This would be financially unsustainable, for example, if the public sector were to suddenly employ 5 million more people at the average minimum wage it would require an extra R250 billion

per year – 30 percent of tax revenues or in the case of the private sector a large portion of the JSE's top 100's R450 billion earnings. The second approach is classical economist – long-term and structural – where government is required to create the conditions for employment and remove barriers to hiring. Fundamentals such as education, healthcare, labour flexibility, and barriers to labour-entry must be addressed. This approach is bottom-up and logical, leading to real improvements that emerge across generations. His suggestions in this regard include following the Singapore example in creating a vision and hope; addressing the basics by linking ministers' salaries to economic growth; creating a stellar public service; partnering with the top educational institutions in the world; creating policies that foster entrepreneurship to create future institutions; and providing BBBEE incentivises that ensure the best Black talent joins large business.

Taxation is usually the first remedy considered as far as the generation of funds for growth go. The erstwhile finance minister, Pravin Gordhan, proposes increased tax on wealth while reducing tax on income thus creating a productivity incentive. This will also penalise the ultra-wealthy, which may lead to decreased investment. South Africa should however not lose focus on how it spends its tax (Kahn, 2013). Zwelinzima Vavi, mentioned earlier, recommends taxing financial transactions to re-orient investment towards productive sectors. He also proposes a new policy on interest rates to replace inflation targeting with employment targeting. These are however large scale structural and fiscal changes. A prudent high-level financial strategy is certainly necessary for South Africa to exploit development opportunities.

Rebuilding infrastructure is often considered to be an important opportunity for development (Du Preez, 2015). The NDP states that increasing infrastructure development from 17 percent to 30 percent of GDP is critical for the reduction of poverty and inequality over the next two decades. It stimulates demand, creates jobs, boosts spending, and drives growth through the multiplier effect. Every Rand spent on infrastructure creates between R2 and R3 of value in the economy. Australia and USA are examples of the job creation available through this kind of investment. Rwanda, for example is also prioritising key infrastructure projects (Jardine, in Hartley, 2012).

There has been a move from primary dependence on policies that emphasised capital investment in plant, machinery, and infrastructure, or export-led growth strategies, to a wider approach that assigns a central role to investments in human capital. Expenditures on enhanced education, training, and health are now no longer regarded primarily as benefits stemming from economic growth and growing incomes; increasingly, they are regarded as investments in human capital that enable sustained economic growth. National governments do not only share this approach, it is also endorsed in the investment policies of international aid agencies (Ziderman, as cited in HRDSA, 2010). This investment is also essential because lifetime employment is no longer a reality and skills required change in relatively short timeframes, often due to changes in

technology and the accompanying nature of jobs. Workers need quality education, training in soft skills, and opportunities for retraining. It is important to create jobs in areas and industries where there are shortages and opportunities. Companies should partake in the battle against youth unemployment by training and mentoring young people in roles that offer career opportunities and eventually hire some of them full-time, or at least assist them in finding employment elsewhere (Garcia & Fares, 2008).

A massive reform of the educational system is required. Strong leadership in the educational sector is necessary, especially at school level. School facilities must meet standards and class sizes should be optimal. Access to social work and similar services, such as learning support, should be improved at all schools. Artisan and similar practical training should also be included as curriculum options (Hermann, 2013). Jacobs (2016) quotes comments and suggestions in this regard, made by the former vice-chancellor and rector for the University of the Free State, Jonathan Jansen, who is very critical of the education system. He suggests pre-school education programmes to prepare children for formal education; a massive restructuring of the education department in terms of deployed officials in provinces and districts; providing teachers and principals with coaches, rather than inspectors; appointing an ombudsman for every school governing body to root out corruption in teacher and principal appointment; accountability in textbook delivery; abolishing the Annual National Assessment (ANAs), and assessing every three years in the most vulnerable schools only; increasing the qualification requirement for teachers to a Master's degree in the short term, with competitive salaries; serious consequences for absenteeism; and the creation of a system where teachers are given three months off every three years to improve their professional qualifications.

Innovative teaching models, such as Ghana's Open Learning Exchange, looks at innovative teaching and learning models, much like the South African experiments with digitizing curricula and making it available on tablet computers. Mobile technology makes education accessible to young learners in more remote parts of the country. Teachers can be upskilled quickly and supported through online platforms (WEF, 2015a). These kinds of approaches also require research in terms of feasibility and implementation.

Professor Labby Ramrathan, educational expert at the UKZN School of Education, advises to consider the impact of teaching in Afrikaans and English. Mother tongue education is crucial for the success of the education system (Muji Kuzwayo, as cited in Hartley, 2015). Learners and parents need to work hard and persevere and push for independent learning (Mlambo & Mngoma, 2015).

Former Chief Executive of Barclays Africa, Maria Ramos, points to the required focus of governments and businesses on creating legitimate improvements through training and scholarships. Governments should remain focussed on funding and investing in education and

skills development, and that they encourage partnerships with donors, business, and local communities (WEF, 2015a). Large scale skills development is needed. The SETA's need to spend the large amounts of funds that have been accumulated, according to Richard Maponya (Barron, 2013). Maponya lauds the Brazilian model as an example in this regard. "Fifteen years ago, they were in a similar situation" (to South Africa), however under strong and inclusive leadership they established training institutions right throughout the country. According to Maponya "it worked so well that in 10 years they empowered more than 24 million people whom they uplifted to a middle-class status" (Barron, 2013, p. 3).

Wage levels and labour laws are often a source of contention when discussing unemployment and inequality. Herman Mashaba (Hartley, 2012) believes that minimum wages, hiring and firing laws, centralised collective bargaining, and bureaucracy costs are obstacles to employment. Many believe that the unemployed must be able to make own decisions and that the high supply of low skilled labour should result in low prices for low skilled labour. Unions typically raise members' wages by up to 20 percent and drives up market wages, in effect creating barriers for the unemployed (Pike et al., 2010). South African trade unionists are accused of not concerning themselves about the unemployed. They make demands that industry cannot meet so only a few will be empowered while the rest are left unemployed (Hermann, 2013). South African unions are highly militant. Wages are seen to have no relation to productivity, which makes business lose productivity and competitiveness and subsequently employment capability. A form of productivity bargaining may be required, such as in the German supervisory boards with workers and unions represented. A closer identification of workers with the company's performance.

Although minimum wages were used during Apartheid to exclude Black workers (Davie, 2016) and there are demonstrable occurrences where minimum wages caused decreased employment (Hartley, 2012), there are examples such as Brazil where minimum wages were raised 50 percent between 1995 and 2011, contributing to a parallel decrease in poverty and inequality. In Brazil, some companies have started to adhere to a ten to one ratio of executive to low level worker remuneration (Oxfam, 2014a). Although the minimum wage debate will always remain contentious, the challenge is to find ways to ensure workers receive adequate wages and that the unemployed are moved into employment. The large contingent of South African workers employed through labour brokers, is also relevant in this discussion.

Labour laws have faced similar criticism in South Africa, and as mentioned earlier, are seen as one of the most stifling factors in our economy (according to the WEF competitiveness reports). Most of the cases coming before the Commission for Conciliation, Mediation, and Arbitration (CCMA) are for alleged wrongful dismissal and of these, the great majority involve small businesses. This is not surprising as the procedural requirements demand careful study of the legislation and best practice guidelines, and meticulous attention to detail – skills that are not

readily available within small firms. Being kept unemployed by laws that would protect them from dismissal if they were ever employed is what some economists regard as a ‘negative benefit’ for the jobless (Davie, 2016, p. 2). Davie, of the Free Market Foundation, insists that all that is necessary is to exempt the unemployed from all, or the most onerous, sections of the Labour Relations Act, and give them exemption certificates that allow them to enter into employment contracts with employers on any conditions they choose. Potential employers should be able to explore ways to co-operate with job seekers in mutually beneficial activities. Excessively onerous regulations and requirements currently prevent the formation of innovative and creative enterprises that would absorb available labour. Job Seeker Exemption Certificates should be given on application to unemployed people who have been jobless for six months or more. They should be available at municipal offices and be valid for at least two years to increase job mobility. Written contracts containing basic conditions agreed to by the parties should be entered and the employees would have all the protections provided by the common law available to them (Davie).

The question with the above is, however, how will business respond to relaxed labour laws and lower wages? It is arguable that this is not a path to lowered unemployment and inequality, but possibly the creation of an abusive secondary labour economy, as this would possibly serve to legalise and legitimise the negative behaviours already widely prevalent in the South African labour market. The search continues for a holistic way of creating positive change, although these aspects do certainly invite thorough research.

The youth require attention with regard to training, and the creation of employment and wealth. One of the main problems is the difficult and often long transition for youth into employment, which seems to depend largely on difficulties finding a job. No employee is ready on day one. The young labour market entrants need to understand the critical capacities required by employers. Generic competencies include critical thinking, communication skills, and other productive attitudes and behaviours. The youth need to discover their unique personal value offering to an employer (Garcia & Fares, 2008). Bobby Godsell, the former CEO of South African gold mining company AngloGold Ashanti (in Hartley, 2012), suggests implementing a national public service examination that tests core skills such as the above.

Pike et al. (2010) suggest implementing a two-year voluntary national service to create some form of employment and income for youth – as may already be planned by government to some extent. The wages will be low; however, it will help participants learn skills, gain experience, and learn discipline and work ethic. There should be a monetary differentiation between those with and without matric to create an incentive to attain an education. For R12 billion per year, 234 000 with (R2 500 per month) and 240 000 (R1 800 per month) without matric could enter the programme. Adding 33 percent for administration and training puts the final cost at R16 billion. Even an understatement of 50 percent still makes this a viable and affordable option. The employed youth

can deliver value in healthcare, policing, security, construction, administration, and various other fields.

In Hartley (2012), every major business and political figure, when posed with the question "How to fix South Africa?" lauded entrepreneurship as a key part in moving South Africa forward.

Europe, as an example of a more developed economy, has seen the strong role small and medium businesses can play in creating employment and wealth. According to the European Commission's 2014/15 Annual Report, European Union Small to Medium Enterprises (SME's) were responsible for 71.4 percent of the increase in employment in the non-financial business sector. The sector employed almost 90 million people, thus creating 67 percent of total employment. Significantly, 93 percent of SME's are Micro businesses employing fewer than 10 people (Davie, 2016). Entrepreneurship indicators for South Africa are low compared to countries at similar levels of development. The 2010 Finscope Small Business Survey Report projected that the SME sector could create 2.5 million new jobs by 2020 (Hartley, 2012). Adrian Gore mentions in Hartley (2012) that 50 businesses that scale to the size of Discovery Ltd can achieve this. This means South Africa needs only 50 highly successful entrepreneurs – that is one for every million people. At an 80 percent expected failure rate, that means there is a need for only 250 highly competent entrepreneurs. The Global Entrepreneurship Monitor report (2012) shows the percentage of people in SA involved in entrepreneurial activities is 8.9 percent, compared to an average of 15.6 percent for comparable economies, for example China at 14.4 percent and Brazil at 17.5 percent. In terms of perceived capabilities and entrepreneurial intentions, South Africa ranks in the bottom third of comparable economies. Globally, most businesses have been started by people with tertiary education and some work experience. In South Africa, a survey of 500 SME businesses showed that 75 percent of business owners had a tertiary education and over 90 percent had previous work or business experience. The South African situation means that people who are inappropriately qualified must try to start businesses through necessity rather than opportunity – that generally do not meet the standard required to ensure sustainability. Collaboration between government, the private sector, and financial institutions is needed to stimulate entrepreneurship. Other countries have demonstrated that it is possible to make compliance less onerous without completely exempting small business from regulations.

According to Sipho Nkosi (in Hartley, 2012), the promotion and support of entrepreneurs is very important for the generation of wealth and job opportunities. This requires improving access to information and credit (Garcia & Fares, 2008) and supporting existing entrepreneurs to diversify into new economic sectors (Mbeki, 2011). Muzi Kuzwayo emphasises self-economic empowerment in terms of inspiring the youth to find jobs and opportunities by educating self-confidence to help them start something on their own. Another serious obstacle is the lack of collateral, where government funding mechanisms have largely failed. South Africa does not have

a viable venture capital market according to Adrian Gore (Hartley). Tito Mboweni advocates for government to play a bigger role in providing financial aid for the establishment of Black entrepreneurs, in order to increase their participation in the economy. Commercial banks will not drive transformation and a state development bank, arising out of the amalgamation of state-owned lending institutions such as the Development Bank of South Africa, or the state purchasing one of the commercial banks, may be a solution in this regard (Barron, 2013).

Pike et al. (2010) have some further suggestions for national consideration. Although these all may have various advantages and disadvantages, research and consideration of these options may be advisable:

- Creating a youth voucher that people under the age of 24 who have completed specified years of schooling can use to spend a certain amount on a service they choose, such as further education.
- Scrapping ineffective employment centres and replacing them with a private sector search subsidy. This will allow job seekers to search through formal sector systems like recruitment agencies.
- Deregulation of professions: elimination of artificially inflated entry criteria applied by professional bodies. Quotas or public funding for universities should be reserved for scarce skill graduates.
- Scrapping of immigration restrictions on skilled foreign nationals seeking work in South Africa.
- Ratification of the ILO conventions to align local labour laws with international best practice.
- Overhauling performance-related dismissals in the Labour Relations Act.
- Scrapping the EE Act's EE plan system and replacing it with a BBBEE type scorecard system.
- Banning closed and agency shop agreements.
- Introducing 'right to work legislation'.
- Developing a fund to support a civil society initiative which gives voice to the poor and champions their interests in all policy discussions that affect them.
- Creating a ministerial portfolio that concerns itself with job creation and employment.
- Allowing freehold property rights to people in townships.

Social upliftment programmes, which are usually within the realm of NGO's, are usually isolated and smaller scale initiatives, however, do serve a purpose toward supporting communities. Although these have limited impact, they remain of value and seeking low investment opportunities with a high return is key in this regard. The problem is that almost all the broad

remedies discussed above require some resolution from the government, and as such, one should not preclude smaller social investments from consideration.

Although there is certainly the question of what private business can do right now; Michael Spicer, former Chair of Anglo-American South Africa, encourages a business strategy that breaks with short-term, profit maximisation model of capitalism, rather returning to the puritan values of earlier capitalism – which resemble much of contemporary Asian capitalism. This involves a future orientation, and an emphasis on savings, investment, long-term horizons, and the benefits of economic activity not just accruing to the individual but to the community as a whole. This may translate into moderate lifestyles and executive remuneration that is truly performance-based, with longer-term horizons and sensitivity to the ratio of highest to lowest earners which currently cannot merely be explained in terms of supply and demand of scarce skills. Although much can be said for the need for government to change the incentives in the labour market that constrain the expansion of employment, business also has to examine their own attitude to employment and employees. The words and actions of too many businesses are at odds, with the sentiments in their vision and mission statements considering people to be the greatest asset to a company belied by behaviour that treats individuals as units of cost, to be excised for often very short-term considerations. Many companies are doing sterling work in the areas of education, training, enterprise development, and community investment, but many others often have a compliance and box-ticking approach to contributing to development and growth in these areas – although BBBEE codes and labour reporting requirements are written in a way that certainly encourages this approach (Hartley, 2012; Woolley, 2005).

There is certainly merit in investigating viable methods of ensuring the empowerment of the jobless and that those in employment receive meaningful gains. Woolley (2005), for example, explores various methods of allowing employees to own shares in a company. There are options such as employee share options, an employee trust, direct shareholding, and social empowerment partners. An example of this is the Umsinsi Health Care–John Lewis partnership model. All staff are partners/co-owners in the business. All profits are split after all relevant deductions (Maidza, 2012). Approaches such as these certainly warrant greater exposure, or at the very least, further research.

2.12 The Related Challenges and Reaction of the HR Professional within the Human Resource Management Paradigm

The HR professional should take cognisance of the above explained social, political, economic, and historical realities that characterise the broader and immediate context in which he/she operates and understand that these issues require remedying action at various levels and on various platforms of the economy and society. The HR professional should be critical, innovative, and pro-active in nature and should aim for constant improvement in order to insure his/her

approach to organisational-level and broader variables is relevant, effective, and meaningful (Van der Westhuizen, 2015).

Although there is merit in somehow becoming involved in remedying these issues within the broader context, the HR professional should attempt to improve this situation through the paradigm of industrial psychology and human resource management discussed earlier. The HR professional will contribute to social and economic change and improvement through taking a responsible overarching strategic position in the human resource function and displaying a mindful engagement in his/her day-to-day operations in an organisation. This strategic engagement should arguably be within the framework of the triple-bottom-line approach discussed earlier and the value-based and long-term perspective described above. Human resource practitioners understand the social issues that are prevalent in their society and how it affects the workforce and should endeavour to use the platform of people-management to expose and rectify issues within their scope of practice in their respective organisations.

The human resource practitioner will experience manifestations of the problems (and their symptoms) mentioned above, in various forms in practice. The challenges faced include pressure for transformation, lack of skills in the workforce, negative attitudes, conflict, and poor motivation. Other manifestations come in the form of personal issues and negative circumstances faced by employees as a result of poverty, including that of ill health, crime, the decreased ability to cope with everyday life problems, and a lacking capacity to self-improve in terms of skills and work-readiness. This impacts directly on the work of the employee and subsequently on the goals of the organisation. Furthermore, these challenges present themselves to the HR practitioner over and above the regular pressure to manage the workforce at the level of efficiency expected to compete in a first-world economy.

There are various motivations for a considered response to these issues by the HR practitioner. There are the obvious moral, ethical, and legal compliance reasons for attempting to institute change, mentioned earlier, however, the promise of a more inclusive, stable, effective, and innovative workforce is particularly inviting for the HR professional in that it is directly in line with his/her purpose in the organisation.

The HR practitioner has various organisational platforms of engagement through which he/she will experience the problems mentioned above. These platforms also serve as an opportunity to remedy the issues on an organisational level, with a considerable impact on different social and economic levels. These platforms include human resource policy and procedure, recruitment and selection, labour relations, organisational development, career guidance and planning, and certainly training and development. Research in the HR field should inform the practitioner of where and how the most effective methods of engagement with these issues are.

A logical start seems to be to attempt to develop human resources in the company. The State of Skills Report 2007/2008 published by the Human Sciences Research Council (as cited by Van der Westhuizen, 2015), does show that this has indeed been a chosen response by the formal sector, as average training rates (expressed as the number of workers being trained divided by the total number of workers employed) have increased dramatically in a short timeframe. The next logical point of departure is to attempt to ensure that the people from the designated groups have a fair selection chance with no undue barriers to employment in the organisation.

Although all the facets of human resource management are interlinked and complementary, some are however more salient in the discussion of this particular set of issues. The starting point of this discussion should thus be the function of recruitment and selection.

2.12.1 Selection, prediction, and adverse impact

Selection is a relatively visible mechanism through which access to employment opportunities is regulated and as such has been singled out as the human resource intervention most scrutinised from the perspective of fairness and affirmative action (Arvey & Faley; Milkovich & Boudreau; as cited in Theron, 2007). More specifically, the use of psychometric tests in personnel selection has been regarded with a large degree of suspicion and scepticism, especially in the context of a diverse applicant group. This is not only among the labour force, general public, or labour representatives and/or government officials, but also among a large number of human resource practitioners (Theron 2007; 2010a).

Theron (2007) and De Goede (2007) explain the objectives, requirements, and underlying fundamental logic of an organisation's selection process. The principal objective of personnel selection is to fill the vacancies in the organisation with applicants who will be most successful in a job (or training intervention), and thus this subgroup of applicants must be chosen in such a manner that maximises the average performance in the job (the ultimate criterion). In selection, future job performance (or training performance) forms the basis, or criterion, on which applicants should be judged to determine their assignment to an appropriate treatment (select or reject) (Cronbach & Gleser, as cited in Theron, 2007). Evidence of actual future job performance is obviously not available at the time of the initial selection decision. In the absence of this required information on the applicant, it is impossible to improve the quality of the selection decision beyond what would have been obtained by chance. Thus, an attempt is made to predict anticipated criterion performance from pertinent, though limited, evidence available at the time of the selection decision, and to base selection decisions on these criterion-referenced interpretations (De Goede, 2007; Theron, 2007). Even though it is logically impossible to measure the performance construct at the time of selection, it is nonetheless possible to predict at that time, if:

- "(a) Variance in the performance construct can be explained in terms of one or more predictors.
- (b) The nature of the relationship between the predictors and the performance construct has been made explicit.
- (c) Predictor information can be obtained prior to the selection decision in a psychometrically acceptable format." (Theron, 2007, p. 104).

The only data available at the time of the selection decision that could serve as the required substitute for criterion information would be physical, psychological, demographic, and/or behavioural information on the aspirants, as applicable. This substitute information would be considered usable to the extent that the regression of the criterion on a weighted combination of this substitute information explains variance in the criterion. This implies that the regression of the criterion on the predictor is accurately understood (Theron, 2007, p. 104). In other words, the selection method is psychometrically sound, when the selection tools or instruments can be used in an understood and decided format to make plausible predictions on the expected future job performance of the applicants. The criterion-referenced nature of selection implies that the focus is on the criterion rather than on the predictor (Schmitt, as cited in Theron, 2007). This view underlies the generally accepted regression-based interpretation of selection fairness (Cleary, as cited in Theron, 2007). Measurement data should be translated into decisions in accordance with some appropriate strategy or rule. This strategy or rule should be evaluated in terms of its predictive validity. The decision to accept or reject an applicant is thus derived from the mechanically or judgementally derived outcome conditional on the (substitute) information on the applicant. A strict top-down approach, where candidates with the highest predicted future job performance are selected first, is further assumed to maximise utility of the decision (Theron).

These selection inferences made on the estimate of the final criterion measure have the four requirements, in that they must be valid; and as such be lawfully permissible; be fair and unbiased towards all of those who partake in the selection process; and that they should add maximum value to the company. Importantly, the measure should minimise adverse impact (De Goede, 2007).

Adverse impact occurs when members of a certain group have a lower likelihood of being selected for an opportunity. A selection ratio for a group which is less than four-fifths, or 80 percent of the selection rate of the group with the highest selection rate, is viewed as evidence of adverse impact. The cause for adverse impact in a selection procedure with valid predictive measures, would be due to systematic differences in criterion distributions between groups. In South Africa, we do see that adverse impact does occur when strict top-down selection is used based on valid predictor information. In the South African case, on aggregate, members of the previously

disadvantaged group consistently score lower on assessment measures, training programmes, and in the workplace in general (De Goede, 2007).

Selection as a process is designed to discriminate; the question thus readily arises however, as to whether it discriminates fairly or not – particularly when any form of psychometric assessment is involved. There are many prominent problematic beliefs in existence in this regard, that result from a non-analytical and uninformed approach to human resource management. There even seemingly exists, among some managers, usually not within the human resource field, to some extent, the notion that psychometric tests ‘do not work on’ members of the designated groups. Conventional tests are suspected of being biased and underrepresenting the cognitive (or other) capacity of individuals from disadvantaged backgrounds (Theron, 2010a). Other problematic views that stem from this uninformed approach include:

- “It is possible to avoid unfair discrimination in personnel selection solely the use reliable, valid, and unbiased selection instruments (i.e. instruments that are free from measurement bias);
- It is possible to avoid biased assessments/measures through the judicious choice of properly developed selection instruments;
- It is possible to avoid adverse impact through the judicious choice of assessment/selection instruments. Or, in its alternative formulation, it is possible to grade selection instruments in terms of the adverse impact they create;
- Adverse impact should be equated with unfair discrimination; and
- It is possible to certify assessment techniques as Employment Equity Act (Republic of South Africa, 1998) compliant” (Theron, 2007, p. 102).

The EEA seems to echo this narrative by barring the use of psychological tests unless it can be demonstrated that the tests are valid and not biased against any person or group (which refers to measurement bias). With the Act explicitly stating that it is not unfair discrimination to exclude or favour any person on the basis of an intrinsic requirement of a position, it could be understood to mean that it does not constitute unfair discrimination to utilise selection instruments that show predictive validity to this effect (Theron, 2007, p. 102).

There is also, to a large extent, perceptual baggage remaining from the Apartheid era, that psychometric tests are tools deliberately used to discriminate unfairly against members of the designated groups. In the early conceptualisation of the Employment Equity Act, there was even consideration of banning the use of psychometric testing related to employment completely and a stipulation has since been added that all tests used should be approved by the Health

Professions Council of South Africa (HPCSA) (Theron, 2010a) - this provision has since, however, been set aside by a High Court ruling.

The belief that the source of adverse impact resides in the selection instruments or in the differences in the latent trait assessed, and the concern for valid predictors of performance also displaying substantial group differences (Sackett & Ellingson, as cited in Theron, 2007), for example general cognitive performance, resulted in the investigation of various approaches to reduce these subgroup differences in mean predictor scores in an effort to increase the representation of protected groups, without forfeiting predictive accuracy. This included the use of valid non-cognitive predictors, identification and elimination of perceived culturally biased items from the predictors, the use of alternative methods of presenting predictor stimuli, and the usage of coaching or orientation programmes (Theron, 2007).

There is contention as to what constitutes selection fairness. Generally, fairness is determined by whether or not a strategy will place members of any specific applicant group at an unfair and unwarrantable advantage. Applicants with an equivalent likelihood of succeeding on the job being applied for (and at the time of selection) should have an equal opportunity of obtaining the job – notwithstanding group membership. Furthermore, they should have uniform treatment in testing circumstances, access to training materials, feedback, and retest opportunities. This stance on fairness seems to be in agreement with the relevant legislation and relevant influential technical guidelines. The regression or Cleary model (as cited by Theron, 2007) of selection fairness describes fairness in terms of the absence of differences in regression slopes and/or intercepts across the subgroups comprising the applicant population (with reference to the regression model referred to earlier). Thus, if group membership does not explain variance in the criterion (predictive bias), or the prediction method takes systematic group differences into account, the selection method may be seen as fair, in the Cleary interpretation. Furthermore, a selection strategy can be considered unfair if the criterion variance, conditional on predictor performance, differs across the applicant subgroups. Even if an instrument demonstrates predictive validity, (indirect) discrimination can still unfairly disadvantage members of specific subgroups if group membership significantly explains variance in the criterion, which is not explained by the predictor, and if the selection strategy fails to take this into account. Cleary's prescription for a diagnosed unfair selection strategy thus depends on whether there exists incremental variance in criterion performance across applicants from the subgroups, irrespective of predictor performance – dependent on the ability levels of the applicants (Theron, 2007, pp. 105-106).

Using a valid predictor is therefore not sufficient to allow the conclusion that selection is guaranteed to be fair. Fair or unfair discrimination therefore does not reside in the predictor, nor in the mean predictor score. It is thus not possible to ensure fair selection just with the thoughtful choice of selection instruments. It is fruitless to try and develop or identify selection instruments

that will somehow make the HR practitioner immune against discriminatory personnel selection; and furthermore, selection instruments cannot be graded or rated as EEA compliant. One can only potentially eliminate measurement bias in this way. The already complex job performance structural model that needs to be understood by the HR practitioner is made even more complex by the fact that “a group membership variable not only affects the latent variables that determine job performance, but also affects job performance directly and possibly moderates the effect of one or more latent variables on performance” (Theron, 2007, p. 107).

Fair selection will not be easily attainable in every case and may even be unattainable in some cases. The adverse impact rule is applicable to projected criterion performance based on the predictor and not top-down on predictor scores. If the predicted criterion performance, derived fairly through moderated regression analysis from the predictor measures, differs for protected and non-protected groups, then adverse impact is likely to occur. Adverse impact can be used to argue the case for unfair discrimination, and the burden of proof would then fall on the defendant. If adverse impact is shown, the burden of proof thus shifts to the employer to demonstrate the job-relatedness of the selection procedure and that the interpretations derived from the predictor scores are indeed fair. Alternatively, the employer could choose to attempt to prove that no valid equivalent, that produces lower adverse impact, exists (De Goede, 2007; Theron 2007).

In the final analysis, the cause of adverse impact in personnel selection hence resides in systematic differences in criterion distributions. There is no avoiding (fair) adverse impact if the criterion distributions differ between groups. If adverse impact arises because of differences in the predictor performance across groups which cannot be justified in terms of differences in the criterion performance, it would imply that the criterion references derived from such scores are biased. This type of unfair adverse impact can be circumvented by eliminating systematic group-related prediction error. When the criterion distributions of the protected and unprotected groups are similar, it is possible to use a valid predictor to maximise the utility of the selection procedure while avoiding adverse impact in a fair manner. However, when systematic differences in the criterion distributions are present, it is no longer possible to attain all four objectives of selection simultaneously. If selection decisions are fair in terms of the Cleary-interpretation of fairness, and selection occurs strictly top-down - based on expected criterion performance, inferred from the predictor scores - then utility will be maximised, however, adverse impact will be unavoidable. Adverse impact will thus be minimised through instituting measures such as quotas, sliding-bands, or criterion referenced race norming –but only if utility is foregone. The extent of the sacrifice required would be dependent on the extent of the differences in the criterion distributions. Within group top-down selection would, (if similar conditions and criterion differences are assumed than in American studies, with a .3 standard deviation difference in mean group criterion performance) (Sackett & Roth, as cited in Theron, 2007), it would result in a utility drop of 5-15 percent, which is considerable when projected over a large number of selectees, an

extended period of time, and successive cohorts. This difference in the criterion distribution may be significantly greater in South Africa though (Theron, 2007).

Manipulating the weighting of the criterion composite will also not provide a meaningful solution to the issue of adverse impact (Theron, 2007).

As mentioned, average ability and cognitive skill differences that exist between groups are directly reflected in job performance and thus are real and not created by tests. One can thus not implement any solution to adverse impact until the problem is faced in an intellectually honest way. It is not intellectually honest, in the face of ample empirical evidence to the contrary, to suggest that the culprit is biased and/or invalid psychometric tests (Schmidt & Hunter, as cited in Theron, 2007). These between-group differences are rather due to the systematic lack of opportunity that the previously disadvantaged group has had to develop their competency potential to the same extent as the advantaged group, and thus the differentials in performance on work-related performance testing and actual work performance should not at all be surprising. Adverse impact in selection in South Africa is thus a highly likely by-product of any criterion-referenced selection process that aims to achieve utility. Adverse impact cannot, however, simply be ignored - especially when considered in the light of the various issues facing South Africa discussed earlier. The response of the HR professional should be based on the root cause of these systematic criterion differences, and as such, the question as to why these exist, needs an honest answer (Theron, 2007). This question may not be raised enough by the human resource fraternity, according to Theron. In South Africa, it seems more than reasonable to attribute a large part of this issue to a previous socio-political system that systematically deprived specific groups of the opportunities to develop and acquire the crystallised abilities to perform on the criterion (and a new system that has subsequently failed to remedy this) (Burger, 2012). Burger insists that the systematic denial of this group in attaining the critical dispositions and attainments to advance in economic (and social) terms, is one of the greatest tragedies associated with the consequences of the challenges confronting in South Africa described earlier in this thesis (both historic and current). The legitimate inability of a large disadvantaged group of the South African population to compete on criterion-referenced predictors, is a serious problem in the recruitment and selection department of HR management.

Psychological tests that report standardised mean score differences between ethnic groups, especially on measures of cognitive abilities, should consequently not be characterised as villains that cause the problems, but rather as unbiased messengers truthfully conveying the state and consequences of a tragic social situation. Traditional affirmative action in terms of preferential hiring can be seen as an inappropriate solution that denies the severity and root cause of the problems and ultimately causes more harm through a gradual systemic implosion. The fact that these criterion distribution differences exist, also explains, to a large extent, the reasons for the

'resistance' to transformation that business is accused of. Had this legitimate criterion distribution claim been false, surely transformation would have happened with much more ease and speed in a market geared at optimisation, growth, and self-interest? The solution is therefore not in strategies to convince the messenger to alter the message, as seemingly suggested by some authors (mentioned by Theron, 2007), or by forcing an organisation geared toward efficiency to act against its own interests, as these observed differences in criterion distributions between protected and non-protected groups reflect actual differences on various critical dispositions and attainments needed to succeed in the world of work, which have resulted from the systematic denial of development opportunities. The call is thus for the savvy HR professional to find lasting, meaningful, and sincere ways to deal with these issues, within his/her mandate, as described earlier. This solution lies in legitimately striving to correct the underlying problem (even if only to a small extent) and provide people who were denied opportunities in the past with access to work opportunities, but also opportunities to gain critical skills necessary to attain real success in an organisational role (De Goede, 2007; Theron 2007).

Jon Taylor (as cited in Theron, 2010a), believes that real affirmative action should not advance people despite skill gaps, but should have a large development component. The solution rather lies in the aggressive investment in affirmative development interventions aimed at developing those attainments and dispositions.

Not everyone who has been disadvantaged in the past will, however, be ready and able to receive the best of development opportunities, especially those opportunities which prepare a person for managerial or technically challenging work. These opportunities are costly in terms of money and of time. Some process is thus needed to identify those who will benefit the most if given the opportunity to develop themselves. Thus, the need arises for selection tools to recognise candidates with the greatest potential to gain new skills and knowledge in workplace education and training programmes. It is here where the research, study, and use of dynamic learning potential assessment becomes relevant (De Goede, 2007; Theron 2007; 2010a).

Although a multipronged approach is needed with various concurrent remedial responses that acknowledge the complex aetiology of the problems in South Africa, as discussed, affirmative development programmes aimed at individuals outside and/or inside the labour market is one way the HR fraternity can contribute to creating a more egalitarian society and a more sustainable, efficient, and effective economic environment. The challenge is thus to identify and develop individuals with appropriate competency potential to acquire, within a reasonable timeframe, the competencies needed to produce the output for which a particular role exists, and to implement this in a way that is viable and cost-efficient for the individual organisation.

One method is to select individuals with a high level of potential into a job and to develop them on the job, however there are certainly more available options than this traditional method of

training. Also, a model must be made available showing how to do this in a socially responsible way that aims wider than only serving the immediate needs of the organisation through the regular recruitment, selection, and training functions. Also, it is necessary to generate insights into the amalgamation of all the HR functions, beyond only selection and training, in an effort that sees the aims of this endeavour converted into legitimate successes that generate a return for the organisation and the broader socio-economic landscape in a meaningful and long-term way.

2.12.2 The development of a multi-stage selection model using learning potential

Theron (2010a) explains what an innovative selection model could look like, that already contains a developmental element and minimises adverse impact in the end. The testing of the potential of affirmative or designated candidates to gain from a developmental endeavour is also included in the process. Testing for (learning) potential may imply a two-stage selection process. During phase one, designated applicants (or perhaps even all applicants) would be screened on those attributes or competencies on which learning performance is dependant. Training, or rather, accelerated affirmative development, is then administered to the designated group. In other words, the individuals with the highest learning potential are thus selected and then developed off-the-job by targeting the attributes that determine and competencies that contribute to successful job performance. An adaptation to this could include development on-the-job, with an option to delay permanent employment pending the outcome of the training. Training success is then assessed through a standardised measurement once the intervention is completed. These measures could then be combined during the second phase of assessment with additional knowledge, skills, and abilities (KSA's) as predictors of job performance (Theron).

The non-designated group could also be measured on the training success measurement instrument. Selection decision-making will then be based on a combination of this and the additional KSA measures in a top-down manner (Theron, 2010a). Further intensive training, coaching, mentoring, and career planning/guidance should (and will likely) continue once the affirmative applicants have been placed in their positions (Van der Westhuizen, 2015).

If all implicit assumptions are met, specifically regarding the ability of the accelerated training programme to have a significant effect on the group criterion distribution, the two-stage programme could possibly satisfy all the requirements of personnel selection, to a high degree (Theron, 2010a).

Adding an element of cognitive potential testing may represent a third stage entered in the above process before the other steps where the cognitive structures and processes could be rehabilitated through a phase one intervention that would enable designated employees to benefit from a phase two training intervention (Theron, 2010a).

The multi-stage selection process is preferable to a model where individuals are selected on learning potential and then go directly into a job, to be trained on the job, due to the avoidance of the compounding of prediction error. In both cases two inferences must be made: firstly, how will applicants perform on the learning/development performance criterion; and secondly, how will they, after being developed, perform on the (ultimate) job performance criterion? Both inferences contain a measure of error variance due to the lack of perfect predictive validity. When those with high levels of learning potential are directly identified, selected into a job, and developed on-the-job, then these two errors of prediction are compounded. The multi-stage selection procedure, however, allows the prediction errors made in the prediction of learning performance to be factored into the following prediction on projected work performance. In other words, in a single-stage approach, decisions are based on predicted job performance based wholly on predicted learning performance. In the two-stage approach, however, predicted job performance is based directly on actual, rather than predicted, learning performance and (if implemented) relevant other measures (Van der Westhuizen, 2015).

This proposed two-stage approach seems to be compatible with the intention of the EEA, as per the eloquent speech of Nelson Mandela, quoted earlier in this thesis; as well as with the provision in the EEA that states that an employment equity (EE) plan may contain measures that are consistent with the purposes of the Act. Furthermore, an organisation employing such an approach will find that multiple elements of it will be conducive to a higher BBBEE rating, as these activities will count towards the individual scoring categories mentioned earlier and will likely bring results that will further improve BBBEE scores (for example skills development, and employment equity). Legal compliance and BBBEE measures, although certainly valid incentives, are however not the only reasons to consider such an approach, lest one forget the multitude of motivations mentioned earlier in this thesis (Theron, 2007).

To identify the individuals that would benefit maximally from a learning endeavour, the question consequently arises why individuals vary in the extent to which they acquire new knowledge and skills. An understanding of intelligence, and the learning/development task, and the measurement of an individual's ability to learn, is thus required. Thus, the measurement of learning potential becomes highly relevant (Theron, 2010a).

2.13 The Considered Response to the Needs of the HR Practitioner

The directive from practice is clear: there is a set of multifaceted challenges facing the HR practitioner in South Africa today. The HR fraternity is faced with the challenge of complying to legislation and pressure to drive immediate transformation. There is a social and economic need for a reduction in unemployment and income inequality, and above else, a large moral imperative caused by the unacceptable conditions faced by the majority of the population. The HR

practitioner should address this need while keeping in mind the goals and strategy of the organisation as they relate to objectives that are in national interest.

Despite the gravity and negativity of the situation described above, the savvy HR practitioner is still presented with the opportunity to address these issues in a way that not only contributes to greater peace, stability, and prosperity but also contributes to the utility of the human resource function and the success of the individual organisation. When it comes to dealing with the complexities surrounding these issues, there are also legitimate and even profitable opportunities available to the HR practitioner who is more entrepreneurially inclined.

CHAPTER 3

LITERATURE REVIEW

The relevance of learning potential assessment in the South African organisational environment has been made clear. In South Africa, the potential of a candidate to acquire the requisite skills to perform a job, within a reasonable timeframe, is a factor that legally determines that the employee is qualified for that job. Learning potential assessment has been around for more than half a century, however is still not used widely around the world; though it has seen a fair degree of growth in interest in the last twenty to thirty years, with a corresponding growth in research literature, albeit mainly at university level (Murphy & Maree, 2006). There are three interpretations of potential, which include:

- Learning potential – the extent to which the cognitive prerequisites are met to allow a person to benefit from novel learning experiences.
- Training potential – the extent to which the prerequisites are met to allow a person to benefit from an opportunity to learn and develop new skills.
- Cognitive potential – the degree to which underdeveloped cognitive structures and processes could be developed/expanded (Theron, 2010a).

Testing an individual's capacity to benefit from a learning or development opportunity requires an understanding of the relevant cognitive and psychological factors and processes that constitute intelligence and the task of learning. Assessment of this would require the elicitation of a sample of behaviour that would, when observed, provide quantifiable evidence of the extent or level of the presence or capacity that an individual possesses regarding these factors and the execution of these processes (Theron, 2010a).

The potential of an individual to perform in a work context, as well as perform in a learning scenario, would typically be expected to be related to his/her level of intelligence. According to Prinsloo and Barrett (n.d.), the definition of intelligence is problematic due to the fact that, although it is useful as a common term, no definite criteria can be identified to define it, and as such, it has been a controversial subject in psychology. Maraun (as cited by Prinsloo & Barrett, n.d.) explains that the difference between the physical sciences and social sciences, and their respective success of measurement is at least partially attributable to their vastly different conceptual foundations. The physical sciences rest on a bedrock of technical concepts, whilst psychology, in particular, often makes use of a range of common-or-garden concepts. These well-known concepts, such as 'intelligence' and 'learning', for example, have notoriously complicated grammars of meaning, and are taught, learned, and commonly understood within the broader

societal context, while technical concepts are typically defined by an expert, or specialised community, and used within a narrow, technical field of application (Prinsloo & Barrett, n.d.).

Intelligence, however, is generally well understood in terms of concepts such as learning, problem-solving, memory, executive control, judgement, speed, and the ability to abstract meaning, specifically as it all relates to the environment of the individual, or the demands placed on the individual, and his/her capacity to understand and adapt to these demands. Intelligence can and should thus be defined in terms of a nomological network of aspects, and has been measured for many years, in many contexts, and by many methods (Prinsloo & Barrett, n.d.).

3.1 Intelligence Testing and the Advent of Dynamic Testing

In 1882 Galton started measuring visual acuity and reaction-time activities, deeming these simple sensory-motor responses to be indicators of other, more profound, capabilities of humans, however by the early 20th century, this approach had been replaced by the approach we know today, measuring broad-based psychological constructs (Taylor, 1994). In 1905, Alfred Binet and colleagues (of whom Simon is best known—being one who is frequently cited with Binet) produced the first intelligence test for children. In the beginning of the twentieth century, educational provision in many developed countries was being extended to include a larger proportion of the population. Consequently, teachers were confronted by significant numbers of children who seemed incapable of coping with academic demands. The concept of the mental age was born, and tests of academic intelligence were developed in this regard (Elliot, 2003). Binet defined intelligence in terms of the ‘ability to learn’, however his, and subsequent measures, have focussed more on prior learning, rather than capability for new learning. More than a century later, modern intelligence quotient (IQ) tests have not changed significantly, still including items that involve activities such as naming objects, recreating designs with patterned blocks, and remembering a series of numbers (Resing, as cited by Elliot).

Resnick and Neches (as cited in Taylor, 1994) point out that there have long been two schools of thought around the concept of intelligence. One tradition views intelligence as a stable set of possibly innate endowments which different people possess in different quantities. The other tradition, which serves as a more appropriate basis for learning potential assessment, identifies intelligence with the capacity of individuals to adapt to circumstantial demands. The learning potential approach addresses itself to the assessment of adaptation to novel tasks, as demonstrated in mastery or increased speed and accuracy as a result of repeated exposure, instruction, examples, or hints; and may as such also provide information on learning processes (as opposed to learning products only, as is assessed by conventional IQ tests) (Taylor).

Generally, psychologists have, however, since come to recognise flaws inherent in many IQ measures, for example, their propensity to lacking an empirically supported theoretical

framework, the limited relationship between scores and instructional practices, their focus on products, instead of psychological processes, their tendency towards linguistic and cultural bias, and their inability to guide clinicians in deriving specific interventions for educational difficulties (Elliot, 2003). Furthermore, even though many traditional IQ tests are well correlated with success in work and training performance, the issues with adverse impact in selection scenarios mentioned earlier cause serious issues for their use in selection in South Africa and other multi-cultural contexts, especially where there has been disadvantage or a lack of exposure by a certain sub-group in a cultural context, as explained earlier (Elliot, 2003).

Learning potential assessment seeks to overcome these difficulties. It is theoretically driven and seeks to examine cognitive (and related) processes/structures that are important for learning and is seen as far more sensitive measures for minority populations, and furthermore has the potential to offer insight and guidance to practitioners. This type of assessment is usually defined as being dynamic in nature and typically involves a training and learning experience within the testing situation. Within the learning potential framework, it is assumed that intelligence is the ability to learn from experience. If, after training, a person shows improvement in performance in the trained task or a problem, it is assumed that the individual can show improved performance in other, similar/related tasks or problems in everyday life. It can thus be defined as “an interactive approach to conducting assessments within the domains of psychology, speech/language, or education that focusses on the ability of the learner to respond to intervention” (Haywood & Lidz, 2006, p.1). The name given to this type of testing is thus ‘dynamic testing,’ which may be seen as a sub-category of ‘interactive assessment’ (although these terms are often used interchangeably).

Dynamic testing has, at its core, two main definitive elements, namely the active intervention by the examiners and the assessment of examinees’ response to intervention. There is thus a deliberate, conscious, and purposeful attempt at effecting change in the subject. The examiner would thus enter into an active relationship with the test subject beyond merely giving instructions, posing questions, and recording responses. This relationship is usually in the form of teaching of cognitive tools/strategies. Conventional (or ‘static’ measures) measures, in contrast to dynamic measures, require limited instruction, usually involving only initial guidance. Contingent feedback from the tester is actively discouraged on the grounds that it will ruin test standardisation (Elliot, 2003).

Dynamic assessment (DA) is thus an umbrella-term used to describe a heterogeneous array of approaches that are linked by shared elements, namely that instruction and feedback is built into the testing process and the assessments are often differentiated on the basis of an individual’s performance. There is however much disagreement in the field between leading exponents about core constructs, purposes, methodologies, and implications of dynamic testing (Sternberg & Grigorenko, as cited in Elliot, 2003). There have been numerous terms for assessments related

to learning potential, these include dynamic assessment, learning tests, interactive assessment, testing-the-limits, and mediated assessment. In learning potential assessment, quantitative and qualitative approaches can be distinguished. From the quantitative approach, both measurement and standardisation are required. Thus, training is developed, described, and implemented systematically, and observed operations are scored (with the appropriate guarantees in terms of psychometric properties). According to the qualitative, or clinical, approach, flexibility in the training and observed operations is emphasised (Fernández-Ballesteros & Calero, 2000).

Learning potential tests are frequently administered in the test-training-test format and thus include tasks (such as progressive matrices, blocks, mazes, dots, for example), training (with different degrees of standardisation), and observed operations (for example post-test performance, number of trials, amount or type of help required, strategies used, and so forth). Dynamic testing usually includes administering a measure (pre-test) that is completed without assistance. Contingent instruction is provided that may consist of general cognitive strategies or may be geared to the individual's strengths and weaknesses. Subsequently, an alternative form of the original test (post-test) is provided. This is what is known as the 'sandwich' approach to dynamic testing. It is distinct from the 'cake' approach, which involves testing 'online' the need for assistance with prompts and assistance during the course of an initial assessment (Sternberg & Grigorenko, as cited in Amod & Seabi, 2013). A typical method employed to assess learning potential with the 'cake' technique is that of progressive clues. The individual is exposed to a learning event and required to transfer insights to a similar type of item. If the person is unable to solve the problem as modelled, a range of progressive clues are provided in a step-by-step manner, with each containing more revealing information so as to ensure the successful solution of the problem by the test subject. The number of clues required indicates the degree of skills transfer or learning potential. Another approach is to expose a person to repeated similar (internally consistent) problem-solving situations. Their initial performance is viewed as an indication of current ability/capacity and the level at which they plateau, as their potential level of functioning (Prinsloo, n.d.).

Further techniques that have been employed to assess learning potential include evaluating metacognition, or self-awareness. Metacognition is an awareness of one's own thinking and thus involves self-evaluation and correction. General motivation is also often viewed as the best indication of learning potential, which is normally assessed through structured interviews (Prinsloo, n.d.).

There are also two notable subdivisions in the paradigm of DA that include global (referring to general or total learning potential) or domain-specific tests, such as Campione and Brown's use of DA toward particular academic contexts, such as reading (Amod & Seabi, 2013).

Dynamic testing is, however, irrevocably linked to the field of intelligence assessment. Despite the lack of consensus on a final conceptualisation of intelligence, current theories illustrate that there are numerous types of intelligence and that traditional psychometric assessments capture only a few of them (Murphy & Maree, 2006). Traditional psychometrics has thus faced much criticism, as described earlier. Traditional psychometric assessment (static assessment), of intelligence, at least, is a product-based approach founded on the assumption of stability of performance, where dynamic assessment is process-oriented, and focuses on the learning that occurs during the assessment (Ruijssenaars, Castelijns, & Hamers, as cited in Murphy & Maree, 2006). Much of standardised testing relies on assessment of products of past learning opportunities, and thus assume, to some extent, the same past learning opportunities for different test takers. Although previous learning is highly correlated with success in new learning, the correlation is far from perfect and often becomes a self-fulfilling prophecy. An easily understandable example of this is a deaf child who goes to school without having had prior training in specialised communication. That child is guaranteed to score poorly on normative tests since he or she will learn less than age peers, but the score will not indicate the potential of the child to learn given appropriate communication methods. In such a case, attempts within the test to overcome experiential deficits will produce better estimates of the child's ability to learn, when provided with appropriate learning. Teaching within the test should also bear greater resemblance to the criterion situation, in this case, classroom learning in a person-appropriate class. If, however, such a child is assessed with normative tests, scores low, and is placed in learning situations with low expectations, and without appropriate communication methods, the prophecy of the normative score will be fulfilled because the assessment and criterion situations are similar. Historic learning is thus seen as a necessary but insufficient condition for future performance (Murphy & Maree).

There are also other conditions unrelated to intellectual potential can and do also interfere with the expression of intelligence. Motivational and other non-intellective variables can influence intelligence tests scores. These should be considered when interpreting data from dynamic tests. Other sources of poor performance on tests include misunderstanding of instructions or expectations, unfamiliarity with materials and content of tests, timidity, and a history of failure on tests (Murphy & Maree, 2006).

The measurement of learning potential or cognitive modifiability poses a variety of theoretical challenges to psychologists, as it not only aims to predict future performance, but also aims to do so by transcending already developed competency and skills and measuring possible future growth that has not yet occurred. Learning potential is particularly useful in cases where cultural and educational diversity, and/or psychological, motivational, and emotional factors, have interacted with genetic predispositions and created a unique skill-set, and where the current skills are not a sufficient indication of the degree of adaptability of the individual (Prinsloo, n.d.).

Some authors have suggested that dynamic testing of learning potential could substitute regular intelligence testing, however this is not advisable. Dynamic testing has been described as a valuable part of an assessment repertoire when used in combination with other methods of testing, including standardised, normative cognitive tests, social and developmental history-taking, observation of performance in learning situations, and data gathered from clinical interviews, parents, teachers, and others (as applicable). The value of dynamic testing is that it adds information about present and future potential performance that is not readily available from other sources (Haywood & Lidz, 2006; Lidz & Elliot, 2000). The method is especially useful in situations where:

- “Scores on standardised, normative tests are low and do not accord with information from other sources;
- Learning appears to be restrained by apparent mental retardation, learning disability, emotional disturbance, personality disorder, or motivational deficit;
- There are language problems;
- There are marked cultural differences between those being tested and the dominant culture; and
- Classification is not the only issue, but the need to inform programming is also important” (Haywood & Lidz, 2006, p.2).

In the above situations, standardised normative testing is likely to produce low scores and predictions of future learning and achievement, although they may be proven true if the barriers to learning and performance are not removed. Dynamic assessment has a value in identifying the kinds and amounts of intervention required to produce an improvement and the likelihood of the success of such an intervention. There is however resistance to the quantification of results in this regard, for the purposes of classification, as often these inferences are not reducible to numbers, especially when based on the clinical expertise of the examiner. From the vast majority of available literature, it seems that the original intention behind dynamic testing was for it to be mediational and used in a clinical process, and not to create a score on which to rank and classify individuals as one would imagine the use of a “modifiability index” or a normative “learning potential quotient” (Haywood & Lidz, 2006, p.2; Lidz & Elliot, 2000).

Dynamic assessment seems to have some value above regular standardised tests. That is, standardised tests can easily identify deficits in intellectual development, especially when compared to people who are similar to the test subject, however it does not provide information about how performance may be enhanced in the future. Intelligence quotient (IQ) scores and ensuing school performance share only 49 percent common variance, an estimate based on the squared correlation of .70 often cited. This leaves about half of the variables in school

achievement related with other factors, therefore leaving a large gap in the prediction of general scholastic performance by general IQ tests. Furthermore, overinclusion might be a highly likely error for traditional IQ tests when classifying people on the bottom of the distribution of intelligence. In other words, people may not be classified as highly intelligent, but they may still perform well in a high intelligence teaching environment (Haywood & Lidz, 2006).

Utley, Haywood, and Masters (as cited in Haywood & Lidz, 2006) confirm that certain groups may be particularly subject to flawed decisions and placements based on standardised tests, not because of test bias or poor predictability, but because they have divergent educational or training needs as those identified by traditional tests. Dynamic testing can thus supplement traditional tests with great effectiveness.

The work of Vygotsky, Feuerstein, and their colleagues has been immensely influential, and a firm grasp of their input is needed to ensure clear understanding of the effective use of dynamic assessment (Lidz & Elliot, 2000).

3.2 Theoretical Forerunners and Underlying Theory of Learning Potential Assessment

Russian psychologist, Lev Vygotsky (1896-1934) and Israeli clinician, Reuven Feuerstein (1921-2014) are considered to be the founding theorists and forerunners of the dynamic movement (Elliot, 2003). Vygotsky's 'psychological tools' paradigm and Feuerstein's Mediated Learning Experience (MLE) and related Instrumental Enrichment (IE) concepts are the most significant in this regard (Kozulin & Presseisen, 1995).

Piaget (as cited by Kozulin & Presseisen, 1995), a Swiss epistemologist, proposed an alternative to the behaviouristic and psychoanalytic interpretations of child development that were popular in the nineteen fifties and sixties. Piaget opposed the view of the mind as a *tabula rasa*, or a basket filled with fragmented skills and separate pieces of data. Piaget, instead, asserted the structural character of thinking, wherein each discrete element is entrenched in the organisation of the whole.

Two notable concerns with the Piagetian cognitive approach include that the sociocultural aspect of learning is to a large extent beyond the scope of this theory; and that the learning process Piaget proposed appeared as a direct interaction of a child with the environment. As such, in this view, human mediators are essentially excluded from the exchange. Vygotsky, who was one of the earliest critics of Piaget, focussed his attention on the question of sociocultural mediation of mental processes (particularly learning). For him, the learning process was not a solitary exploration of the environment by a child; rather, it was a process of appropriation of the methods of action existent in a given culture, by the child. In such a process of appropriation, symbolic tools play a critical role – referring to signs, linguistic and mathematical systems, and so forth. Feuerstein, and several other authors, suggested a radical dichotomy of direct versus mediated

learning. The philosophical and sociological basis for an argument for mediated interaction is that the interaction between a human and the environment is never instantaneous, but always mediated by meanings that originate outside of the individual, in the world of social relationships. For example, in the work environment, work presupposes material tools interposed between the individual and natural objects. These tools, though engaged towards natural phenomena, also provide a reciprocal stimulus on the individual in terms of causing changes in cognition. Also, because work involves other people, social and psychological characteristics of others enter the equation. Finally, since performing work is impossible without engaging with symbolic representations, these symbols, and the means of their transmission, become two added mediatory agents. Vygotsky suggested three major classes of mediators, namely, "material tools, psychological tools, and other human beings" (Kozulin & Presseisen, 1995, p. 68).

Material tools place new demands on human mental processes as they do not merely exist as individual implements, but presuppose "collective use, interpersonal communication, and symbolic representation" (Kozulin & Presseisen, 1995, p. 68). Psychological tools are the basic mental processes of decision-making, memory, and elementary arithmetic operations. Beyond these tools lies the wide range of higher order symbolic mediators, which include "natural and artificial languages, as well as discourses, and cultural-symbolic systems of different epochs and nations" (Kozulin & Presseisen, 1995, p. 69). As far as the role of another person as a mediator of meaning goes, Vygotsky believed that the meaning of a person's own activity is shaped through the mediation of another individual, as activities are, through the guidance of others, initiated, mastered, and then internalised (Kozulin & Presseisen, 1995).

Vygotsky's work is based on his social development theory and emphasises two main concepts, namely that of the more knowledgeable other (MKO) and the zone of proximal development (ZPD). The MKO refers to an instructor or mentor figure who guides the learning of the child. His theories stress the importance of social collaboration in the development of cognition, as he believed the community has a central role in creating meaning for a young subject. Unlike Piaget's notion that a child's development must necessarily precede learning, and that development stems largely from independent explorations through which children construct knowledge of their own. Vygotsky argued that learning is an essential and universal facet of the process of developing culturally organised, specifically human, psychological functions - meaning that social learning tends to precede development. Cognitive development stems from social interactions from guided learning within the zone of proximal development as children and their social partners co-construct knowledge. Although Vygotsky thus tended to believe that children are active participants in their own learning, he placed greater emphasis on social contributions to the process of development, whereas Piaget emphasised self-initiated discovery. According to Vygotsky, a large amount of significant learning (by a child) thus arises through interactions with a skilful teacher. The teacher may model behaviours and/or provide verbal instruction for the child.

Vygotsky refers to this as co-operative or collaborative dialogue. The child endeavours to comprehend the activities or instructions provided by the tutor and then internalises this in order to use it as a guide to regulate their own behaviour at a later stage (Kozulin & Presseisen, 1995).

Vygotsky's notion of the Zone of Proximal Development (ZPD) is central to his approach. The ZPD concerns itself with the performance that cannot be solicited without assistance, but can be attained with the help of another, more capable, individual. Vygotsky explained this in terms of individuals currently functioning on the same cognitive level, but with differing potential in terms of possible functioning after assistance. Children from ethnic minorities or from disadvantaged backgrounds typically underperform in measures of achievement of knowledge and skills that one typically acquires at home or in school. An assessment that includes an examination of the capacity of the child to learn when provided with teaching that is tailored to offer the minimum level of assistance required to produce successful performance, and then allows the examiner to transfer the learning to other activities, would thus appear to be more meaningful for usage in educational settings. There is ample evidence that aided performance can provide an indication of latent abilities that traditional measures fail to tap. Looking for conditions that may be limiting a person's access to his/her intelligence, minimising or removing those factors, and then assessing abilities again – this is what directed Vygotsky to his now famous concept of "zone of proximal development" (Murphy & Maree, 2006, p. 169).

Most of the psychological investigations concerned with school learning measured the level of mental development of the child by making him/her solve certain standardised problems. The problems he/she could solve alone were supposed to indicate the level of mental development at the particular time. But in this way, only the completed part of the child's development can be measured, which is not a complete representation. Vygotsky tried a different approach. In accordance with his example: having found that the mental age of two children was, for instance, eight, he gave each of them harder problems than they could manage on their own and provided some slight assistance like the first step in a solution, a leading question, or some other form of help. He discovered that one child could, in cooperation, solve problems designed for twelve-year-olds, while the other could not go beyond problems intended for nine-year-olds. The discrepancy between a child's actual mental age and the level he/she reaches in solving problems with assistance indicates the zone of proximal development. In the example above, this zone is four for the first child, and one for the second. One can thus rightfully question whether their mental development/age is truly the same. Vygotsky's experience has shown that the child with the larger ZPD will do much better in school. Children with severe difficulties, those who demonstrated high potential on a dynamic test, and who were subsequently provided with cognitive training appeared to make the greatest advances. This measure gives a more helpful clue than mental age does to the dynamics of intellectual progress (Vygotsky, as cited by Murphy & Maree, 2006).

Vygotsky also places more (and different) emphasis on the role of language in cognitive development. He claimed that people are born with the basic materials for intellectual development. He refers to four elementary mental functions in this regard, namely attention, sensation, perception, and memory. Eventually, through interaction within the sociocultural environment, these are developed into more sophisticated and effective mental processes/strategies which he refers to as higher mental functions. People use cultural tools of intellectual adaptation to use basic functions more effectively (for example memory mnemonics). Vygotsky thus sees cognitive functions, as affected by beliefs, values, as tools of intellectual adaptation of the culture in which a person develops. These tools thus vary between cultures. Vygotsky thus regards language as a very powerful tool for mental adaptation and a critical enabler to cognitive development (Murphy & Maree, 2006).

Vygotsky suggests that teachers should use co-operative learning techniques. One contemporary application of Vygotsky's theories is called reciprocal teaching, which can be used to improve learners' ability to learn from text. In this method, teacher and learner collaborate in learning and practicing four skills: summarising, questioning, clarifying, and predicting. The teacher's role is reduced over time. Other relevant instructional concepts include 'scaffolding' and 'apprenticeship,' in which a teacher or more advanced peer helps to structure or arrange a task so that a novice may work on it successfully (McLeod, 2014; Murphy & Maree, 2006).

Vygotsky passed away before some of his work could be completed, although, some of his work is still being translated from Russian. His work has not received the same level of scrutiny as that of Piaget, partly due to the effort surrounding translation and also because his sociocultural perspective does not provide as many specific hypotheses to test as did Piaget's work, making refutation difficult, if not impossible. Perhaps the main criticism of Vygotsky's work concerns the assumption that it is relevant to all cultures (McLeod, 2014).

After Vygotsky, it was Feuerstein who continued to develop the concept of the assessment of learning potential within a general theory of mediated learning. According to Feuerstein, cognitive development is the result of mediated learning experience, defined as training given by an experienced adult who frames, selects, focuses, and feeds back an environmental experience in such a way as to create appropriate learning sets. Linking to Vygotsky's thinking, Feuerstein predicted that low-achieving individuals, who perform poorly in school and on intelligence tests because they have experienced inadequate mediated learning experiences, will show improvement if they receive appropriately supportive interactions. Feuerstein developed the Learning Potential Assessment Device (LPAD) as a dynamic procedure and as a way of operationalising learning potential. This involves a set of micro teaching-learning situations by means of which the level of modifiability of low-performing children can be inferred and measured.

Feuerstein based his work on studies on Israeli adolescents who were retarded in their intellectual performance for reasons associated with their diverse cultural origins, disrupted lives, and limited opportunities to learn. He provides a foundation for a general theory of cognitive competence, coupled with technology to assess learning potential and for repairing functional deficits in the cognitive process (Hobbs, 1980). He concluded that the use of IQ tests was resulting in many children being improperly labelled as intellectually inferior and being placed in special education. He sought to devise measures to assess the individual's modifiability – that is their capacity to develop and improve deficient functioning when provided with a maximally effective intervention. Feuerstein's subsequent measure, the Learning Potential Assessment Device (LPAD), mentioned above, consists of a series of tasks with items similar to those in IQ tests, yet adopts a process that involves the provision of highly contingent support and guidance ('mediation') in their completion. The form of, and focus for, help, while guided by Feuerstein's detailed and comprehensive theory, is individually determined by the tester and thus for any individual, these could differ significantly from one clinician to another. The approach does not utilise norms or seek to compare test-takers to their peers. Psychometric proponents obviously generally emphasise the importance of standardised administration and inter-rater and test-retest reliability. Feuerstein's response to such calls and criticisms is that dynamic assessments aim to induce change, and seeking consistency is a pointless task. As mentioned earlier, this is a view that exists in the more clinical approach to learning potential assessment, especially when employed as an active part of the development process. To a significant extent, the relative importance of standardisation depends on the purpose of the assessment. If the assessment is to be used for educational selection, the allocation of resources, or for system accountability, one is more likely to require data that can be used to enable systematic comparison. Dynamic testing was however seemingly originally rather conceptualised as a method of remediation and not a solely predictive measure for classification purposes, as mentioned earlier. It is for this reason that the majority of the large literature base is geared toward uses in Clinical/Educational Psychology, and particularly in the diagnosis, treatment, and development of adult and child schizophrenics; Educable Mentally Retarded (EMR) children and adolescents; and culturally disadvantaged children with a wide variety of classifications. Learning potential measurement can however be applied to other populations as well (Fernández-Ballesteros & Calero, 2000).

Feuerstein developed the learning potential approach into a comprehensive theory with accompanying applied systems. The basic principle of the Feuerstein Method, based on a deep and optimistic belief in human modifiability, is that all human beings, regardless of their age, disability, or socio-economic background, have the ability to improve their learning – and therefore their level of functioning – significantly. The aim of the Feuerstein Method is the enhancement of people's learning potential, and improvement of their cognitive functioning - enabling meta-learning. Or as Feuerstein himself puts it: "to change the cognitive structure of the retarded

performer and to transform him into an autonomous, independent thinker, capable of initiating and elaborating ideas" (Hobbs, 1980, p.567). Feuerstein transcended three intellectual traditions in psychology: psychodynamic theory, behaviourism, and the psychometric movement (Hobbs).

The Feuerstein Institute, a non-profit Israeli company, with about 160 local employees, was established in the 1960's and has over 70 training centres in 35 countries. It still operates in Jerusalem today, focussing mainly on children with developmental disabilities or brain injuries, with a large focus on those from immigrant families, or ethnic minorities (The Feuerstein Institute, 2014).

The process of the Feuerstein Method is intended to start with the LPAD assessment to identify optimal ways for the improvement of a person's learning ability and cognitive functioning. A Feuerstein Method trained team will then review the assessment results and design a treatment regimen tailored specifically to the needs of the given person. Therapy regimens are multi-disciplinary and together with cognitive methods, may include speech and occupational therapies, reading, writing, and fine motors skills (The Feuerstein Institute, 2014).

The LPAD is designed to identify the individual's degree of cognitive flexibility and modifiability and consists of a series of tasks that include active interaction between the examiner and client. It takes between nine and fifteen hours to administer and as such is spread out over the course of several days or several weeks, depending on the individual. The focus is on the individual's performance, and not on a comparison with an age norm. The LPAD is oriented toward establishing a profile of modifiability and determining the preferential modality by which this modifiability can be materialised and as such yields a prescription for intervention through instrumental enrichment (The Feuerstein Institute, 2014).

A central part of all Feuerstein therapy programmes is the use of Instrumental Enrichment (IE) tools. This is a series of mediated learning activities and tasks designed to promote and enhance cognitive strategies and skills, while also helping to monitor the person's changing and developing needs. The IE program seeks to increase the modifiability, plasticity, and flexibility, where it has been left inadequate, because of the lack of MLE of general or specific nature. The intervention programme aims at developing the prerequisites of learning and correcting deficiencies in cognitive functions and operations. IE has undergone several revisions and has been implemented at a variety of sites around the world. It has also been translated into all major European languages and some Asian languages. Although originally aimed at improving the overall cognitive performance of adolescents, IE is actually used worldwide with a variety of populations, including special needs students, new immigrants, adults in vocational training, and other learners in eclectic classrooms. There are six major goals to IE implementation:

- To correct weaknesses and deficiencies in cognitive functions.

- To help students learn and apply basic concepts.
- To create learning motivation through habit formation in students whose conditions and environment do not reinforce learning needs.
- To develop task-intrinsic motivation.
- To produce insightful and reflective cognitive attitudes.
- To transform poor learners from passive recipients and reproducers of information into active generators, and
- To enhance the self-image of students as active and independent learners (Feuerstein, Rand, Hoffman, & Miller; Link, as cited by Kozulin & Presseisen, 1995, p. 72; The Feuerstein Institute, 2014).

IE provides a phase-specific substitute for insufficient or ineffective MLE. Its 300 hours of paper-and-pencil exercises are essentially non-content specific and seek to transform the learner from a passive recipient of information into an active generator and projector of relationships. The material is taught three to five hours weekly over a two-to-three-year period by teachers who have been specially trained as IE mediators. Positive results have been obtained in many studies conducted across a broad range of populations and in a large variety of settings. Modifiability occurred through this program has been shown to be structural in nature (Kozulin & Presseisen, 1995).

There are two IE programmes: The IE Basic programme is for young children and low functioning individuals, while the IE standard programme is aimed toward older children, high school students, and adult learners. IE Basic consists of a set of playful learning activities (with eleven workbooks, referred to as 'instruments,' in total) that develop basic concepts and thinking skills of younger children. These are not set pieces, but rather guides for creative teaching. Instruments are selected to fit deficiencies identified in the prior learning potential assessment (Hobbs, 1980). Through a series of increasingly complex tasks, learners explore the operations of comparison, orientation in space, analysis of geometric shapes, numerical skills, empathy for others, and other behaviours. IE Standard, which may follow IE basic, is a series of structured paper-and-pencil exercises that gradually increase in levels of difficulty and abstraction. The materials are also organised into workbooks/instruments (fourteen in total) and each instrument focusses on a specific cognitive area such as analytic perception, comparison, classification, orientation in space and time, and other comparable activities (The Feuerstein Institute, 2014).

During the IE sessions, a trained Feuerstein mediator leads learners, either one-on-one or in a classroom, through increasingly complex cognitive tasks and works with them on how to analyse a problem and how to solve it systematically. The progressive nature of the IE tools allows the learner's progress to be monitored, and the program to be modified in accordance with the

learner's developing needs. The teaching method of mediation allows passing of information to learners in a manner that ensures it is relevant to the recipients, that they understand it, and can apply it to a wider range of contexts (The Feuerstein Institute, 2014).

The instruments in the IE programme cover such domains as organisation of a visual field, analytic perception, orientation in space, comparative activity, categorisation, temporal relationships, family relationships, decoding and encoding instructions, working with numerical progressions, transitive relations and syllogisms, and comprehension of absurd or humorous situations (Kozulin & Presseisen, 1995). The intended frequency of IE lessons is five fifty-minute to one-hour lessons a week, for a period of two years, at least, and Feuerstein and Haywood, who have extensively replicated IE training in the USA, consider three lessons per week to be an absolute minimum (Shayer & Beasley, 1987).

IE exercises are complemented by 'Shaping a Modifying Environment' (SME) that supports further learning. A modifying environment is important, and it is important to create a conceptual framework to outline the principles, rules, and nature of this. It is set out to capitalise on the individual's unveiled modifiability, as evaluated by the LPAD and increased by the IE, in order to continue to modify the individual in the most adequate and desirable way. It must produce in the individual the need system that will make modifiability and its subsequent adaptability a survival social need (Feuerstein & Hoffman, as cited by the Feuerstein Institute, 2014). MLE is the imposition of a culture that creates in the individual powers of adaptation in response to the needs present in the environment. MLE is thus the interaction that ties together the applied systems that are oriented toward the generation of human intelligence, through the realisation of the human propensity to change. The motive for change and adaptation is generated by the need of the human being to perpetuate its survival as individual entity and for its cultural identity. This motivates cross-generational engagement and raises serious questions about current issues of intergenerational discontinuity and counterculture. The importance of instructional, educational, and social organisation to create greater opportunities for intergenerational interaction and cultural transmission should be considered in this regard (The Feuerstein Institute, 2014).

On their official website, the Feuerstein Institute claims that numerous studies have proven that cognitive functioning can be significantly improved through consistent and systematic application of IE and SME. Although, logically this makes sense, it seems that the Feuerstein Institute base their findings strongly on anecdotal observations and case studies. The Feuerstein Institute failed to respond to repeated written requests lodged by the current researcher for assistance in accessing empirical studies relating to the application of their theory, concepts, and methods (The Feuerstein Institute, 2014).

Feuerstein explains his approach to intelligence in terms of the theory of Structural Cognitive Modifiability (The Feuerstein Institute, 2014). Based on other basic views of intelligence, which

group and categorise manifestations of intelligence in relation to certain situations and life conditions, for example Sternberg's triarchic theory of intelligence, Feuerstein views intelligence as adaptability. Sternberg claims that the diverse and specific modalities and the personal styles of individuals whose cognitive structure – with its cognitive, emotional, and experiential determinants – are oriented toward preferential modalities of adaptation. Adaptability is inherent in both problem-solving and creativity, which is engendered by strong motivational elements. Philosophically and morally, adaptability is usually described as overtly serving an organism's positive goal for survival, the survival of others, and the preservation of certain states of mind; although adaptation may also be geared away from these goals. Adaptation in its most generic form is the changes that the organism undergoes in response to the appearance of a novel situation that required such changes in the organism. This adaptability is what Feuerstein refers to as modifiability – that may differ from individual to individual, from state to state, and from situation to situation. Individual difference may thus be viewed in terms of the process or dynamics of change or adaptation: the rate and quality of change; the nature, frequency, and intensity of the stimuli required to produce the given change as a structural characteristic of an individual. The definition of intelligence as a process, rather than an immutable, fixed entity, thus carries with it some dramatic differences in the way behaviours are perceived. Through its propensity to integrate into previously formed schemata the learning derived from new experiences, previous schemata are modified so as to make them adaptable to the new situation that has been produced by the experience. In describing the dynamics of this process, one must take into account other elements responsible for the adaptability of the individual's behaviour. These components, whether they be emotional or cognitive, will have to be revealed and the role they play in the nature and process of change will have to be analysed, understood, and eventually assigned a particular weight. Viewing intelligence as having an adaptive meaning represents a dynamic view of it as a process. If this view is accepted, one may then ask what is the origin of the flexibility, plasticity, and modifiability of those schemata that are changed by experience in order to adapt to new experiences? Modifiability is a process that differentiates meaningfully among individuals and thereby reflects the different degrees of their manifest adaptation. Many of the difficulties people have in academic areas, in particular, and in life in general, for instance are due to a limited, poor, or non-existent capacity to benefit from formal or informal learning situations. Learning disabilities are thus to be seen as the description of the incapacity of an individual to benefit from, or become modified through exposure to, certain experiences that are effective with other people. Feuerstein suggests that differences are due to the nature of the organism, but also due to a typical human mode of interacting with the world, which affects precisely this quality of the human experience (The Feuerstein Institute).

According to Feuerstein, learning through exposure to stimuli, versus with a motivating mediator, means learning capacity becomes meaningfully increased and we reach levels of functioning not

easily accessible in isolation. MLE is thus the determinant responsible for the development of the flexibility of the schemata which ensures that the stimuli that impinge on us will affect us in a meaningful way. MLE thus produces the plasticity and flexibility of adaptation we call intelligence. The frequency and intensity of MLE not only brings about change in the realm of the learning content, but also in the learning structure, in the propensity for learning, and in the growing capacity of the organism to benefit from exposure to learning situations (The Feuerstein Institute, 2014).

Different individuals will, however, according to Feuerstein, require different variations in investments in MLE time to acquire the same level of functioning/change, reflected in the differential rate of their learning process, and grounded in the person's innate conditions. These variations may thus have a neurochemical, neurophysiological origin that, indeed, may vary from individual to individual. These variations need, however, not be considered as inevitably leading to gross differences between the level of functioning of individuals. It may be possible to conceive of variations in intervention that may overcome initial differences partially, but meaningfully (The Feuerstein Institute, 2014).

MLE is defined as a quality of human-environment interaction that results from the changes introduced in this interaction by a human mediator who is interposed between the receiving organism and the sources of stimuli. The mediator selects, organises, and schedules the stimuli, changing their amplitude, frequency, and saliency; and turns them into powerful determinants of behaviour, instead of randomised stimuli, whose occurrence, registration, and effects may otherwise seem purely probabilistic. The mediator's intention to make a particular stimulus available to the recipient meaningfully changes the stimulus from a fleeting, randomised, almost imperceptible occurrence, to a powerful, inescapable encounter that will be registered, integrated, and mastered by the learner. The major and unique effect of MLE is, however, not the acquisition of the mediated specific stimulus, but the creation in the recipient of a disposition and attitudinal propensity to benefit from the direct exposure to stimuli. Methods are thus created or instilled to focus not only on the stimulus, but also the relationships of proximity, distance, of temporal and spatial order, of the constancy-transformation complex, and on a variety of higher order perceptions and elaborations of stimuli. Thus, there is an increasing expansion of the schemata from their pure sensorimotor or perceptual nature to their abstract level of mental operations. This transition, described by Piaget, cannot be considered simply as the epiphenomenon of direct exposure to stimuli, nor the active interaction with them. It requires the active interposition of the mediator whose intentions are marked by a goal that transcends by far the immediacy of the interaction. Without the dimensions of intentionality and transcendence, the acquired stimuli would have little meaning beyond what they represent. The intention of MLE is thus structural change that enriches the repertoire of the individual's mental activity with structures of behaviours that were previously non-existent or passive. The intention is thus not in essence exploiting the

learning potential of the individual, but actually increasing it. This, according to Feuerstein, in contrast to many other theorists, including Piaget and Vygotsky, is not possible without MLE. This refers to Feuerstein's focus on proximal determinants of cognitive development, rather than distal factors (maturation, organicity, emotional and educational level of parents, and so forth) which, although they inevitably result in differential cognitive development, are seen as triggers for the secondary processes (proximal determinants, of which MLE is the greatest). Proximal determinants are considered to be directly and unavoidably responsible for both differential cognitive development and the degree of the modifiability typical for an individual. Endogenous or exogenous distal factors may, however, account for, or contribute to, the lack of MLE (The Feuerstein Institute, 2014).

The extent of the positive effects of MLE on an individual depends on the appropriateness thereof in terms of the needs of the recipient, which vary according to age, and neurophysiological and emotional conditions. A few of the effects of MLE include imitative behaviour, focusing, systematic search for relevant data, revocation, retrieval of stored information, comparative behaviour, and the use of more sources of information. A lack of MLE can cause that even a gifted individual, endowed with rapid perceptual and mental processing, can be left underperforming. They may be limited to certain types of incidental learning that are of little help in situations that demand systematic, laborious, selective, and goal-oriented learning (The Feuerstein Institute, 2014).

Early childhood interactions of coaching cognitively struggling peers inspired Feuerstein's work. He refers particularly to when he helped an adolescent boy acquire reading skills, when specialised adult teachers gave up. With the motivation from the boy's father, and time spent by Feuerstein, the boy developed reading skills and continued to develop much more normally. Motivation generated by a culturally determined need system and the resulting proximal MLE succeeded in bypassing and overcoming the barriers that were produced by some distal determinants. MLE plays an important role in the shaping of human adaptability and of ensuring its continuity. This is not only done by enhancing individual cognitive processes, but also by creating the cognitive, emotional, and intentional conditions for the continuity of culture produced by the propensity of individuals to expand their identity – beyond their immediately experienced selves – into the past and future. The needs created by this orientation have their origin in the biosocial nature of human existence. The social components, however, have proven to be stronger than the biological factors alone. The unique flexibility of the human cannot be explained without recourse to the mode of interaction ensured by cultural transmission on the group level and MLE on the individual level. Cultural deprivation, due to a lack of effective cultural transmission or a lack of MLE is manifested as a limited, reduced, or even total lack of modifiability in either a general or a specific area of required adaptation. Such a formulation of the very diverse phenomena of disability helps to perceive these difficulties as structural, rather than as due to some discrete distal etiology. Thus, intervention to remediate a specific dysfunction that is linked

to the modifiability of the individual requires the increase of the modifiability of the individual. If this hypothesis relating to the origins of human intelligence is accepted, then nowadays one can view the need to adapt - in other words, to change behaviour in order to make it correspond appropriately to changes in the situation with which the individual is confronted - as so strong that we may consider 'modifiability,' as defining the concept of intelligence, as the most vital condition for survival. Cognitive modifiability, in this sense, should be considered the prime goal not only of education in the initial stages of the person, but it must also be implanted where it is missing, or increased when the need to change and become modified is exacerbated by the individual's existential condition (The Feuerstein Institute, 2014).

In the dynamic approach, emotional, affective, and personality variables are considered to be interdependent on cognition to play an important role in shaping an individual's behaviour. Affectivity both generates and is generated by cognitive processes. Thus, motivation and attitudes cannot be considered in isolation from such cognitive factors such as knowledge, operations, anticipation of outcomes, and adoption of strategies for achieving particular goals (The Feuerstein Institute, 2014).

Changes in role, techniques, and in instrumentation, all require an openness, a propensity to learn, and become meaningfully modified in formally organised, as well as situationally determined encounters that are missing in many individuals; and may be considered a lack of intelligence and a lack of capacity. Indeed, modifiability may be lacking due to a variety of endogenous and exogenous factors that have triggered a reduced MLE; however, from the Feuerstein perspective, these should be considered states of the human and its cognitive structure rather than immutable, hard-wired traits. The former is modifiable, and the latter, fixed and immutable (The Feuerstein Institute, 2014).

The quality of the MLE interaction that is responsible for the formation and development of modifiability is ensured by the three parameters of intentionality, transcendence, and meaning. The mediator's intentionality turns the stimuli impinging on the organism from a random probabilistic appearance into an organized, directional succession, with characteristics lent to it by the mediator's culturally determined intentions. The mediator's intention modifies the stimulus in order to ensure its registration by the mediatee. Thus, the mediator's intention regulates the intensity, the frequency, and the modality of its appearance. The effects of the intention go beyond the registration of the stimulus, as also affects the mediatee's state of mind, level of vigilance, and alertness. This change in the mental state turns the interaction into a source of structural schemata, the active components of which will affect the individual's mode of dealing with a variety of stimuli. The mediation of transcendence involves the mediator widening the scope of interaction to areas that are consonant with more remote goals. In transcending the immediacy of the required interaction, the mediator establishes a way in which the mediatee can relate

objects and events to broader systems, categories, and classes. Creating the search for similarities and differences, systems of operations are established that will act as a way by which the individual can register the information reaching him/her by direct exposure to the stimuli. The mediation of meaning reflects the need systems of the mediators as a determinant of their intention and their perception of the goals for the future that they set for themselves and their progeny or mediatees. This provides the energetic and dynamic source of power that will ensure that the mediational interaction will be experienced by the mediatee. On a more general level, the mediation of meaning becomes the generator of the emotional, motivational, attitudinal, and value-oriented behaviours of the individual (The Feuerstein Institute, 2014).

These parameters are responsible for variance in modifiability and flexibility of individuals. Modifiability and flexibility are seen to be the most stable and universal qualities, and as such are common to all human existence, irrespective of cultural, socio-economic, or educational levels of functioning. These qualities are thus available to all individuals, regardless of damaged levels of functioning due to cultural deprivation or other impairments. The mediation of intentionality, transcendence, and meaning may have to be varied in term of intensity, frequency, content, and language, to overcome the particular characteristics of the individual (The Feuerstein Institute, 2014).

The diversification of cultural cognitive styles and emotional behaviour can be ascribed to eight parameters, which may turn an interaction into MLE; these include, the mediation of a feeling of competence; mediation of regulation and control of behaviour; mediation of sharing behaviour; mediation of individuation and psychological differentiation; mediation of goal-seeking, goal-setting, goal-planning, and goal-achieving behaviour; mediation for challenge (the search for novelty and complexity); mediation of the awareness of change; and mediation of an optimistic approach. The presence of any of these parameters is situationally determined and varies greatly according to societal, environmental, and cultural factors; and is thus not a prerequisite of MLE. Ecological, historical, and cultural factors will all determine the extent to which the various parameters of MLE will be mediated, transmitted, and reinforced. It is differential mediation that determines the diversification that is characteristic of the individual. Cultural transmission plays a very important role in determining the nature of an individual's cognitive style, personality, emotional responses to constraints, or even to the options presented by the physical environment (The Feuerstein Institute, 2014).

Another MLE parameter that varies greatly between situations, individuals, and to a larger extent, between different cultures, is the mediated regulation of behaviour. This parameter deals with the individual's orientation toward the use of cognitive, as well as metacognitive, means to initiate or delay responses: to control or inhibit behaviour, and to accelerate certain responses according to criteria established through cognition. The regulation of behaviour is extremely important in the

occidental culture where the technologically advanced society requires a highly controlled and regulated mode of behaviour. This can be contrasted with the lesser demands for regulation and control in the more natural and rustic life that encourages spontaneous, uninhibited, and often impulsive behaviours (The Feuerstein Institute, 2014).

Sternberg, as cited by The Feuerstein Institute (2014), considers cognitive styles to be largely the outcome of social, cultural, and environmental factors. Thus, these are not only inherited trends, but to a much larger extent, the result of culture, gender, age, parenting style, and schooling. To consider these variations as socialised *ipso facto*, is to view them as modifiable at least to some degree.

Diversification of human states, orientations, and motivations represents modes of adaptation of the individual to his/her sociocultural environment and is another outcome of MLE. The modes give the individual a sense of identity and belonging in a particular group. The development of differential cognitive and personality styles, as with cognitive modifiability, is strongly dependent on the prior mediational experience of the individual (The Feuerstein Institute, 2014).

A characteristic shared by many culturally deprived individuals, is that, an episodic grasp of reality makes the individual experience perceived stimuli passively without relating them to either that what has preceded and, even less, to what is expected to follow. An episodic grasp of reality makes learning from experience, with its subsequent changes in the individual's cognitive structure, almost impossible. Individuals or groups that have been offered cultural transmission have been equipped with effective modes of perceiving and elaborating their perceptions. This permits them to learn to generalise by actively linking their various life experiences through comparing, coding, and decoding them by summing up the times of their occurrence, by relating them to the time and space of occurrence, and so forth. Out of this linking process concepts, categories, classes, series, codes, symbols, causal relationships, ideological relationships, and other hierarchically higher levels of functioning are derived. These modes have their origin in socially determined, human-based mediational interactions. Individuals will be able to capitalise on the attitudes, dispositions, and modes of focussing and search they have acquired through MLE to adapt to a new culture or environment. Devoid of the prerequisites of learning, due to a lack of MLE and cultural transmission, the culturally deprived person is often unable to identify the new goals that life in the more advanced and higher functioning environment offers. Furthermore, the culturally deprived person is likely not inclined to identify with these goals. A host of cognitive deficiencies may be responsible for a person's limited capacity to benefit from the opportunities to learn, these include the lack of future-anticipatory behaviour; the lack of a need for logical evidence; a limited capacity to define problems and inner and outer sources of disequilibrium; the lack of comparative behaviour that would permit the distinction between the familiar and unfamiliar, and the advantages and disadvantages of certain behaviours; the lack of

a capacity to create systems of priorities consonant with more meaningful needs; the lack of use of diversified information sources; the inadequate control over one's behaviour; a limited representation leading to reliance on the immediately perceived, and the lack of orientation toward using the past and future as sources of guidance for present behaviour; a cognitively determined egocentricity; and other deficiencies (The Feuerstein Institute, 2014).

Mediation needs to be sensitive to the needs of the mediatee. Basic skills and advanced abstract thinking need to be catered for differently and separately. This implies catering for the culturally different, even though modifiable, need to become equipped with conceptual, relational, operational, and linguistic tools, that are not currently in their repertoire, to ensure success in their adaptation to the dominant culture. Once such a systematic investment is made, however, structured cognitive modifiability, which is the result of early MLE, permits the individual to benefit rapidly (The Feuerstein Institute, 2014).

As long as culturally deprived individuals stay in a familiar environment that they have mastered by over-learning, they may not show clear signs of inadaptation. It however becomes problematic when the environment requires more than very limited adaptation. It is then that the deficient functions, resulting from a lack of MLE, have their negative impact and create conflicts whose solutions may not be adequate. There is a sharp differentiation in cultural deprivation and cultural difference. Some individuals may show a large degree of adaptability. Cultural difference refers to someone merely entering a different culture or having to adapt to a more dominant culture, versus someone who was deprived of his/her own culture, or who was not exposed to MLE, or who could not benefit from it. Cultural deprivation both describes the symptoms of passivity and powerlessness toward the environment exhibited by the individual and the characteristics of sub-groups and society. This occurs when the culture decays under too much pressure and older persons lose their ability or belief in their ability to facilitate MLE (Shayer & Beasley, 1987; The Feuerstein Institute, 2014).

It takes time and meaningful investment from the planners of integration and leaders from the group to reorient the group toward its past, and its cultural mores and values. Cultural parsimony, instead of denial, is the key in this regard (The Feuerstein Institute, 2014). It is interesting and relevant to think of this theory in terms of the South African situation, described earlier. As such, the application of this theory to the South African situation is discussed further in the subsequent section of this thesis.

3.3 The Mediated Learning Experience and Instrumental Enrichment Concepts Evaluated and Applied

MLE is today more important than ever – with adaptability being a human quality required more than ever. Also, one notes a general decrease of MLE through the reduction in the pervasive

inter- and intragenerational interactions; a general waning in quality of interpersonal interactions; and breakdown of family structures.

Several studies have shown the value of the MLE/IE approach: Link (as cited by Kozulin & Presseisen, 1995) observed that studies evaluating IE programmes were generally positive in terms of student achievement, student perception, and teacher reaction. Sternberg and Bhana (as cited by Kozulin & Presseisen) reported that a greater amount of exposure to the IE program, in diverse populations, generally led to greater classroom gains, particularly in academic learning. A study by a Canadian Education Department (as cited by Kozulin & Presseisen) showed strong positive results from IE instruction for learning disabled students, leading to the programme being included as an integral part of the province's school curriculum. There have been cases with less than satisfactory results, though, for example Blagg (as cited by Kozulin & Presseisen) reported mixed results with IE, despite being criticised for creating circumstances and additional influences that were unreasonably favourable for the generation of positive results.

According to Elliot (2000), Feuerstein's theoretical formulation contained several conceptual and logical inconsistencies. There is little published empirical evidence indicating that the LPAD has been successfully employed as a means of informing individualised interventions based on differential performance, or that Instrumental Enrichment has proven effective as intervention tool (Grigorenko & Sternberg; Blagg, as cited by Elliot). There are, however, some positive results to be found amongst the available evidence.

A small experimental design study showed particularly large increases in the zone of proximal development (as measured on LPAD), and unassisted scores on Raven's Progressive Matrices (discussed in a later section) for the experimental group, in comparison to a control group which underwent unstructured supportive remediation. A follow-up study two years later showed that this same experimental group outperformed the control group by .85 standard deviations on a test of general intelligence (Shayer & Beasley, 1987).

Notably, Shayer, and Beasley (1987) argue the existence of an exponential learning curve that is still growing by the end of IE. In other words, the true effect of the intervention is in the time following it where students can apply their increased reality processing power to fresh learning. This means that the true test of the effect of such an intervention is on new learning, after the intervention, and not on achievement tests at the immediate end of the intervention. Shayer and Beasley conclude that IE does have a substantial effect, well justifying the time and expense of the programme. However, the final step, of showing that these effects can translate into longer term school achievement, has not been shown conclusively.

In South Africa, the socio-political history and current situation has clearly resulted in a magnitude of societal agents being unable to fulfil their role of social and cultural mediators, with a resulting

limited capacity of the nuclear family to supply mediational needs, and interrupted processes of mediation and cultural transmission (through cultural deprivation).

Lilian Lomofsky, a South African Educational Psychologist, (personal communication, November 30, 2014) provided the researcher with an informal summary of instances where the principles of the Feuerstein approach have been applied successfully in South Africa before. IE was introduced into schools, technical colleges, and colleges of education during the latter part of the 1980's, and many research projects and publications were generated using MLE and the IE programme. Results showed that people who had elements of MLE and IE built into training programmes, including those from historically disadvantaged communities, showed positive gains in their studies and greater success in the workplace (Levy; and many cited studies by the Wits University Cognitive Research Programme, as cited in the aforementioned summary). Training teachers in mediated learning and cognitive approaches showed that it was possible to change teachers' attitudes to underperforming children (Lomofsky & Young, as cited in the aforementioned summary). Various smaller scale programmes are still running currently. MLE is included and taught at various South African Universities and Colleges in undergraduate and postgraduate teacher training psychology courses. There are also other positive outcomes noted in various professional applications over a broad spectrum of activities, including teaching to the deaf and rehabilitation of stroke victims.

There have also been other attempts at creating social change through using the MLE/IE approaches in South Africa. The Globes Institute launched a project to increase the employability of disadvantaged individuals (similar to the AMIR project in Israel). A high-ranking South African delegation visited Israel to sign a cooperation agreement to integrate one million Zulus and hundreds of thousands of other workers into the employment cycle in South Africa (The Globes Institute, 2008). Unfortunately, the researcher could not find further information on the implementation of this project.

When contacted directly (October 22, 2014) and asked about applications in the workplace, The Feuerstein Institute commented that they apply either individual or group LPAD assessments and identify the areas where employees showed the greatest learning potential and identify the weaker areas that need to be worked on. A mix of IE tools are then applied toward the weaknesses along with professional training to bring about the desired results.

According to The Feuerstein Institute (2014), MLE programmes with native Americans taught management, analysis, decision among alternatives, projection of relationships, goal setting, planning, and goal achieving. In an African programme the failure-rate of aerospace technicians in training dropped ten percent after the incorporation of forty hours of IE into four hundred hours of professional technical training. Another programme saw three hours per week of IE incorporated into a technical training programme spanning seven months, after selecting

technicians with the greatest learning potential with the LPAD device. This reduced the cost of sending machines overseas for repairs as they became completely capable to handle all repairs. There have also been several other successful applications in several African countries, for example with the selection with the LPAD device and incorporation of IE into the training of combat pilot trainees. Currently, there is a local network of IE instructors operational in South Africa, although, unfortunately, the researcher was unable to secure a meeting with a local instructor, despite repeated attempts.

3.4 An Integrated Understanding of the Founding Theories of Learning Potential

Kozulin and Presseisen (1995) propose an integrative model that includes both MLE and higher order psychological tools, such as writing, numerical, and other abstract notational systems. This model is in the form of a fourfold matrix of interaction between MLE and psychological tools: (1) positive MLE/tools available; (2) positive MLE/tools unavailable; (3) deficient MLE/tools available; and (4) deficient MLE/tools unavailable:

- Condition 1 is characteristic of normal cognitive development of children who have acquired and sufficiently internalised such higher order tools as written language, numeracy, and so forth. These tools have not only been made available to the child but has been properly mediated to him/her, allowing a meaningful understanding and application thereof.
- Condition 2 is characteristic of culturally different individuals who have received sufficient MLE in their native culture, but who were neither exposed to, nor provided, mediation of higher order psychological tools. The prototypical case of this kind is a child reared in a nonliterate traditional culture that, at the same time, cultivates its own well-articulated means of cultural transmission, and, as such, has general pre-requisites for learning.
- Condition 3 is characteristic of individuals who were exposed to higher order psychological tools but received no proper mediation of them. A prototypical case of this kind would be an individual whose everyday life is attuned to the norms of preliterate, traditional society, but who, at the same time, received formal schooling. Sometimes symbolic tools acquired at school remain unmediated; that is, they are used as tools in a narrow sense, but fail to affect the whole of the individual's cognition. They received adequate MLE in a traditional way but were deprived of proper mediation of symbolic tools. The prototypical example would be Feuerstein's groups of immigrants from a Third World country to Israel. They received high levels of schooling in their home countries, but experienced great difficulties in solving fairly elementary problems. The transition thus interrupted mediated interaction. They did, however, demonstrate high learning potential and responded immensely well to the IE programmes.

- Condition 4 is characteristic of individuals who had no exposure to higher order psychological tools and whose traditional MLE acquisition was disrupted. A prototypical case is a group of individuals who became displaced and whose traditional cultural transmission is disrupted by war, famine, or other major social upheaval. This kind of group chooses to, or is forced to, abandon their traditional way of life, and find themselves on the margins of a new industrial society. The new position makes it impossible to continue traditional mediational practices, and higher order psychological tools associated with school-based learning remain unavailable and unmediated (Kozulin & Presseisen, 1995).

The matrix is not exhaustive or intended for simple classification as the conditions are dynamic and can be transformed through appropriate educational and mediational efforts. They may also involve specific cognitive functions dependent on a specific subculture (Kozulin & Presseisen, 1995). Conditions 3 and 4 are, however, highly relevant when considering disadvantaged individuals in South Africa.

An instrumental enrichment cognitive education system introduces a learner to higher order psychological tools and provides the learner with an intensive mediated learning experience and, as such, is an approach uniquely suited to the remediation of cognitive deficiencies stemming from some form of cognitive deprivation. The ultimate criterion is that of modifiability. Individuals who exhibit high flexibility of modifiability will be capable of changing their functioning, depending on the new hierarchy of cultural demands (Kozulin & Presseisen, 1995).

If one thus adopts Feuerstein's views with regard to learning, intelligence, and modifiability, one may be inclined to view the possible remediation of the poorly developed work-related competency potential variables of the disadvantaged group in South Africa with some optimism. The situation has clearly been caused by insufficient or lacking MLE due to situational variables and can, in accordance with Feuerstein's theory, be remediated by appropriate MLE/IE type activities with individuals who show the highest measured learning potential. It is thus prudent to explore the available research, approaches, and available products in the country in order to understand the extent to which this approach holds relevance for contributing to the solving of the problems delineated earlier, particularly as they present themselves to the HR practitioner. First however, some notable international approaches to learning potential testing are discussed.

3.5 Notable Learning Potential Tests

As one may expect, a wide range of learning potential measures and approaches have been developed all over the world. Reporting on all of these would be very difficult, as in most cases, only very superficial promotional information, or only limited research, is available. Apart from that, the field is vast and attempting to document even a reasonable part of it would be beyond

the scope of this study. Instead, this thesis will focus more on the approaches used in South Africa – in a subsequent section. As for the rest, only one fundamental measure is discussed, along with one other measure which has been developed with the foundational theory of the learning potential field in mind. These demonstrate how the concept of learning potential testing has been put into use.

Raven's Progressive Matrices (RPM) was developed for use in fundamental research into the genetic and environmental determinants of intelligence. This test is seen as a well validated, and widely employed measure of basic cognitive functioning for different cultural, ethnic, and socio-economic groups. RPM is often used as comparative measure when testing or validating learning potential measures (Raven, 2000).

According to Raven (2000), the abilities that are most often thought to lie at the heart of intelligence are much more open to environmental influence than had previously been thought. The two main components of general cognitive ability (known as *g* and discussed further later) were those identified by Spearman, which are educative ability, which is the ability to make meaning out of confusion—to generate high-level, usually non-verbal, schemata, which make it easy to handle complexity; and reproductive ability – the ability to absorb, recall, and reproduce information that has been made explicit and communicated from one person to another. This theoretical framework has been confirmed in numerous studies. Matrarezzo (as cited by Raven) demonstrated that the extraction of more than these two scores from multiple factor 'intelligence' tests is usually unjustified. Ree, Earles, and Teachout (as cited by Raven) showed that the addition of specific factor scores to *g* estimates rarely improve the ability to predict occupational performance.

The RPM tests (of which there are many versions) are made up of a series of diagrams or designs with a part missing. Those taking the tests are expected to select the correct part to complete the designs from a number of options printed beneath (Raven, 2000).

Fernández-Ballesteros and Calero (2000) developed the *Evaluación del Potencial de Aprendizaje* (EPA) instrument – based on the ideas of Feuerstein and Vygotsky, also used to test several hypotheses related to learning potential. During development of the measure, the RPM test was examined to select the tasks that should be included in the EPA. The reasons for using this measure is that the pioneers in the field of learning potential testing (for example Feuerstein and Budoff) stressed the importance of working with tasks with a minimal verbal load, and that were outside of the educational curriculum. For this reason, many learning potential assessments were developed using non-verbal tasks, particularly visual-spatial tasks. To these conditions should be added the knowledge that exists about the cognitive strategies necessary for the performance of the tasks which permit the development of training. Indeed, diverse studies have confirmed that

there exists a single correct strategy perfectly established for each of the series making up the Raven test (Hunt, as cited by Fernández-Ballesteros & Calero). On the basis of these strategies, a training programme can easily be developed (Fernández-Ballesteros & Calero). The Raven test is a very stable measure of inductive reasoning, with test-retest reliability of around .9. Therefore, the results of its application in two successive sessions (test-post-test) should not differ if the training is ineffective. Also, given its low verbal content, this test has been widely used in the assessment of intelligence in socio-economically deprived populations. If improvement occurs after training, individuals from disadvantaged backgrounds with poor initial performance can demonstrate their potential modifiability (Fernández-Ballesteros & Calero).

The training programmes developed as part of learning potential tests are generally based on verbal interactions between the test administrator and the learner with the aim of improving the learner's approach to the task and self-regulation through the provision of significant cues, feedback and generation of strategies. Empirical studies with diverse populations involving the use of different training approaches with matrix problems (for example Feuerstein in the development of the LPAD) have demonstrated the possibility of obtaining improvements in performance that are significant, stable, and consistent (Fernández-Ballesteros & Calero, 2000).

The ultimate learning criterion in the initial studies of learning potential has generally been improvement in performance, either identified in a qualitative way, or established as a significant numerical difference between post-test and pre-test. This has, however, been one of the most controversial points in the studies of the reliability and validity of these techniques, since working with a score representing the differences between pre-test and post-test scores represents several statistical problems, as discussed in a subsequent section of this thesis (Fernández-Ballesteros & Calero, 2000).

The EPA combines qualitative and quantitative approaches. The distinction is based on three criteria, namely, the object of interest, type of interaction established, and the objective of the measurement. Structured procedures would be those where the author's major focus is the final product of the training (how much participants have improved after being trained), where the type of interaction is designed and standardised before the training, and where the final goal is the evaluation of a general ability for improvement (learning potential). In contrast, clinical procedures focus on the learning process (how the learner reacts to each cue given by the assessor), and the interaction is flexible, adapting itself to each individual. The objective of the clinical approach is to establish a descriptive profile of specific deficits in the learner's approach to solutions of the tasks (Fernández-Ballesteros & Calero, 2000).

The EPA, as a dynamic measure, thus combines all the above through obtaining three quantitative scores for pre-test, post-test, and gain – with classification attempted on the gain score. Items are largely based on Raven's type material. The EPA is completed over four days.

The assessment is 68 matrix problems presented on 132 slides. The problems presented include (in the first series) matrices, solvable through a gestaltic algorithm with three possible subroutines, namely continuation of the perceived field, superimposition of the entire pattern, and superimposition centred on a point. The second series combined gestaltic and analytic algorithms. The remaining problems are solved according to an analytic algorithm that includes the following logical operations: maintain constancy, complement/delete, expansion/contraction, movement, and addition/subtraction. These operations are used either individually or in combinations for the solution of a given item. The structured training approach is a dialogue-oriented approach based on the mediated learning approach. The stimulus side of the matrix is shown, and the individual is asked for a response, which may refer, depending on the case, to the final solution or to the rule that must be applied for finding the solution. The individual's approach to the correct answer is reinforced with provision of immediate feedback in that the assessor requests verbal explanation about the correctness or incorrectness of the different response alternatives. This may involve examining them one by one, requesting justification for the strategy followed, suggesting the possibility of other response alternatives, and/or analysing the possible causes of error in each type of problem. The answer slide is shown once more, allowing the analysis of why it is the only correct solution (Fernández-Ballesteros & Calero, 2000).

The approach also allows for the qualitative classification system for analysing errors made during administration, thus allowing for the identification and treatment of those behaviours that may inhibit or interfere with the correct execution of the tasks. The qualitative analysis protocol, although it is not to be seen to negate the quantitative nature of the assessment, can be applied to individuals by observing their behaviour during each training item, and classified according to the categories: error; analysis of the information; answer modality; and appropriateness of the answer. On the basis of these response categories, a profile may be drawn up, which includes most frequent types of error, answer modality usually employed, degree of impulsiveness, and most frequent result at the beginning and at the end of the training. This profile may be useful for the planning of subsequent treatments (Fernández-Ballesteros & Calero, 2000).

The psychometric properties that these kinds of assessments, as assessments of cognitive change through the methodological strategy of test-train-test, must display are:

- Evidence that the training is effective in influencing the dependent variables.
- Evidence that those effects are durable.
- Evidence that changes produced in the test situation predict improvement in other learning situations regarding intellectual functioning (Fernandez-Ballesteros, as cited by Fernández-Ballesteros & Calero, 2000).

The EPA has shown good results in each of these areas (Fernández-Ballesteros & Calero, 2000).

One of the main problems in teaching strategies for solving cognitive tasks of the sort found in intelligence tests concerns a general question regarding the extent to which strategies trained using certain materials transfer or generalise to other strategies and/or materials. There are several levels of transfer, namely at the level of the task, at the level of the construct assessed by similar tasks, and at the level of other related constructs assessed by other more complex tasks (Fernández-Ballesteros & Calero, 2000).

Cognitive training was shown to have a positive effect in populations with organic brain disorders and in another study, with people who were culturally disadvantaged. The EPA showed that its gain score can predict improvement in verbal IQ scores after long term cognitive training and can do much better than a static IQ measure (Fernández-Ballesteros & Calero, 2000).

De Beer (2006) mentions, however, that experimental validation of the ZPD construct is extremely rare – with little empirical validation. Research has not produced convincing quantitative empirical data to support the broad claim that ZPD-based teaching results in better educational and cognitive outcomes.

3.6 Learning Potential Testing: Toward an Application in the South African Context

Elliot (2000) delineates four main reasons for the slow uptake in the use of dynamic assessment that are relevant to consider in South Africa, even though he operates mainly within the domain of educational psychology. Firstly, DA does not consist of a single set of procedures that can be acquired easily with little training, but rather the range of models, techniques, methods, and purposes is vast and potentially confusing to the practitioner. Secondly, dynamic approaches are often time consuming and makes for a slow turnover of assessments. Thirdly, few opportunities for training exists – combined with limited available expertise. Finally, these approaches, by tradition, are more qualitative in nature, and subsequently do not fit well with Western models of professional thinking, which are “proudly empiricist” and view change “through differences in amount rather than differences in kind” (Sutton, as cited in Elliot, 2000, p. 716).

This has led to opinions that dynamic assessment should perhaps not be seen in the same light as traditional assessments and that psychometric properties should be relegated to secondary considerations. Grigorenko and Sternberg (as cited by Elliot, 2000) note that, unlike researchers whose focus tends to be the measurement of change, teachers and applied psychologists are generally more interested in promoting change; thus, for them assessment is most effective when it provides clinical insights that can inform subsequent intervention. As such, Elliot argues that rather than endeavouring to develop superior tools to undertake traditional functions (classification, selection, and prediction), dynamic assessment researchers should highlight the requirement for theoretical, methodological, and professional paradigm shifts and justify this change by emphasising the particular contribution dynamic approaches can make to educational

intervention. The judgements about modifiability/potential will assist practitioners in deciding on the appropriateness of special education placement, predicting future educational success, and gaining an understanding of the nature of the individual's specific strengths and weaknesses and should thus assist in identifying potentially effective interventions. This should particularly assist in the assignment of children to special education – although there are poignant and complex philosophical and practical considerations associated with the application of potential to placement in education, which are beyond the scope of this thesis (Elliot, 2000).

Due to the socio-economic and educational disadvantages many South Africans experienced in the past, and currently, there is, however, a need for assessment that focusses on potential, rather than current ability (Murphy & Maree, 2006), for the purposes of utilisation in the organisational environment, particularly in the context of a multi-stage selection model.

This means that adequate measurement and construct clarity is needed to the extent where the practice is psychometrically and legally justifiable. One does notice, however, that most studies involving the validation of a learning potential model for predicting learning performance, for the most part, have happened outside of the business or work environment – and rather particularly in the educational field, as mentioned earlier.

Many dynamic batteries do not adequately address issues such as reliability and validity, however, any model that seeks inclusion in the psychometric model, needs to be scientifically sound and should certainly provide benefits in terms of their use over and above what is available from traditional measures. Dynamic assessment lends itself more easily to methodological faults and is vulnerable to exploitation for unscientific purposes, more so than traditional tests, due to its precarious handling of psychometric issues. Construct fuzziness, procedural spuriousness, instructional aloofness, instrument inadequacy, and labour intensiveness, are all issues associated with learning potential assessment, that certainly do not inspire confidence when one considers the needs of practice (Jitendra & Kameenui, as cited by Murphy & Maree, 2006). Issues of reliability and validity are not always seen as being part of the paradigm from which dynamic assessment springs. Sternberg (as cited by Murphy & Maree), a strong critic of the dynamic movement, states that the psychometric soundness of DA tools need to be demonstrated.

Dynamic assessment in South Africa is regarded as a process involving a pre-test and post-test design, with some learning or mediation involved in between – that is not strictly defined. The straightforward difference between pre- and post-test scores are seen to be an indication of 'potential' (Murphy & Maree, 2006). These difference scores (or gain scores), merely obtained by subtracting pre-test and post-test scores is, however, not always an effective means of assessing change in the subject and cannot be interpreted directly as indicating potential. Recommendations on solving this have not always been forthcoming, however. When taken in its purest form, dynamic assessment emphasises extensive individual mediation and remediation and does not

emphasise quantitative values. Even though the pre- and post-test scores may have a large degree of reliability, this in no way ensures the high reliability of the difference score. The cumulative effect of error measurement most assuredly influences the difference score. Early studies also merely subtracted pre-test from post-test, though one has to consider the appropriateness of this strategy. In recognition of psychometric problems that result from the use of gain-scores, that is, focusing on the difference between pre- and post-test measures, it is the post-test performance that is generally considered to be more statistically useful (Guthke & Wingenfield, as cited in Elliot, 2003).

As Embertson (as cited by Fernández-Ballesteros & Calero, 2000) states, the reliability of the gain-score depends on, and will be affected by, the reliability of the two scores on which it is based. To solve this problem, Schottke, Bartram, and Wiedl (as cited by Fernández-Ballesteros & Calero) developed a mathematical algorithm, based on linear regression that allows the establishment of a significant gain criterion. This algorithm takes into account the error of estimation of the gain-score from which the classification of the learners into gainers, non-gainers, and high scorers starts out.

Difference scores can be used to differentiate between a disorder and a difference. When pre-test to post-test scores show a significant increase, it shows the ability to learn. A significant gain score is an indication that learning skills related to the task were not present due to some background factor. Small gain scores present two possibilities: The first option is that the pre-test score was not significantly low, and the post-test score is similar to that of the pre-test, indicating that this test-taker did not need to be assessed in this area. However, if the score is significantly lower than average on the pre-test and does not show a significant gain, then a learning disorder may exist that prevented learning (Gutierrez-Clellen & Pena, as cited by Elliot, 2003).

Gain-scores may thus prove problematic when used for comparative purposes. The purpose of dynamic assessment is to determine the extent of learning that can take place in the ZPD during a specifically designed session. Dynamic assessment has been motivated by the inadequacy of conventional tests to provide information about individual differences of learning ability and specific learning processes, which can be large for individuals who are highly comparable otherwise. This is especially magnified with people who suffer mental retardation or those who are culturally different. While Vygotsky included both the initial level of functioning and the ZPD in explaining his theory, the difference score has often (incorrectly) been referred to as that which indicates potential. Because much of the early research in DA involved low-ability examinees with similar (low) initial levels of performance, the initial focus was only on the ZPD or difference score obtained. This can only be done in special cases where the initial levels of performance are equal. However, in all other cases, when one needs to interpret the results of individuals where there are differences in the initial level of the performance and quite likely also differences in the ZPD,

pre-test, and post-test results must be included in the interpretation because, for all such cases, the use of the ZPD (difference) scores without reference to the level at which they occur provides incomplete information. If one were to only consider the difference score as learning potential, then a person with a high (near maximum) initial score (due to being highly intelligent and adaptive, and having an extremely high level of learning potential), will show little to no improvement from pre-test to post-test. His/her difference score will thus be smaller than that of a person who is a low performing individual, due to this person likely being able to produce a bigger gain in scores, despite actually having lower real learning potential. To state this case more plainly, a high-performing academic, who would be able to master a large array of new experiences, would produce both a high pre-test and post-test score due to their high development level. This person would thus show a low gain score, whereas, in comparison, a person with a poor development background and low education would perhaps, by achieving a low pre-test score, and an only slightly higher post-test score, due to learning more from the novel teaching element of the DA than the academic, be able to produce a bigger difference-score. In this example, if the difference score was recorded as being outright learning potential, one might mistakenly conclude that a genius academic will be outperformed in a learning task than a person who is far less capable. Vygotsky's proposed use of both the actual developmental level and the ZPD is thus essential to achieve logical and practically useful interpretations. The focus is on the ability to learn, thus current accomplishment in learning should be taken into consideration (Elliot, 2003).

In South Africa, DA is usually aimed at disadvantaged students and is seen to be culture and bias free, but, as mentioned, takes very long to administer and is very costly to implement. In South Africa, DA is often implemented merely by making use of conventional testing instruments, implemented in a dynamic manner. Sometimes it is a form of assessment that comprises only mediation and individual attention that is wholly qualitative and thus not suitable for larger samples. In practice, it is supposed to be a form of assessment which involves two aspects, namely mediation and assessment, which emphasises previous deficiencies in learning opportunities, allowing all learners to participate on the same level, as far as is possible. The bulk of South African research in this field places emphasis on the assessment aspect, often not considering mediation or remediation at all, or only paying scant attention to it. Murphy and Maree (2006) cite various studies that deem DA unsuitable for the South African context now, due to time constraints, costs, and the less robust reliability and validity indices when compared to more static assessment procedures.

Test batteries in South Africa containing the word 'potential' in their titles, apparently convey the meanings inherent in the terms "ability" and "aptitude", which represent different aspects of intellectual functioning and measurement. These terms are often used interchangeably and thus need to be clarified and understood by practitioners, for the sake of the future of dynamic

assessment in South Africa. There is also the perception that dynamic assessment refers to disadvantaged learners only, although this is certainly the main field of the application thereof, as mentioned above. It can also be applied to gifted learners in disadvantaging circumstances and to average and above-average learners who are struggling with some aspect of cognitive functioning. Those learners from cultures that are not considered mainstream or who have received inadequate mediated learning in the past can also benefit from dynamic assessment measures (Murphy & Maree, 2006).

Murphy and Maree (2006) looks at research in South Africa in response to dynamic assessment. An analysis of various theses, dissertations, and published research (29 studies in total) shows that 21 (or 72 percent) of them have a positive view of dynamic assessment, in that it is able to predict performance to the same degree or better than conventional tests. Six of the studies found partial support and cautiously encouraging results for dynamic assessment in South Africa. These studies include findings such as the types of learners who may or may not benefit from dynamic assessment, as well as evidence suggesting that exposure to training within a testing situation allows a better pre- to post- test transfer score. Certain sub-tests of the LPAD do correlate with certain school subjects. In terms of culture fair testing, there have been results showing that dynamic assessment batteries should be used as initial tools before static measures or in combination with them. Some of the negative findings include that mediation as a strategy may indeed not prove effective in modifying performance. The degree to which a student's performance is modifiable may also not predict or constitute academic success. Also, in some instances static measures exceeded the predictive capabilities of the dynamic measures. Of the 36 tertiary institutions surveyed in the study, 27 percent used dynamic assessment either in the past or at that point in time. There are also other negative results, especially with the Learning Performance Assessment Device (LPAD), in contexts of gifted populations; and also, when attempting to predict academic success at a multicultural tertiary institution using the Ability, Processing of Information and Learning Battery (APIL-B) (discussed later) (Murphy & Maree).

The research is also marred by methodological issues as far as mediation techniques are concerned. Inadequate sample size is also frequently listed as a problem, resulting in poor statistical defensibility of results. It is perhaps too much to expect that researchers should develop and norm criterion tests as part of their studies, however making use of normed criterion variables on samples that are not the normed population skews the results and findings when learning potential tests are compared to these criterion measures (Murphy & Maree, 2006).

According to Elliot (2000) findings suggest that dynamic assessment has failed to produce consistently superior predictive power compared to traditional intelligence measures (Grigorenko & Sternberg, as cited by Elliot). It is however important to realise that traditional intelligence tests do not measure the same construct as learning potential tests, although there is a significant

degree of overlap. Predications based on dynamic measures require an appropriately contingent intervention if they are to be realised (Feuerstein; Haywood, as cited by Shayer & Beasley). Thus, the focus is on the potential gains for the individual with short-term instructional inputs, and what degree of assistance is required – thus, the present readiness to respond to intervention, and not a long-term prediction of performance. Lidz (as cited by Elliot, 2003) mentions, as a word of caution however, that those dynamic approaches that appear to best fit scientific requirements often appear to have less utility for diagnosis and intervention.

In South Africa, the individual administration of learning potential tests is, although it is the most desirable method, not a viable option. The benefits of standardisation, as always, include that a group of learners can be assessed at any one time, and issues of psychometric importance such as reliability and validity can be monitored and measured more easily – thus ensuring equity of test administration (Murphy & Maree, 2006).

There are some locally developed and normed learning potential assessment devices resulting from a shift away from internationally developed tests in South Africa. The majority of studies in South Africa have secondary or tertiary education as their field of application and the main emphasis was placed on the prediction of academic success. While the field of application for dynamic assessment has traditionally remained in the arena of education, this is not the exclusive domain of the approach. It is versatile enough to warrant further research in other contexts in South Africa. Dynamic approaches should integrate important psychometric aspects into its own framework, while simultaneously espousing positive change as its primary goal. One way of doing this is to standardise dynamic assessment tools while remaining cognisant of the fact that norms do not play as large a role in dynamic assessment as they do in conventional assessments (De Beer, 2006; Taylor, 1994). Many researchers claim that there is a large pool of data available on the topic, although the research does seem to be rather fragmented. Viewed collectively however, dynamic assessment research results support the case for dynamic assessment to be implemented and used on a wider scale. Collaborative research is however needed.

3.7 Notable Learning Potential Measures Originating from South Africa

Although there are a wide array of batteries that fall into this category, there are four highly relevant South African learning potential batteries to discuss, namely the Learning Potential Computerised Adaptive Test (LPCAT), and three measures created and distributed by Aprolab (Terry Taylor), namely the Ability, Processing of Information, and Learning Battery (APIL-B), and the Transfer, Automation, Memory, and Understanding Learning Potential Batteries (TRAM I & II).

3.7.1 The Learning Potential Computerised Adaptive Test (LPCAT)

The LPCAT is an example of a more measurement/psychometric approach to dynamic assessment. The LPCAT is a dynamic and adaptive learning potential test focussed on measuring the general fluid reasoning ability or 'g' domain (mentioned earlier and elaborated on in a later section of this thesis). It uses non-verbal figural material, as this is seen to show less bias in multicultural assessment. Verbal content, in particular, often underestimates the cognitive ability of African language test-takers. Responding to such non-verbal figural pattern items requires common reasoning skills such as identification, comparison, and recognition of relations (De Beer, 2010a).

De Beer (2006) pitches the LPCAT as a solution to some of the concerns surrounding learning potential testing, including the time taken to complete the measures, the lack of reliability and validity information, and the lack of standardisation, as specifically mentioned by Grigorenko and Sternberg (as cited by De Beer). Despite the general positivity towards dynamic testing, these factors have been standing in the way of general practical application and usage, as discussed earlier.

The LPCAT was conceptualised based on the practical need in South Africa for instruments that can be group-administered, with the purpose of identifying individuals, over a broad spectrum of ability, who show the potential to benefit most from further training and development. The developers linked dynamic assessment and Computerised Adaptive Testing (CAT) based on item response theory (IRT). At the core of IRT methods are three features, namely that item difficulty and individual ability are measured on the same scale; item characteristics are sample-independent; and individual abilities are item-independent (Embertson; Weiss, as cited by De Beer, 2006). This makes possible a form of CAT in which a unique set of items is selected for each test-taker during test administration, so that items presented to individuals are continually and interactively selected from a bank of available items to match the estimated ability of the individual at that point in time (Weiss, as cited by De Beer). IRT furthermore allows for the accurate measurement of difference scores, and CAT shortens testing time (De Beer). IRT-based analysis was used to perform bias analysis of items (in terms of gender, culture, language, and level of education) with a large ($N = 2\,450$) representative sample (De Beer, 2005). Classical test theory, as well as IRT item analysis, was performed, and items that did not meet the criteria in terms of measurement properties or differential item functioning (DIF) were discarded in the compiling of the final test. The item characteristic curves of different subgroups were compared to determine the extent of DIF (De Beer, 2005).

Two separate, but linked, adaptive tests are used for the pre-test and post-test respectively. The total testing time is nearly one hour. The advantages of computerised adaptive models are that testing time is shortened, and the results are available immediately after completion of the test.

Although the test is computer-based, candidates need only use the space bar and enter key, and as such computer literacy is not a requirement to take the test. The training that is provided between the pre-test and post-test is aimed at explicating the applicable reasoning strategies, by providing more example questions in which the basic principles, building blocks, and general strategies for answering the particular types of questions are provided. Questions are not repeated from pre- to post-test (De Beer, 2010a).

As a dynamic CAT, the LPCAT must be computer-administered to permit for the interactive selection of appropriate items for each individual, depending on the response pattern and the estimated performance level at the time. In CAT, a bank of pre-calibrated items is available for presentation during the testing process. Unlike standard tests, which all individuals who take the test complete the same items in the same sequence, CAT presents a selection of items unique to each individual, while continuously selecting items to be presented based on their difficulty level, matching the individual's estimated ability level at that point in time. Candidates will also receive different numbers of items with a minimum and maximum number of items pre-set to be used during administration. Test termination is only partially linked to the number of items. It is also linked to the accuracy of measurement, which in turn depends on the psychometric measurement quality of items presented. Entry level to the pre-test is set, thereafter the following steps are repeated until the testing is terminated:

- The first item presented is the item that measures best at the predetermined entry level (the best psychometric quality item available in the bank that has a difficulty level closest to that of the initial level of ability).
- When the respondent answers a question, three things happen:
 - If the item is answered correctly, the respondent's estimated ability level is readjusted upwards – assuming that, since the question aimed at the entry level of ability was answered correctly, the respondent has a higher level of ability. If the item is answered incorrectly, the respondent's estimated ability level is adjusted downwards, based on a similar assumption as above.
 - The characteristics of the item presented are also used to calculate an accuracy index, reflecting the accuracy of the ability estimation at that time. A check is done to determine whether the termination criteria are met – if they are, then the test is terminated. The test terminates as soon as the required level of accuracy or the maximum number of items is reached.
 - If the test is not terminated, the next question selected will be the one in the bank that measures most accurately and provides the best information at the current newly estimated ability level.

- When the next item is presented, the process repeats, and does so until the termination criteria are met (De Beer, 2005).

One of the advantages of CAT is that items of appropriate difficulty level are presented throughout testing, thereby not overwhelming or boring participants (De Beer, 2011).

There are two versions of the LPCAT – one with no language text on screen, for which instructions can be read in any of the eleven official South African languages; or one with either English or Afrikaans text on screen. A grade six or seven reading level is required in the language of administration for the text-on-screen versions. The entry level (initial estimated ability level) is lower for the version of the test that has no text, although due to the adaptive process, this does not affect these individuals in terms of their possible final scores. The same introductory practice examples and example items for training are used for both versions (De Beer, 2005).

The results are presented in graph form, and reports can be generated showing the pre-test score, post-test score, difference score, and a composite score (which is a reasoned combination of the pre- and post-test). The levels of performance in both the pre-test and post-test should be noted, as well as the patterns and gradients of the graphs. The estimated ability/performance levels after answering each question are plotted, and these levels, as well as the number of questions answered, can be seen in both the pre- and post-test plots. In the pre-test, between eight and twelve questions are administered adaptively from an item bank of 63 questions, while in the post-test, between 10 and 18 questions are administered adaptively from a separate post-test bank containing 125 questions. The performance level at the end of the pre-test is used as the entry level of the post-test, thereby maximising the accurateness of it (De Beer, 2006; 2013).

Stanine and percentile rankings are also provided for the pre- and post-tests, however these are less useful than the T-scores, which are used for the interpretation of the level of reasoning revealed in the tests in relation to the National Qualifications Framework or academic levels (De Beer, 2005).

Interestingly, the LPCAT compares to early dynamic tests on several dimensions. According to Weiss (as cited by De Beer, 2006) the original dynamic test by Binet and Simon also had a variable entry level, items were scored during administration, results were used for further branching and selection of additional items, and the test also had a variable termination criterion.

Challenges associated with the LPCAT could include limited face validity for individuals at higher educational levels, since its content is unrelated to job performance or training at higher levels; the reliance on computer technology means that the assessment is vulnerable to technical or electricity problems; it does not provide a direct link to a particular career or job level and other information will be needed for career-related guidance and decisions; and ongoing software

updates are required. Future developments for the LPCAT include internet-based administration (De Beer, 2010b).

3.7.1.1 The psychometric properties of the LPCAT

There have been numerous empirical studies on the psychometric properties of the LPCAT during its development and validation, as well as in the time since its release in 2000.

The reliability of CAT's is not measured in the same way as standard classic tests, due to the individualised test questions (although the scores obtained are on the same scale that measures the latent trait of the domain). McBride (as cited by De Beer, 2013) indicates that adaptive tests can achieve higher reliability compared to conventional tests in the upper and lower extremes of the ability scale, and at the same time reach a given level of precision, using substantially fewer items than standard tests. The IRT equivalent to test score reliability and standard error of measurement of classical test theory is the test information function. This reflects the level of information available at a given ability level, as a result of the number and quality of items available at that level in the item bank. The standard error is a function, which means that it is not a single measure over the entire ability range, but is calculated across various ability levels, based on the amount of information at different ability levels. LPCAT coefficient alpha reliability levels range between .926 and .981 for subgroups based on gender, culture, language, and level of education for the standardisation sample of 2450 grade nine and grade eleven learners (De Beer).

The validity of a test refers to the usefulness of a test for various groups in different contexts. It usually requires evidence of the relationships between the test and some other independent measure which reflects the construct or behaviour of concern. Although DA was previously criticised for its lack of empirical psychometric evidence, this has changed somewhat in the twenty-first century. The construct and predictive validity for the LPCAT is visible in results of samples at different educational levels, from low-literate adults, to tertiary university students - though of all the studies listed by De Beer (2011), only two are with adult groups. These groups were from an industry environment and included members of the designated groups. One in particular stands out, with 194 Black males, where the LPCAT correlated well with Adult Basic Education and Training (ABET) scores and a similar measure (Paper-and-Pencil-Games (PPG)) showing construct and predictive validity (De Beer, 2011).

A study on 52 (mainly White) production employees at a polymers company showed strong relationships between learning potential and English language proficiency. No support was found for the hypotheses relating to the predictive validity of the LPCAT and the English Second Language Proficiency Test when the criteria were training results (Schoeman, De Beer & Visser, 2008). This study also showed that language proficiency is a large issue in the business environment, as English is the business language and, in general, *lingua franca*, and as such

impacts on learning, training, and performance (Huysamen; Van Eeden; De Beer, & Coetzee; and Van Rooyen, as cited by Schoeman, et al., 2008). Most Black people prefer to receive their education in English (Rossouw, as Schoeman, et al., 2008). According to Van Eeden, De Beer, and Coetzee (2001), English proficiency seemed to influence performance on both the predictor (LPCAT) and criterion measures (first year academic performance) in a study of N=224 grade 12 students.

High school grades have been found to correlate with subsequent academic and work performance. Shochet (as cited by Van Eeden, De Beer, & Coetzee, 2001), argues that grades obtained in a disadvantaged school system cannot accurately reflect academic potential. Van der Merwe and De Beer (2006) does note however that Matric results do correlate with tertiary academic performance, even for disadvantaged students and despite poor schooling standards in South Africa.

Van den Berg (as cited by Van Eeden, De Beer, & Coetzee, 2001), argues that language proficiency is the single most important moderator of test performance as it reflects familiarity with concepts and access to the language medium through which knowledge has to be gained.

The acquisition of second language literacy is furthermore influenced by proficiency in the first language, the motivation to learn the second language, as well as cultural determinants. This is an important consideration in the South African developmental context (Van Eeden, De Beer, & Coetzee, 2001).

The LPCAT is registered with the Health Professions Council of South Africa (HPCSA) and can be used in contexts in which decision-making involves obtaining information related to required future performance or development and training levels (in terms of the NQF level framework). It has shown statistically and practically significant predictive validity for academic results at different levels. The individual's level of required functioning can be compared with his/her current and potential level of functioning. Smaller improvement scores indicate that the individual is likely to perform at similar levels in the future, as currently. Larger improvement scores indicate that the individual can be expected to perform at higher levels in the future than those currently shown, provided that effective and relevant development opportunities are provided. The LPCAT scores can be used to determine the appropriate level at which assessment can be targeted, with due consideration to actual academic attainment De Beer (2005; 2010a).

3.7.2 Taylor's approach to learning potential testing

TRAM 1 and TRAM 2, as well as the APIL test, make up a suite of learning potential batteries, designed for application to a wide educational spectrum. These measurement instruments were developed by Dr Terry Taylor. After many years of working for the Institute for Personnel

Research and publishing extensively, both nationally and internationally, he started his own company in 1994. The company, specialising in the assessment of learning potential, is named Aprolab and sells the aforementioned test batteries from their offices in Johannesburg. Apart from Dr Taylor, they employ at least one full time Independent Practicing Psychometrist (Aprolab, 2007).

Taylor contributed to future research in learning potential testing by creating a viable underlying theory to the structure of intelligence and the functionality of learning performance. He reviews three traditions in psychological measurement, namely the conventional psychometric approach, the information processing approach, and the dynamic or learning potential approach. Although the three elements have developed relatively separately and are not linked by significant theory, Taylor suggested a combination of them in terms of a test battery and accompanying underlying theory (Taylor, 1994).

From around the seventies, the information processing approach and dynamic approach gained traction. The information processing approach somewhat resurrected Galton's approach to searching for the underpinning of real-world problem-solving skills in processing speed and acuity on simple tasks. The learning potential approach continues the tradition of regarding learning as the key factor underlying cognitive competence and the mastery of problems and challenges, as discussed earlier. Taylor (1994) mentions that these approaches have in the past failed to yield much in the way of practical measurement instruments, such as those which could be used for selection and/or vocational guidance. The criticism faced by traditional measures, as well as the prospect of testing for potential or learning potential, has caused the interest in these kinds of approaches to increase, in terms of the situation experienced in South Africa, as discussed earlier. Almost all the research and theory development in this tradition has been of the individual differences type (Cronbach, Taylor, & Verster, as cited by Taylor), and has made extensive use of correlational and factor analytic techniques in resolving theoretical and empirical questions. Spearman (as cited by Taylor), the first researcher to use the factor analytic method to identify underlying structures in the cognitive domain, concluded that there is one general factor, namely 'g', that underlies performance on all cognitive tasks, and a number of specific factors that contribute to performance on certain activities. Thurstone (as cited by Taylor), using a somewhat different factor analytic technique, came to a different conclusion, and identified between seven and nine 'Primary Mental Abilities,' such as numerical ability, verbal ability, memory, and spatial ability. Burt (as cited by Taylor), then concluded in his factor analytic research that cognition is hierarchically ordered, from sensory processes to relational reasoning, a g-like construct. Many other cognitive researchers continued the factor analytic tradition, including Ackerman, (also cited by De Goede, 2007), each producing a different proposed structure of intellect. According to Taylor, one of the best-established theoretical positions is that of Cattell, who offers a higher-order theory which distinguishes two forms of intelligence, namely fluid and crystallised. The

former is a basic inherited capacity as developed by an interaction with environmental characteristics which are found in any society, whereas the latter is specialised skills and knowledge promoted by and required in each social or cultural environment. Cattell's culture-fair subtests were designed to assess fluid intelligence. Their medium of presentation is abstract diagrammatic, and the tasks involve such apparently universal activities such as series completion, pattern recognition, identification of conceptual odd-ones-out, classification, and identification of conceptual relationships. There is evidence in support of the cross-cultural validity of the fluid intelligence construct. The Cattell model is also amendable to dynamic, learning, or developmental interpretations. There are some widely used tests such as the Figure Classification Test, which measures fluid intelligence (Werbelloff & Taylor, as cited by Taylor). Use of this type of test has been on the increase (Taylor).

Most test construction however tends to be based on a Thurstonian model, for example many tests in South Africa measure constructs closely related to the so-called Primary Mental Abilities. Most of these would be classified as crystallised abilities and are as such affected strongly by culture and prior schooling, which leaves them open to question, considering the South African history discussed earlier (Taylor, 1994).

The first issues with measures of crystallised abilities are the matters of construct integrity and the meaning of test scores in different cultures, which in psychometrics is dealt with under the rubric of comparability or bias. Taylor and Boeyens (as cited by Taylor, 1994; 2013), conclude that there are basically three main varieties of comparability, namely construct, score, and predictive – of which construct comparability has been identified as the most significant. This tends to be an issue, as the psychological constructs that conventional tests measure, tend to be quite broad, and are often not well defined. Sternberg (as cited by Taylor, 1994), points out that different tests, which purportedly measure the same construct, frequently tap only partially overlapping skills and processes. He uses this argument in support of his contention that the factorial construct is too gross for a viable theory of cognition and should be abandoned in favour of a more fine-grained analysis of cognitive functioning based on processes. However, even when there is no evidence of incomparability of test scores across groups, the defensibility of using scores which may maintain the status quo as far as existing privilege and disadvantage (as discussed earlier in this thesis) is still questionable. This is the case, as these measures will report on skills and abilities, which the previously disadvantaged members of the South African population have not been allowed to attain. This disadvantage will thus prevent them from accessing desirable positions in jobs and universities. The economic utility that these measures do provide however, will thus have to be compensated for in the use of scores, such as the use of sliding bands or separate norms, although, as discussed earlier, this will not be seen to be a sincere method of addressing the problem at hand. The measures of potential have thus indeed been identified as compatible with redressing the wrong of the past (Taylor, 2013).

The information processing approach began to establish itself as the basis of cognitive psychology in the 1960's, when the emergence of computer and related concepts began to be seen as fruitful modes of understanding human perception, thinking, and problem solving. Most of the significant paradigms in that time produced tests that elicited scores of a chronometric nature. According to Sen (as cited by Taylor, 1994), after reviewing several information processing variables, rudiments of mental abilities of human beings can be tapped by gauging information receiving, processing, and retrieval speeds that would be relatively free from the scope of availability of knowledge and other environmental variables. Other variables have also shown promise as cognitive correlates. Working memory, in particular, has been shown to correlate strongly with fluid intelligence measures. The simplicity of information processing measures was also seen to provide promise in terms of their likely lack of cultural influence, however little cross-cultural research has been done into this effect. There is little proof of the effectiveness of an information processing battery for predicting practical criteria such as work performance or educational success. The correlations with Raven's Progressive Matrices are promising, however fluid intelligence tests in themselves obviously do not represent relevant or interesting criteria. The information processing approach also requires computer administration (Taylor, 1994).

Taylor (1994) also considered the views of the forerunners of learning potential assessment. Vygotsky took the view that the attainment of cognitive competence is a social phenomenon. Adults and older peers pass on to children the knowledge and skills required in their culture. Thus, in effect, they play the role of metacognitive or executive processes in assisting children conceptualise and interpret the world and solve problems. Later, these processes are internalised by the recipients of this mediation who then make the intelligence or skill their own. Vygotsky acknowledged that individuals diverge in their capacity to benefit from mediated learning experiences. The concept of the zone of proximal development defines this difference between unassisted performance and performance attained through mediation. Feuerstein's theoretical position and method of assessing is strongly in the Vygotskian school. Vygotsky's perspective does however not explain the modest early relationship between intelligence, as observed by IQ tests, and learning ability. The early studies, however, involved very simple learning tasks, and psychologists started studying learning in more complex knowledge domains later. Marshalek, Lohman, and Snow (as cited by Taylor, 1994), ascribe to the idea that a radex map describes the relationship of abilities effectively, with more complex and g-loaded abilities clustering around the middle (with fluid intelligence, g, right at the centre) and specific abilities and low complexity speeded activities falling further out in verbal, spatial, and numerical sectors of the radex. Fluid intelligence is a function of the cognitive strategies available to the person; presumably many of those which play a role in each ability also assist in the process of transfer (Hunt, as cited by

Taylor). Sternberg (as cited by Taylor) sees coping with novelty and automatisation as learning concepts fundamental to intelligence.

There have been several approaches devised for assessing learning potential, of which there are three main approaches.

Budoff's (as cited by Taylor, 1994), approach is to pre-test subjects on a block-design or Raven's type task, and then to re-test after simple practice and task specific training. Feuerstein, in contrast, assesses pre-test to post-test improvement in response to elaborate mediation designed to develop thinking skills. Campione, Brown, Ferrara, Jones, and Steinberg (as cited by Taylor), concentrate on learning potential as transfer and assess it as an inverse function of the number of hints required. Dynamic measures have been found to have considerable variance compared to static tests. In addition, certain individuals who produce poor showings on static tests produce considerably better performances on dynamic measures (Budoff; Laughton, as cited by Taylor).

The conceptual and theoretical advantages of learning potential include that they seem to neutralise or equalise the amount of relevant learning experience across cultures. This is achieved by selection learning tasks that are initially unfamiliar to all (Hegarty, as cited by Taylor, 1994). Even if there is some variation in initial familiarity with the material, the improvement score may be less contaminated with bias than the score on a conventional test. The reason for this is that the bias may be a roughly constant factor throughout the learning process and will thus be effectively cancelled out when the improvement score is calculated. If the gain score is stated as a normed percentage improvement over the individual's initial performance, such a score may even be used as a method of implementing affirmative action in a way that does not require the tester to record the subject's cultural background, race, or other biographical information. The reason for this is that it is 'easier' to obtain a high percentage improvement over an initial score which is depressed by disadvantage than it is to achieve a similar improvement on a high initial score. Another approach which may achieve a similar effect is to measure learning potential as the difference between an individual's actual final score and the predicted final score as determined by the regression of the final score on the initial score. This index reflects the extent to which the person underperformed or overperformed relative to others in the sample with a similar initial score. Embertson (as cited by Taylor), points out the superiority of this residual score over a simple difference score.

Certain questions remain, however, about learning potential testing, as there is much still to be done in terms of providing evidence in support of the predictive and construct validity thereof, not to mention showing how to apply it practically in a South African environment.

Test-train-test formats may be somewhat problematic because subjects may be confused by inconsistencies between self-generated learning strategies developed in the initial test and the

strategies taught in the training session (Boeyens, as cited by Taylor, 1994). Gain scores may be unreliable unless special effort is made to optimise the reliability of pre-test and post-test measures and maximise the size and variance of difference scores. There is an apparent paradox concerning the interpretability of a difference score as its reliability is inversely related to the correlation between pre-test and post-test; hence a reliable difference score can be seen as the result of comparing “apples with pears” (Cronbach & Furby, as cited by Taylor, 1994, p. 189). However, traditional psychometrics is not fully appropriate for learning tests and Embertson (as cited by Taylor) has developed a model which largely resolves this apparent difference score paradox. The model treats certain components of variance which would traditionally be regarded as error, as systematic.

Taylor (1994; 2013) sought to combine the ability, information processing, and learning traditions in cognitive psychology, in order to devise a test battery that would be appropriate for the use in multicultural environments. Speed, as aspect of cognitive competence, is deemed by some information processing theorists as the entire foundation of intelligence and problem solving, along with processing capacity. It is also recognised by others as important, however, there is much consensus that intelligence is founded in a broader set of constructs. Spearman (as cited by Taylor, 1994), outlines intelligence as the education of relations and correlates. Cattell’s concept of fluid intelligence is accommodated by this to a large degree, namely in the education of relation, or the inference of rules and formation of concepts. Cattell’s crystallised intelligence involves rule application, which also relates to this definition. Taylor combines the views of information processing speed and capacity with the potential to infer concepts or rules – and thus thinking abstractly. According to him the two potentialities are related, but separate. Both factors are biologically or genetically endowed and set an unalterable upper limit on performance. They are not directly measurable, although empirical information processing measures may provide a reasonably accurate reflection of fundamental processing efficiency. Conventional ability test scores, however, are further removed from the fundamental potential to form concepts and think abstractly.

Ackerman’s cylindrical elaboration of Snow, Kyllonen, and Marshalek’s (as cited by Taylor, 1994; and importantly, also by De Goede, 2007) circular (or radex) cognitive model (mentioned earlier) supposes that competencies located near the centre of the cylinder are more general and are more closely related to the genotypic potential. Progressively larger concentric rings contain skills which are ever more specific and remote from fundamental potential. These rings also reflect the process of transfer in development and learning. The vertical dimension of the cylinder represents a speed dimension. Starting from the top, each successive ‘slice’ through the cylinder contains skills which are of an increasingly speeded nature. As development proceeds, skills and knowledge accumulated in past learning have a growing impact on the emergence of new skills. Kyllonen and Christal (as cited by Taylor), in fact distinguish four sources of variance in individual

learning, these are knowledge and skills (the enablers) and processing speed and processing capacity (the mediators). The enablers would thus be expected to play a crucial role in the transfer required for the development of later emerging skills (those on the periphery of the Ackerman cognitive cylinder). The mediators would be expected to impact on the development of the speeded skills in the lower reaches of the cylinder. Several authors have distinguished three phases of learning, namely conceptual understanding of the task, compilation of execution procedures, and the automatisation of processing. Abstract thinking is likely to play a role in the initial phase and then processing speed and capacity will likely play a larger role as learning progresses. As automatisation progresses, skills shift outwards and downwards in the cognitive cylinder. Measures in the core of the cylinder provide the best estimate of the individual's fundamental potentiality. Those skills at the periphery are the product of a more extensive process of learning and transfer. The impact of developmental opportunities is more apparent at the periphery than at the core. If developmental opportunities are equalised, individual differences in skills at the periphery will be largely a function of personal endowment of the two fundamental cognitive factors. In South Africa, however, there has been great inequality in the distribution of opportunity. Thus, there are fairness concerns in using tests of specific skills to make selection decisions, although in some applications their use may be justified (Taylor).

The difference between learning performance and learning potential, according to Taylor (1994), is conceptualised as learning equivalents of crystallised and fluid intelligence. Learning performance is demonstrated when an individual acquires specialised skills through transfer from other specialised skills or abilities. The more developed a person's skills repertoire, the more effectively and swiftly he or she is likely to acquire the new skill. Learning potential is shown when a person comes to grips with a novel learning task involving unfamiliar stimulus material; in this case previously developed specific skills are of relatively little assistance, and the learner must use very general transfer and skill acquisition strategies. Similarly, general strategies are needed to solve abstract problems of the sort encountered in fluid intelligence tests. The critical learning aspects to measure thus are the implementation of general transfer strategies in dealing with novel material, and the early stages of automatisation and what can be termed 'proceduralisation'. Although it may be unwise to attempt a precise one-on-one mapping of the two basic intellectual factors, onto these learning variables, it appears that transfer and abstract thinking capacity are related, and automatisation and processing efficiency are related (Taylor).

Taylor (2013) thus proposed a battery that would consist of a combined content and construct oriented approach with tests measuring in the four domains of fluid intelligence, information processing, transfer in tasks designed to assess learning potential, and automatisation in such tasks. Measures of fluid intelligence and information processing speed and capacity are not direct or pure indices of biological or innate potential. These phenomena have, to some extent, already been conditioned by interaction with the environment. Therefore, the assessment of actual

learning tasks in order to measure learning potential directly, is warranted. The learning assessment instruments included in Taylor's approach are thus the kind designed to measure the potential to benefit from repeated exposure or factual feedback, and not the potential to benefit from mediation intended to develop thinking skills. Taylor also emphasised the need to use stimulus material removed from the fields of language and mathematics and focus rather on abstract-diagrammatic material.

Employers and educationalists may however justifiably want to know about a candidate's verbal or numerical skills, for these may have a bearing on whether the person will be able to perform in the job or training and may have very little correlation with learning potential scores. In such cases, test materials very close to the actual skill demands could be administered and the scores interpreted as pure skills and not measures of intellectual capacity or potential. It seems that it would thus be desirable to invest in research that truly tests the use of learning potential testing in an applied organisational setting (Taylor, 1994).

The first two components of Taylor's proposed battery (abstract thinking capacity and processing speed) are regarded as 'static' in that they are to be measured in a non-learning way. The second two (transfer and automatisation) are considered 'dynamic' as they are to be measured in the actual process of learning. These four components have been split into sub-components and so make up the various sub-sections of the TRAM tests, mentioned earlier (Taylor, n.d.). Transfer would be measured by a series of sets of novel non-verbal problems, differing in nature from the preceding sets, and becoming more complex (shifting target), in which the test-taker continuously has to develop new solutions based on previously developed solutions and insights. Automatisation can be measured via the increase in output of a task performed repeatedly over a number of sessions where speed is determined by the extent to which the elements of the task have been automated. The steepness of the learning curve is thus the focus of interest. Non-verbal, geometric, abstract, or diagrammatic test material is favoured in all instances. Measuring transferability and automatisation rates require dynamic content-oriented assessment techniques because the desired descriptions can only be obtained by observing the process of transfer and automatisation (learning) over time (Taylor, 2013). These two measures could thus be described as competency measures (Theron, 2010a).

The APIL-B, TRAM-1, and TRAM-2 tests, all distributed by Terry Taylor's Aprolab, have all three been classified by the HPCSA, and are discussed briefly below, as per Taylor (n.d.; 2013).

APIL-B, intended mainly for application to individuals with tertiary education or aspirations for tertiary education, is the longest of the batteries, producing eight scores. The battery takes about 3 hours and 45 minutes to administer; however, it is possible to administer individual parts of the battery. The shortest recommended version takes about 2 hours. A global score is also available, irrespective of how many subtests were administered.

The eight scores produced by the full APIL are:

- Conceptual reasoning ability or fluid intelligence.
- Speed of information processing.
- Accuracy of information processing.
- Flexibility of information processing.
- Steepness of learning curve in automatisation exercise.
- Total amount of work done in automatisation exercise.
- Memory and understanding.
- Transfer of learning (Taylor, n.d.).

The fluid intelligence test, known as the Concept Formation Test, has an odd-man-out format and comprises six quasi-geometric drawings, one of which is conceptually anomalous (Taylor, n.d.).

The information processing mini-battery comprises three ‘pure’ sub-tests (called Series, Mirror and Transformations) and one mixed sub-test (called Combined Problems). All problems consist of a row of symbols, one of which has been replaced with a question mark. The respondent has to say what symbol the question mark represents. Although the pure tasks are simple, limited time is given so that very few manage to finish (which is also the case for the Combined Problems subtest). The speed score is the total output across the three pure tests. The accuracy score is a function of the error rates across all four subtests, and the flexibility score reflects performance on the Combined Problems sub-test in comparison to performance on the pure sub-tests (Taylor, n.d.).

The automatisation scores are based on a test called the Curve of Learning Test which consists of four sessions in which the respondent translates symbols into well-known, high-frequency words using a mock ‘dictionary’. Interspersed between these sessions are study periods during which the respondent may study this dictionary. After the fourth work session, a test called Memory and Understanding Test is presented, which tests the respondent on gained knowledge of the dictionary (Taylor, n.d.).

The final dimension, transfer, is measured with a test named the Knowledge Transfer Test, which requires the test-taker to associate shapes known as ‘pieces’ with symbols that represent them. Learning takes place through study and feedback. The universe of pieces and symbols grows as the test progresses and so does the complexity of the relationships between them (Taylor, n.d.).

TRAM-2 is meant for individuals with 10-12 years of education, takes two hours and 45 minutes to administer. Unlike the APIL-B, the TRAM-2 measure must be administered in its entirety. Testing time is about 2 hours and 45 min. It produces the following scores:

- Abstract thinking or conceptual reasoning ability (Concept Formation Test).

- Speed of information processing.
- Accuracy of information processing.
- Steepness of learning curve in automatisation exercise.
- Memory and understanding.
- Transfer (Taylor, n.d.).

Fluid intelligence is measured with a test similar to, but less difficult than, the conceptual test in the APIL-B measure. Learning rate is assessed by giving the individual a symbol translation exercise similar to the APIL-B's Curve of Learning exercise. There are only two sessions, separated by a lesson and study period. This structure constitutes what is called Phase-A of the battery. Learning rate is a function of the difference between the person's performances in the two sessions. Transfer of learning is assessed by giving the person a second symbol translation exercise called Phase-B, which has material related to, but different from, the Phase-A material. The transfer score is the person's performance in Phase-B minus the performance in the first part of Phase-A. A final test measures the person's memory and understanding of the material. The questions are drawn from the Phase-A and Phase-B dictionaries. A global score is calculated, based on the six component scores (Taylor, n.d.).

TRAM-1 is meant for individuals with 9-10 years of education, and no reading is required. TRAM-2 requires a certain moderate level of literacy (the ability to follow the test instructions in the test book as they are read out, and to use a separate answer sheet), TRAM-1 requires no literacy, as the instructions are verbally given in one of six languages: English, Zulu, Xhosa, South Sotho, Tswana, and Afrikaans. The test takes up to three hours due to time taken to ensure that test-takers understand the instructions. The structure of the battery is very similar to that of TRAM-2, but the conceptual test is omitted due to time constraints. It produces the following scores, along with a final score:

- Speed.
- Accuracy.
- Learning rate.
- Transfer.
- Memory and Understanding.
- Composite Score (Taylor, n.d.).

All material is pictorial and there is no separate answer sheet. To respond to an item, the subject places a cross over the picture of his or her choice in the test book. Two versions of the material are available, namely a reusable plasticised version where the individual uses a water-washable pen, and a pencil-and-paper non-reusable version (Taylor, n.d.).

3.7.2.1 Psychometric evidence for Taylor's assessments

Taylor (as cited by Pelser, Bergh, & Visser, 2005) has produced various studies examining the validity and reliability of the Aprolab tests. These include intercorrelation analysis, and comparisons with scores on job performance, ABET scores, and scores on other cognitive tests.

In the APIL-B manual, intercorrelations are presented for six samples, although there are thirteen norm groups for the battery. The most general and representative sample reveals that intercorrelations vary between .42 and .85, with only three correlations less than .5. For the eight component scores, mean reliabilities were .82 for the CFT, .88 for the speed measure, .79 for accuracy, .79 for flexibility, .95 for the learning curve total, .66 for the learning curve difference score, .77 for memory, and .8 for the transfer score (Taylor, n.d.).

The APIL-B technical manual does report on various validity studies, for example one where the learning curve, automatisation, and memory scores showed reasonable correlations (around .3) with an overall performance rating when a study was completed at a beverage company with n=110. Similarly, a study with n=137 applicants for bursaries for commerce degrees offered by a financial institution showed a .53 correlation between the APIL-B global score and an independent performance rating (Taylor, n.d.).

The APIL-B was also administered to over 2 400 first year applicants to a South African university. Correlations with academic subjects varied between .14 and .69. A small subsample of n=110 students also completed the Human Sciences Research Council's General Scholastic Aptitude Test. The global score of the APIL-B correlated .7 with this test, hence a measure of learning potential seemed to share about 50 percent of its variance with a test of more crystallised abilities (Taylor, 2013).

Taylor (2013) reports on various studies that have produced favourable results on APIL-B in terms of predictive bias. Similarly, in one interesting study on the TRAM-2 instrument, data on 292 (175 Black and 117 White) clerks and administrative personnel were used for a predictive bias study. The results (Table 3.1) showed very little difference between the two groups.

In a subsequent linear regression analysis, there were no significant differences found in the slopes and intercepts for the two groups. The correlations between the TRAM-2 scores and the criterion were also .52 for the Black group and .43 for the white group (Taylor, n.d.).

Table 3.1***Mean differences in TRAM scores across racial groups***

	Black Respondents	Black Respondents	White Respondents	White Respondents
	Mean	Standard Deviation	Mean	Standard Deviation
TRAM 2	47.04	11.62	52.80	11.44
Rating	2.46	1.13	2.72	1.03

Note. Adapted from APIL and TRAM Learning Potential Assessment Instruments, by Taylor, T, (n.d.), p.19. Unpublished manuscript, Aprolab, Johannesburg. Copyright Taylor, T.

As for the technical analyses on TRAM-2, the reliabilities of the scales were calculated for all dimensions, across seven large samples. The average reported reliabilities were .91, .93, .94, .79, .81, and .9, respectively, for the CFT, Speed, Accuracy, Learning Rate, Transfer, and Memory. In the case of one particularly representative sample, the intercorrelational analyses between the six components also produced acceptable results. This sample was of working individuals with ten to twelve years of education. The sample was rather representative of the South African population (average age 33; 39 percent female, 61 percent male; 66 percent Black, 22 percent White, 8 percent Coloured, and 4 percent Indian; n = 526). The other six samples were, respectively, young matriculants, blue collar workers, technical job applicants, parastatal workers, parastatal administrative workers, and private sector clerical and administrative workers (Taylor, 2013).

TRAM-2 has also been tested for validity. In one study with municipal workers (n=151), the TRAM-2 component scores correlated between .14 and .66 with measures of work performance and scores on tests within the domain of general intelligence. TRAM-2 has also shown to be able to discriminate between members of two groups, based on a rating of supervisors' perceived trainability of the candidates in the study (Taylor, 2013).

TRAM-1 has also displayed similar results, to the extent that Taylor argues that there is justification for characterising it as a genuine learning potential assessment instrument. The TRAM-1 test also presents high, significant intercorrelations for the component scores and good concurrent validity when analysed with the results of mineworkers' scores after an ABET intervention. Similarly, it showed high predictive validity when administered to a different sample of mineworkers who were selected for training on other criteria. The TRAM-1 scores were much higher for this elite group who was selected for training (Taylor, 2013).

Since the Aprolab tests were developed in South Africa, with a post-Apartheid South Africa in mind, the tests are certainly relevant in the current context, considering its logical applications in affirmative development (as mentioned earlier). Because the emphasis is shifting to selecting for development, the measuring of specific skills suddenly becomes somewhat less relevant, as they are based on a person's history; which, in this country, is not a fair history. The measurement of potential is indeed a measure of the future and the ability to adapt to novel situations. Taylor argues, today, the ability to adapt to novel situations is also a more critical skill than ever before. Most of the people who undergo the TRAM-1 test is from the previously disadvantaged group, as it was certainly developed for this market (personal communication, April 18, 2013).

3.7.4 Stellenbosch studies: What constitutes learning potential?

In response to the research imperative discussed earlier in this thesis, the Stellenbosch University Industrial Psychology department, as mentioned earlier, embarked on several studies to investigate the concept of learning potential for use in selection for affirmative development, using, as its starting point, the suggested multi-stage selection model of Theron (2010a). The work of Taylor served as a key impetus for the theoretical basis of this research.

Theron (2010a) and De Goede (2007) explain that learning potential exists as a structurally interlinked nomological network of learning competencies. The level of competence achieved on these learning competencies is not a random event, but rather systematically determined by a complex nomological network of structurally interlinked, person-centred, learning competency potential latent variables, and situation-centred learning competency potential latent variables. In other words, learning success is determined by the nature of the learner as well as the situation of the learner. Van der Westhuizen (2015) mentions various problems with skills development programmes, for example low learnership completion rates (around 20 percent). According to the Mail & Guardian and the Human Sciences Research Council (as cited by Van der Westhuizen) reasons for failures could include poor recruitment and selection of learners, insufficient support mechanisms in the programmes, and, poor quality training. Learning potential based selection may thus be a partial solution to these problems.

Van der Westhuizen (2015) further explains that a comprehensive learning potential structural model will explicate the way the person-centred learning competency potential latent variables and situation-centred learning competency potential variables combine structurally, to affect the level of competence achieved on learning competencies. It will also elucidate how these competencies in turn affect learning outcomes and how these outcomes, in turn, feed back into learning competency potential latent variables.

Some of the person-centred learning competency potential latent variables are not malleable and thus the only option for increasing the probability of fruitful learning performance, when focussing

on these non-malleable latent variables, is through effective selection for development. Some of the person-centred learning competency potential latent variables are, however, malleable. When focussing on these malleable latent variables the probability of successful learning performance, as well as eventual job performance, can be enhanced through development. This implies well guided accelerated development initiatives that develop the job competency potential variables and job competencies required to succeed on the job. Furthermore, as far as situational variables are malleable, the probability of successful learning performance can be enhanced through attempts to improve the favourability of the learning context (Van der Westhuizen, 2015).

High quality training is obviously required, along with time, effort, and other resources being invested. This has led to the overarching research question for the Stellenbosch researchers: 'What determines success of trainees?' Learning success is defined in terms of learning competencies structurally mapped out on latent learning outcome variables. The level of competence that a learner achieves is, in turn, determined by a nomological network of structurally inter-linked person-centred and situation-centred learning competency potential latent variables (Van der Westhuizen, 2015).

The Stellenbosch University research studies of learning potential have focussed mainly on the person-centred constructs determining the level of competence attained in the learning competence. Situational variables, such as the nature of the training intervention in this instance, however, also play a crucial role in determining human behaviour (Van der Westhuizen, 2015).

The question why learners vary in terms of the success they achieve at learning, in the final analysis, cannot be answered adequately if the answers obtained on these more distinct research questions are not at some point integrated into a coherent structural model. Initially, practical considerations necessitate drilling down into specific, narrower domains of the eventual comprehensive learning potential structural model. Results in a training programme as such, become the centre of attention when narrowing the focus when considering the situational characteristics on the level of competence achieved on the learning competencies (Van der Westhuizen, 2015).

'Performance@learning' models explicate the cognitive and non-cognitive person-centred competency potential latent variables affecting learning performance. Training/learning performance is a highly complex construct determined by various situational (training programme) factors. Learning potential thus represents a three-domain competency model, that includes: learner and situational competency potential variables, learning competencies, and learning outcomes. This model would thus be sequentially linked to a similar three-domain job competency model, containing three elements, namely: job and situation competency potential, job competencies, and job outcomes. The learning-performance competency model and the job-performance competency models are sequentially linked in the sense that the learning outcomes

are the job competency potential (and job competency) latent variables that affect the performance on the job (Theron, 2010a; Van der Westhuizen, 2015).

Van der Westhuizen (2015) explains the concept of competency modelling. Competencies are defined by various sources, and considerable conceptual confusion exists with regard to the concepts of competencies and competency modelling. The meaning of these concepts varies according to the context that are used in and the requirements of the user. There are two views regarding competencies. The first is that competencies are attributes causally related to job success (with 'job success' also referring to different phenomena according to these two views). This (primarily) American perspective on competencies, viewed as person attributes, thus has formally been defined as characteristics of an individual that have been shown to drive superior job performance and as including both visible competencies of knowledge and skills, and underlying elements of competencies such as traits and motives (Hartle, as cited by Van der Westhuizen, 2015). It can also be a motive, trait, or aspect of a person's self-image, skills, or knowledge used (Boyatzis, as cited by Van der Westhuizen). Thus, competencies include the knowledge, skills, abilities, or other characteristics that are needed for effective performance on a job (Campion, Fink, Ruggeberg, Carr, Phillips, & Odman, as cited by Van der Westhuizen).

A different view considers competencies as bundles of behaviour that support the attainment of organisational objectives. Bartram (as cited by Van der Westhuizen) defines it as relatively stable sets of behaviours that are instrumental in the delivery of desired outcomes. This represents a British view of competencies primarily, ascribed to mostly in South Africa (Van der Westhuizen, 2015).

Understandings of competency modelling will obviously depend on the definition of competencies one agrees to favour. The Saville & Holdsworth Ltd (SHL) Performance@work competency model could clarify competency modelling. A model of performance at work that defines the relationships between competency potential/requirements and competencies themselves. Competency potential is seen to derive from personal dispositions and attainments that act as facilitators or inhibitors of organisational performance. The employee is characterised by a set of critical attainments/attributes (competency potential) that determine work behaviour (competencies) that is instrumental to achieving work outcomes. Competency potential can thus refer to person constructs that can be relatively stable such as personality, values, attitudes, and to more variable aspects such as knowledge skills and abilities (Van der Westhuizen, 2015).

A competency model can thus be interpreted/represented as a three-domain structural model that maps a network of causally inter-related person characteristics onto a network of causally inter-related competencies (critical behaviours), that then maps the latter onto a network of causally inter-related outcome variables. The effects of the person-characteristics on the performance dimensions and the effects of the latter on the performance dimensions are in turn moderated by

environmental variables. The performance outcome variables can be seen to be the results that an employee achieves through his behaviour and can include factors such as customer satisfaction, generated profit, wastage levels, or other direct (or indirect) job outputs. All the above factors are supposed to be based on the goals that the job exists to fulfil. Desired outcomes determine what constitutes relevant behaviour. Sought-after performance is behaviour that is relevant to organisational goals (Campbell, as cited by Van der Westhuizen, 2015). An employee's success on the job could thus be judged according to whether the employee displays certain behavioural actions as well as in terms of what the employee achieves through those actions (Van der Westhuizen)

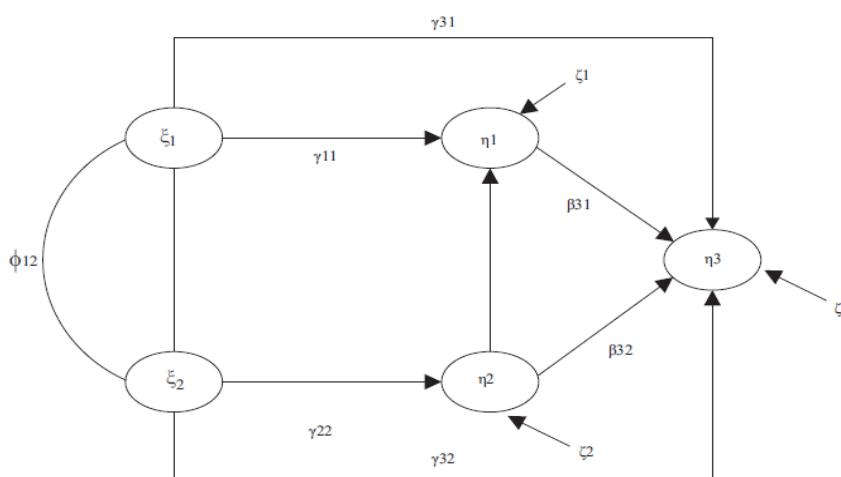
Competency modelling, as it relates to Performance@learning, can be understood in terms of certain learning competencies that have to be displayed in order for learning to take place. Whether or not these are displayed, is the result of the presence or absence of certain person-centred characteristics. These person-centred characteristics comprise of either more stable dispositions which are difficult to modify or other more malleable attainments. The affirmative intervention or trainer can affect the level of malleable person-centred learning competency potential variables and the malleable situational learning related factors, which in turn determine the learning behaviours displayed in class and which, in turn, affect the learning outcomes achieved by the learners. The learning outcome for affirmative development is to affect the job competency potential and job competencies needed to perform at the job, and, to a large extent, to impact positively on the malleable aspects of learning competency, in order to improve future learning. The ultimate purpose is thus to transfer the knowledge, skills and behaviours learned in the training intervention to novel problems the individual will be confronted with on the job, and also to be able to apply skills learned in the future in the same way (Van der Westhuizen, 2015).

The challenges presented in terms of preparing for adequate affirmative development is thus firstly building a comprehensive learning performance structural model that explicates how critical learning dispositions map onto critical learning competencies and how these relate to job performance dispositions and attainments and ultimately job competencies. Secondly, it is necessary to derive an appropriate affirmative development selection battery from the model to identify previously disadvantaged individuals that would most benefit from an affirmative development opportunity. Thirdly, it would be fruitful to derive appropriate interventions, in terms of training content, learning strategies, and training delivery, from the model aimed at maximising transfer of training (Theron, 2010a; Van der Westhuizen, 2015).

Various research studies have been undertaken at Stellenbosch University in order to address these challenges:

3.7.4.1 De Goede (2007)

De Goede (2007) translated the underlying cognitive model of Taylor (1989, 1992, and 1994, as cited by De Goede) and his resulting assessment measures into two learning competencies, namely transfer of learning and automatisation, influenced respectively by the competency potential variables abstract thinking capacity and information processing capacity. He thus devised a model of the competencies and competency potential latent variables contributing towards learning performance as a basic cognitive model, with basic causal paths as can be seen in Figure 3.1.



Where:

ξ_1 = Abstract thinking capacity
 ξ_2 = Information processing capacity

η_1 = Transfer of knowledge
 η_2 = Automatisation
 η_3 = Learning performance

Figure 3.1. Hypothesised learning potential structural model. Adapted from An investigation into the internal structure of the learning potential construct as measured by the APIL-B test battery, by De Goede, J., & Theron, C. C. (2010), Management Dynamics, 19(4), p. 38. Copyright 2010 De Goede & Theron; Management Dynamics.

De Goede used the APIL-B test battery to operationalise the model, and it was tested on 44 new recruits from the South African Police Service (SAPS) Training College in Philippi, Cape Town, to obtain empirical evidence that the relationships postulated in the learning potential structural model provide a plausible explanation for differences in learning performance during evaluation. Learning performance (or job competency potential) was determined by two measures used by the SAPS in the evaluation of constables in their basic training programme. Structural Equation Modelling (SEM) was used to test the hypotheses. Reasonable model fit was obtained, though with only limited support obtained for the proposed causal paths – only four of the ten hypotheses. The postulated relationship between information processing capacity and automatisation was corroborated. The direct path hypothesised between information processing capacity and learning performance was corroborated. Similarly, the direct path hypothesised between automatisation

and transfer of knowledge was corroborated. Support was also obtained for the indirect effect of information processing capacity on learning performance, mediated by automatisation. No support was found for the following hypothesised paths/linkages between:

- Abstract thinking capacity and transfer of knowledge.
- Abstract thinking capacity and learning performance.
- Transfer of knowledge and learning performance.
- Automatisation and learning performance.
- The indirect effect of abstract thinking capacity on learning performance, as mediated by automatisation (De Goede, 2007).

According to De Goede (2007) the degree of measurement model fit achieved was reasonable and the specific indicator variables used reflected the respective latent variables in the model, although the validity of the learning performance and transfer of knowledge measures seemed to be questionable. He argued however that the transfer of knowledge measure cannot be changed easily as it forms an integral part of the APIL-B test battery. Professor Callie Theron suggested at the 2015 Empowerment for Development Seminar, held at Stellenbosch University, that perhaps the more fundamental TRAM-2 measure would have been a better choice to operationalise these variables. De Goede raised the concern that the learning performance measure did not completely reflect the ability to use newly obtained knowledge in a creative manner in problem-solving and that the extent to which real learning took place is not determined effectively by many training institutions. Instead, tests or examinations rather reveal the amount of information committed to memory and not whether those who qualify can indeed cope with the novel challenges posed by the role they are being trained for. This also highlights a pertinent issue surrounding the definition of learning performance, as discussed by Van der Westhuizen (2015) with reference to De Goede's results. Indications of instructor effectiveness and student learning have traditionally relied on achievement outcome measures such as graded performance, despite the inherent imperfection of the assessment as a measure of trainer success, and, for that matter, student learning performance. De Goede defines learning performance (in terms of outcomes, and in the workplace development context) as the (achieved) level of malleable job competency potential latent variables – the person characteristics that directly or indirectly affect the level of competence achieved on job competencies. De Goede (2007) and Burger (2012) define learning performance as the extent to which an individual has acquired knowledge, or a specific skill or ability, corresponding to the specific learning situation. De Goede (2007) and Theron (2010) argue that the latent variable learning performance should be removed from the modified model as the learning competencies already constitute learning performance, more specifically classroom learning performance. The essence of this argument is that learning performance cannot be modelled separately from the learning competencies and outcomes that comprise learning. They

therefore proposed that a longitudinal explanatory structural model should be developed in which provision is made for the level of crystallised abilities at different points in time. A clear distinction can then be made between learning performance in the classroom and subsequent action learning in the workplace. This implies that transfer and automatisation latent variables should be operationalised using stimuli from the actual learning task. Van Heerden (2013) stresses that De Goede and Theron's recommendation to delete learning performance from the model can easily be misunderstood. She notes that the intention was to clarify the point that the current learning performance latent variable should not be seen as conceptually distinct from learning performance in the classroom. Numerous learning competencies constitute learning performance. These learning competencies constitute learning performance in the classroom, as well as learning performance during evaluation, and action learning in the workplace. Learning performance in the classroom and learning performance during evaluation essentially constitute the same selection of learning competencies, however, the nature of the learning problem differs. The learning problem differs in term of the nature of the crystallised ability that is transferred and the nature of the insight being automated. In the classroom, specific crystallised ability, developed through prior learning is transferred onto novel learning problems comprising the curriculum (Van Heerden, as cited by Van der Westhuizen, 2015). Once meaningful structure has been established in the learning material, it must be automated. Actual transfer takes place in the classroom and the subsequent automatisation of the derived insight determines learning performance during evaluation. De Goede (2007) (see also De Goede and Theron (2010)) used the APIL-B subtests to measure transfer and automatisation as dimensions of learning performance in the classroom. The APIL-B uses essentially meaningless learning material to assess learning performance in a simulated learning opportunity. Van Heerden claims that the APIL-B subtests cannot be considered valid measures of the extent to which transfer and automatisation takes place in a classroom. Classroom learning performance should rather be assessed by tracking the extent to which learners transfer previous learning onto the novel material presented in the classroom and the extent to which they automate the newly constructed meaning successfully. Learning performance during evaluation, in turn, should be measured by providing learners with novel learning problems that they should be able to solve by using the crystallised knowledge that they should have developed through transfer and automatisation in the classroom. As such, learning performance during evaluation involves transfer of newly gained knowledge that has been automated onto novel problems related to, but qualitatively distinct, from those encountered in the classroom (Van Heerden, as cited by Van der Westhuizen). This is an important issue to be considered by researchers going forward and is for example noted by Mahembe (2013).

Another critical conclusion from De Goede's research, was the need to expand the Performance@Learning Structural Model. De Goede focussed exclusively on cognitive ability as

determinant of learning performance, however, it is extremely unlikely and somewhat unreasonable to assume that cognitive ability would be the sole determinant of learning performance. The model did not acknowledge that learning performance is not solely determined by cognitive learning potential competency potential latent variables (Burger, as cited by Van der Westhuizen, 2015). As De Goede explains, the learning domain very likely consists of more than two competencies, and suggested that future research incorporate latent variables such as existing knowledge levels, conscientiousness, tenacity, learning support, learning motivation, self-efficacy, performance motivation, and mentoring or perceived support. This suggestion is in line with the theories of Vygotsky and Feuerstein, discussed earlier, which clearly stated that other elements than purely cognitive ones should also be explicated as to their impact on learning performance. Moreover, non-cognitive determinants of classroom performance would likely not affect the two learning competencies identified by Taylor and De Goede directly.

Theron (2010a) suggests that since learning potential only refers to the ability to benefit from a learning/development opportunity, and since learning is not solely a function of ability, additional aspects probably need to be considered, as they may relate to learning performance, and assessed to identify those that would maximize the return on the development investment. Van der Merwe and De Beer (2006) also theorise that non-cognitive factors such as locus of control, self-perceptions, expectations of personal abilities, as well as study habits, also influence academic performance, and as such suggested that these types of variables be accounted for in future studies.

According to Theron (2010a), these likely include:

- Personality.
- Motivation.
- Interest.
- Learning strategies/skills.
- Learning self-efficacy.
- Language proficiency.
- Critical thinking competencies.
- Cognitive complexity.
- Locus of control.
- Learning self-efficacy.

Learning competencies may also be expanded to include:

- Time at task.
- Self-motivation.

- Time management.
- Managing resources.

Time management and Managing resources may be combined into “Academic self-leadership.”

Being cognisant of the thinking described above, several scholars from Stellenbosch University have since revised the De Goede model.

3.7.4.2 Subsequent revision of the De Goede (2007) model

Burger (2012) modified the De Goede learning potential structural model by expanding the number of learning competencies that drive learning performance, as well as adding non-cognitive determinants of learning performance. The aim of this, and other subsequent studies, was to find a model that would more closely approximate the psychological processes of learners. Further similar studies have been conducted by scholars from the Department of Industrial Psychology at Stellenbosch University. These include Van Heerden (2013), Mahembe (2013), Prinsloo (2013), Pretorius (2014), and Du Toit (2014).

These studies were all based on Structural Equation Modelling (SEM) and sought to test the fit of a theoretical structural model to sampled data. A detailed description of the SEM process, model fit indices, and paths theorised, tested, added, removed, confirmed, and/or rejected, in each of these studies, is however beyond the scope of this thesis. As such, these studies are thus briefly discussed below, and a summarised model showing factors added, and paths shown to be significant or insignificant, drafted by Professor Callie Theron, as presented at the Empowerment for Development Conference in 2015, is added as Annexure A.

As mentioned, Burger (2012) provided the first elaboration of the De Goede (2007) model. Learning competencies included in the Burger (2012) model were:

- Transfer of knowledge.
- Automatisation.
- Time cognitively engaged.
- Academic self-leadership.

Learning competency potential variables added to the model were:

- Abstract thinking ability.
- Information processing capacity.
- Conscientiousness.
- Academic self-efficacy.
- Learning motivation.

- Expectancy of learning performance.
- Valence of learning performance.
- Instrumentality of learning performance.

The elaborated hypothesised model was reduced in the interest of practical concerns, and the cognitive competencies and competency potential latent variables were removed along with the expectancy related to learning performance and also the valence and instrumentality of learning outcomes. Burger (2012) then tested the model on a sample of 460 grade-11 pupils from Western Cape schools, with learning performance operationalised through academic results, and obtained good fit after some modifications were made to the model. Burger recommended that her study be considered a positive first step toward building non-cognitive factors into the De Goede learning potential structural model. She suggested the malleable non-cognitive variables in her model could be enhanced to increase learning performance through including the development thereof in training programmes. Also, conscientiousness, academic self-efficacy, academic self-leadership, and learning motivation could be included in selection procedures, probably together with the cognitive factors, when the aim is to improve learning performance. These factors could prove to be highly significant, considering the stated drop-out rates for learnerships and similar programmes and also the reasons therefore, for example poor attitudes and an expectations mismatch. Burger emphasises the need for on-going collaborative research, with each study building upon the previous, and also building the model through academic theorising, though with introspection. She also suggested other variables that could be added in the future, namely, meta-cognition, self-deception, time, belonging, goals and goal orientation, locus of control, optimism, interest profile, and prior knowledge.

Van Heerden (2013) also suggested added cognitive and non-cognitive variables to be included, based on De Goede's theoretical position on learning potential and his conceptualisation of how the constructs interact. Learning competency potential variables included in her model were:

- Information processing capacity.
- Abstract reasoning capacity.
- Meta-cognitive knowledge.
- Learning motivation.
- Conscientiousness.
- Academic self-efficacy.
- Locus of control.

Learning competencies included in her expanded model were:

- Transfer of knowledge.

- Automatisation.
- Time cognitively engaged.
- Meta-cognitive regulation.

This model thus, in comparison to Burger's expansion, included meta-cognitive regulation and locus of control, and excluded academic self-leadership. Van Heerden's hypothesised elaborated model was reduced for testing due to practical and operationalisation constraints. The final model only included meta-cognitive knowledge, meta-cognitive regulation, time cognitively engaged, conscientiousness, academic self-efficacy, learning motivation, locus of control, learning goal orientation, and learning performance during evaluation. The model was tested on a (final) sample of 320 grade-12 learners from three different high schools. After modification, the model showed good fit. As for the additions, the locus of control variable was removed from the study during item analysis and interestingly, meta-cognitive regulation was the only construct in the structural model that evidenced a direct relationship with learning performance during evaluation (Van Heerden, 2013).

Van Heerden's study also highlighted the need for an interesting and pertinent discussion around the equivalency of the psychological dynamics underpinning learning performance between the previously disadvantaged and advantaged group, and likewise the applicability of the learning potential competency model to all forms of formal training versus just affirmative development. This is certainly an important point to ponder for future research as it could not be considered scientifically sound to not at least examine this particular assumption.

Van Heerden suggested that further research could consider examining the latent variables of prior knowledge, interest, self-esteem, and persistence as extensions of the structural model.

Mahembe (2013) completed a thorough doctoral research study into an extended learning potential competency model, integrating the De Goede and Burger models. The learning competencies included in his study are:

- Transfer of knowledge.
- Time cognitively engaged.
- Automatisation.
- Regulation of cognition.
- Cognitive planning and activation.
- Cognitive monitoring.
- Cognitive reaction and reflection.
- Meta-cognitive self-regulated learning strategies.
- Environmental structuring.

- Self-monitoring.
- Self-leadership.

Learning competency potential variables included in his model were:

- Abstract thinking capacity.
- Prior learning.
- Post learning.
- Information processing capacity.
- Motivation to learn.
- Knowledge of cognition.
- Academic self-efficacy.
- Goal orientation.
- Personality.
 - Conscientiousness.
 - Openness to experience.

Mahembe (2013) specifically distinguished between competencies that were relevant to learning during evaluation and classroom learning competencies. Also, due to the conceptual and practical challenges surrounding the operationalising of the transfer of knowledge and automatisation competencies, these were deleted from the abridged model which was subsequently tested. Mahembe made reference to the failure of the previous scholars to adequately distinguish between classroom learning performance and learning performance during evaluation and also the questionability of using the APIL-B to measure these learning competencies as dimensions of learning in the classroom. The APIL-B measures transfer in a simulated learning task, comprised of geometric symbols – something with which all learners are equally unfamiliar. This provides a measure with low content validity, since transfer of learning as dimension of learning performance in the classroom involves transfer of specific prior knowledge onto the actual job-related learning material which comprises the development programme content. Automatisation likewise involves the writing of intellectual insights in an actual learning task gained through transfer from prior learning. Adequate measurement of these competencies as dimensions of learning in the classroom would as such require that the course presentation and assessment be completed simultaneously.

Mahembe (2013) noted that it could be argued that the model should be tested on a sample of participants that qualify as affirmative development candidates. As such, a sample of 213 students enrolled for the extended degree programme at Stellenbosch University was selected, with the candidates coming predominantly from the previously disadvantaged group, or at least from a disadvantaged background. He did however conclude that the model used can be applicable to

any formal learning context and essentially that the same nomological network determines learning for any learner in any learning context.

The fit of the structural model was problematic, however, it was derived from the comprehensive and measurement models that the structural model shows good close fit. The possible additions as per the beta and gamma matrices were not implemented and Mahembe suggested that future studies examine this. As for the other paths, it is relevant to include results from this comprehensive study (Mahembe, 2013, pp. 311, 312):

Significant relationships were found between: Information processing capacity and Learning Performance during evaluation; Self-leadership and Motivation to learn; Motivation to learn and Time cognitively engaged; Self efficacy and Self-leadership; Knowledge about cognition and Regulation of cognition; Regulation of cognition and Time-cognitively-engaged; Learning goal orientation and Motivation to learn; Openness to experience and Learning goal orientation. Support was not found for the relationships between Conscientiousness and Time-cognitively-engaged as well as between Time-cognitively-engaged and Learning performance. The moderating effect of Prior learning (indicated by the interaction term ABSPRIO) on the relationship between Abstract reasoning capacity and Learning performance during evaluation was not supported.

Significantly, Mahembe (2013) found the same results as De Goede (2007) for the cognitive learning competency of abstract reasoning capacity, in that it was shown not to have a direct effect on learning performance. Mahembe also provides some guidelines on deriving a practical model which could be used to measure the psychological dynamics underlying learning performance in the classroom.

Prinsloo (2013) expanded the reduced Burger (2012) model by adding optimism, hope, and resilience as competency potential latent variables. The model was tested on data gathered from 280 grade-11 school learners from seven different schools in the Western Cape, most of which were from traditionally disadvantaged areas. The model showed reasonable fit, and eleven of twenty-three paths were supported. Prinsloo also replicated the unexpected results of one particular path as discovered by Burger, in that academic self-efficacy showed a negative impact on academic self-leadership. Subsequent modifications and experimentations with the model improved the fit thereof. Prinsloo suggested furthermore that future research should consider different provinces, and thus different developmental contexts; as well as more representative samples. She also suggested the possible including of the variables adversity of living and learning conditions and prior knowledge in future collaborative research, and also pointed out the value in longitudinal models.

Pretorius (2014) provided a further elaboration of the De Goede model, with cognisance of the work done by Burger, and with the purposeful inclusion of specific interaction terms. Competency variables he included are:

- Transfer of knowledge.
- Automatisation.
- Cognitive engagement (Time-at-task) (This latent variable was originally included in the model due to its hypothesised influence on transfer of knowledge).

Additional competency potential variables included in his model are:

- Abstract thinking capacity.
- Information processing ability.
- Conscientiousness.
- Learning motivation.
- Environmental unfavourableness.
- Tenacity.
- Grit.
- Parental quality.

The model was reduced to non-cognitive factors only and tested on 395 grade-9 learners from schools in disadvantaged areas in Cape Town, using academic marks as an indication of learning performance during evaluation. After some modification, the structural model showed good fit, with only five paths being empirically corroborated. Support was found, indicating that a statistically significant positive relationship exists between Learning Motivation and Tenacity, Conscientiousness and Resilience, Parental Quality and Learning Motivation, Grit and Cognitive Engagement, as well as between Grit and Learning Motivation. Pretorius suggests that the malleable aspects of learning competency and competency potential be developed to improve the learning performance of affirmative candidates. The role of parental quality is also highlighted. He also suggests that the issue of language proficiency requires further research attention and that longitudinal models of learning potential be developed and tested (Pretorius, 2014).

Du Toit (2014) expanded the De Goede model by including the following competency variables:

- Automatisation.
- Transfer of knowledge.
- Time at task.
- Metacognitive regulation.
- Academic self-leadership.
 - Behaviour-focused strategies.

- Natural reward strategies.
- Self-reward strategies.
- Constructive thought strategies.

She also included the following competency potential latent variables:

- Abstract thinking capacity.
- Information processing capacity.
- Knowledge of cognition.
- Cognitive engagement.
- Learning motivation.
- Goal orientation.
- Academic self-efficacy.

Du Toit (2014) argues that, considering the research findings on the De Goede model, the fundamental theory underlying his model must be reconsidered. For example, the De Goede (2007) model provides inadequate empirical justification for the confident inclusion of Abstract Reasoning Ability and Information Processing Capacity in an affirmative development selection battery (Burger, 2012). The question could therefore be asked whether the learning latent variables identified by Taylor, and the way De Goede structured the relationship between these latent variables, validly depicts the psychological dynamics that allows one individual to be more successful than another in acquiring novel intellectually demanding skills or job competencies (Du Toit).

A reduced model was suggested with the two De Goede learning competencies removed, again due to the considerations of the operationalisation of these, as discussed earlier. This resulted in removing the learning competency potential variables too, as their effect on learning performance is mediated by the competencies. Removing the competencies also led to the simplification of the hypothesised indirect effect of time-on-task on learning performance during evaluation, in that this effect would have been mediated by the competencies. As such, the reduced model showed a direct effect in this regard, and furthermore, focused only on non-cognitive elements of learning potential (Du Toit, 2014).

The model was tested on the grade-11 results of 200 learners from four former model-C schools in the Free State and Gauteng and achieved good close fit. One modification was subsequently made to the model after the consideration of the full range of fit indices, standardised residuals, modification indices, and parameter estimates; however, no paths were removed. The final revised structural model achieved good fit. Du Toit also advocates for future collaborative research to expand the model and suggests the addition of the variables of

autonomy and prior knowledge, as well as the development of longitudinal models (Du Toit, 2014).

In summary, the Stellenbosch studies have provided much in terms of laudable basic research on learning potential. The SEM studies have the implications that the expanded structural model (see Annexure A), can be developed into a selection tool for recruitment for affirmative development; as well as in building or optimising of affirmative programmes, or in improving training effectiveness; and finally, for the improving of learning potential of candidates through developing the malleable constructs in the model. There is thus certainly value in building, explicating, and testing the merged model of learning potential.

The SEM studies do share some typical limitations, in that an SEM model fit, or path confirmed, is not a guaranteed confirmation of causality. Most of the scholars also note issues in operationalisation due to the fact that many of the measures are based on self-reporting. As such, it is difficult to tell whether results, which often contradict well-meaning and thoroughly theorised hypotheses, are due to measurement issues, or flawed underlying assumptions. Multi-group studies and the replication of results will assist in this regard. Another salient issue in this vein is the omission of the cognitive variables underpinning learning potential and subsequent learning performance. The issues around existing learning potential measures, and dynamic testing in general, are evident here, in terms of time and cost of implementation. Although the non-cognitive factors are highly relevant, and of particular interest due to their malleable nature, the current researcher implores future researchers to apply their minds to the operationalization of the cognitive factors and perhaps reformulation of the theory around this obviously critical facet of learning. It is imperative, as is discussed later, that the learning potential structural model be converted into a viable learning potential assessment and also a fundamental affirmative development initiative and learning improvement programmes.

3.7.4.3 Further research into affirmative development

Van der Westhuizen (2015) looked at the trainer-instructor as significant role-player in the affirmative development arena. To understand the impact of the affirmative trainer-instructor, it is necessary to understand the network of latent variables characterising the learners, as well as the context in which they have to learn; the learning competencies and how these in turn affect the learning outcomes.

As discussed at the 2015 Empowerment for Development seminar, mentioned earlier, other studies from within the Department of Industrial Psychology at Stellenbosch University investigate the creation of an enabling environment for affirmative candidates in the workplace, after selection, as well as other research that addresses issues mentioned in this paper, for example, the development of a school principal competency model, the career success of Black employees

in the organisational context, the development of an affirmative development coaching competency questionnaire, and research to the support of skills development in the agricultural sector.

3.7.5 Approaches currently used in practice

After having now discussed in detail the available current theory on learning potential assessment, along with available instruments, it is important to discuss actual existing applications of the principles of learning potential in South Africa. It is important to investigate some solutions industry has already put in place and look at the extent and way the approaches and instruments discussed above have actually been absorbed and applied by those in practice. In terms of current practice, a few techniques are used to measure learning potential. This section is by no means exhaustive, however aims to summarise some approaches used, as can be deduced from the little information available.

Some proponents of the concept of g generally regard standard IQ tests as a valid indicator of cognitive modifiability. Many others however oppose this idea and regard IQ as a reflection of the quality of educational exposure a person has received in the past. They measure IQ primarily via verbal and numerical measures and fluid capacity (g), which they regard as an indication of learning potential, via non-verbal item content such as figural analysis (Prinsloo, n.d.).

Taylor (personal communication, April 18, 2013) mentions that some large and well-known corporates in South Africa are using the APIL-B as main (sometimes only) selection instrument (for recruitment). They do this because they see the current business environment as one of constant change, and adaptivity as a core success competency in the modern workplace; thus, the ability to learn should logically be an indication of future success in this environment. Although there is certainly sense to this logic, one must consider a word of caution in this regard, as proper validation of this stance is still needed before it can be considered 'criterion-referenced prediction'. It is still required that the link between the dimensions of the assessment and actual expected future work performance is demonstrable, though one would assume that these reputable companies have indeed ensured this is the case. Other factors that can be used to predict work success should, however, also be available to explain additional variance in the performance construct.

Taylor describes the TRAM as a fundamental measurement with large predictive value and as useful for scenarios involving challenging and diverse tasks. These tests are seen as 'less biased', however group differences are not something that can simply be 'cut out' and a large developmental effort is still needed. For example, based on anecdotal observations, Taylor mentions that group differences on the Wechsler Intelligence Scale for Children is about two standard deviations in South Africa, whereas the difference on the TRAM measurement will be

about half of a standard deviation between groups. These types of differences are somehow more observable when testing the younger generations (personal communication, April 18, 2013).

There are, however, companies that use cognitive learning potential testing in combination with non-cognitive measures for selection into development programmes. Susan Ellison spoke on the practical usage of learning potential testing, in combination with personality testing and role-playing assessments, for selection into a leadership development programme, at the Stellenbosch Empowerment for Development conference, mentioned earlier. She has used the combination of tools for a developmental leadership selection programme. The battery of tools was used to generate development recommendations for four individuals, who were then entered into a joint problem-solving process for developmental purposes. The outcomes for the individuals in the developmental endeavour was as expected according to the learning potential scores, however motivational factors played a role.

Gilmore (2008) examined whether the LPCAT could be used as a valid predictor of future job performance (as measured through a promotion ratio) in the mining sector. She found a statistically significant correlation between the LPCAT composite score and the criterion measure and concluded that there is predictive value in using learning potential scores, however no other comparative measures were used.

What seems to have happened to some extent regarding learning potential testing in practice is that many practitioners have taken to heart the idea of 'unbiased' and 'culture fair' measurement by using a learning potential testing method that simply cuts out language and other 'biasing' factors. This could be buying into the notion that one could merely substitute existing selection instruments for 'unbiased' or 'certified EEA compliant' measurements. This is something to be cautioned against, as it is the suggestion of this thesis that, although learning potential testing is certainly relevant for some type of use in different selection scenarios, the use of it for selection into development, as discussed earlier, is a more appropriate use in the South African context, and as discussed, swopping out all other selection measures for learning potential may likely result in a loss of predictive validity.

The above delineation of the available literature on learning potential testing has provided insight into the intentions behind, and general approach to, learning potential. It is important to investigate how this approach is used in practice and evaluated considering current research. Usage of learning potential testing for the purposes of selection for development has seen some uptake in practice. Harambee Youth Employment Accelerator is an example of an organisation using such an approach. Their approach, and formulation thereof, is discussed in the following chapter.

CHAPTER 4

HARAMBEE YOUTH EMPLOYMENT ACCELERATOR

This chapter explains the process employed by Harambee, an employment programme in industry whose operational model closely resembles the suggested multi-stage selection model discussed earlier. The researcher approached Harambee after attending an introductory lecture on their model, because to date they represent the clearest, most significant, and closest known approximation of the multi-stage selection process being used in practice. The intention behind approaching Harambee was to investigate how these principles are applied in practice and to seize an opportunity for applied research that would inform the field going forward.

4.1 Background and Conceptualisation

Harambee (which means “all put together” in Swahili) is an employment programme launched by Yellowwoods Social Investments, a privately-owned European investment group. The company was originally created with the intention to operate in partnership with many of the companies operating under the Yellowwoods umbrella in the South African market. These include large corporates in the financial services such as Hollard, Clientele, Direct Access, Telesure, and other companies such as Nando’s, Spier, and Beyond Lodges (Harambee, n.d.).

The Harambee programme was formulated in response to a problem that particularly plagued the insurance companies in their network, as it does in many other sectors such as retail, business process outsourcing (BPO), hospitality, and financial services, namely, that they were struggling with recruiting and retaining the right demographic profile of employees for entry level positions, and that the Yellowwoods companies even poached employees from one another (Helen Smith, personal communication, March 13, 2012).

This major impetus for the establishment of Harambee came about in 2008 to 2009 when Yellowwoods was looking at sustainability in all aspects of their business, including social, environmental, and human capital sustainability. The management of the group spent a year interviewing line managers, HR practitioners, and operations executives and found various challenges, including a 20 percent vacancy rate in entry level positions (in one of their insurance companies in particular) and a big staff turnover throughout entry level jobs, especially in customer service (Rob Urquhart, personal communication, June 29, 2015).

Upon investigating the reasons for these problems, Yellowwoods found that managers struggled and hesitated to hire entry level staff for two main reasons. Firstly, due to the failure of the South African schooling system, through providing a National Senior Certificate that has become known as a ‘rubbish matric.’ This, with reference to the variable quality of schooling, means that the school system is providing school leavers who are seen to be ill-equipped to serve the needs of

employers in the formal sector. Secondly, school leavers are not seen to be ‘work-ready’ in terms of the behaviours and dispositions required by the work environment. This relates specifically to expectations around discipline, punctuality, attendance, and attitude (Harambee, n.d.).

Furthermore, Yellowwoods took notice of the South African situation regarding poverty and unemployment, in that approximately half of the country’s youth are unemployed; do not have an income, work-seeker’s network, or access to meaningful employment information. It is further notable that, according to Harambee’s research, up to 80 percent of jobs are found through social networks. Most people find work through family, their community, school mates, universities, or prior work contacts. Many of the youths in South Africa do not have access to adequate work through these kinds of networks. This leaves many youths in a gap where they do not have acceptable options when it comes to making a decent living. Harambee has found that for every year a young person is unemployed the likelihood raises significantly that they will never find a job and become a victim to a ‘poverty spiral’ where continued unemployment compounds other social problems. This situation is also much worse for those from a disadvantaged background, whose chances of finding work are even smaller (Rob Urquhart, personal communication, June 29, 2015).

Employers subsequently further failed to provide these youths with opportunities by curbing hiring, relying on temporary labour, and resorting to more expensive candidates when making appointments, by looking for people with higher qualifications and experience to deal with the gap in skills and attainments mentioned above. This caused several issues for these businesses, including growing wage bills and the creation of disincentives for developing or promoting employees (Rob Urquhart, personal communication, June 29, 2015).

This situation represents a disconnect in the labour market in terms of supply and demand, as there is an over-supply of young work-seekers, even though there is ample availability of entry level positions suited to young people. The demand for entry level positions is particularly large, with 549 000 people between the ages of 15 and 34 being placed into jobs due to demand generated by both attrition and growth in 2015 (Harambee, n.d.).

Harambee was thus conceptualised as an employment accelerator, which would serve the needs of companies within their group, by recruiting, training, and placing work-ready employees in job positions that are available. The system is thus demand-driven as they find jobs first and proceed to match candidates to these positions from the onset. The value proposition for candidates is the promise of potential absorption into the job market, and for employers the promise is a pool of ready recruits (Harambee, n.d.).

Being convinced by the apparent sound motives for founding Harambee, the Yellowwoods partners agreed to share the risk of this endeavour and the South African Jobs Fund provided

Harambee with an additional large conditional grant. Other social investors currently involved with Harambee include Mastercard, The Dell Foundation, and The Rockefeller Foundation. Harambee sees itself as a social experiment and runs as a Non-profit Organisation (NPO). They do, however, earn revenue, as they have since establishing themselves taken on large corporate clients and are currently working with about 140 employers. These include Santam, Discovery, Outsurance, Pick 'n Pay, Ster-Kinekor, FNB, and Standard Bank. Harambee is managed through a business-minded philosophy, with strong executive leadership. They made their first placements in 2010/2011, reached 2 600 in 2013, 10 000 in October 2014, and then 20 000 in October 2015 (Nhlabathi, 2013; Rob Urquhart).

Although Harambee recruits mainly out of the designated groups, as defined by the relevant legislation, they have purposefully not positioned themselves as an affirmative development programme, but as a youth employment project (Helen Smith, personal communication, April 25, 2012). On their official website, they explain why they target these groups. They mention that two thirds of people between 18-28 years old are unemployed and they thus target first time job entrants; who according to research by the Development Bank of South Africa, will have an 85 percent chance of achieving lifetime employment, should they be able to keep their first job for more than 12 months (Harambee, n.d.).

Harambee has had much success with establishing their brand in the lower income market. A market research report found that Harambee was named the 7th favourite brand in South Africa amongst lower income earners (lower than R6 000 per month). Harambee was the only non-consumer brand receiving this recognition and tied in 7th place with Omo washing powder and finishing ahead of fast food giant KFC at the 8th position (Harambee, n.d.).

Harambee has assessment centres in Cape Town, Durban, Johannesburg, and Port Elizabeth, which are all located close to major transport hubs. They have opened an office in Pretoria and all of these regional offices are currently running mobile assessment centres and also opening smaller offices in their target areas, for example the Cape Town branch is operating in the Phillipi area (Harambee, n.d.).

4.2 Harambee's Process

Harambee uses the graphic in Figure 4.1 to explain their process.

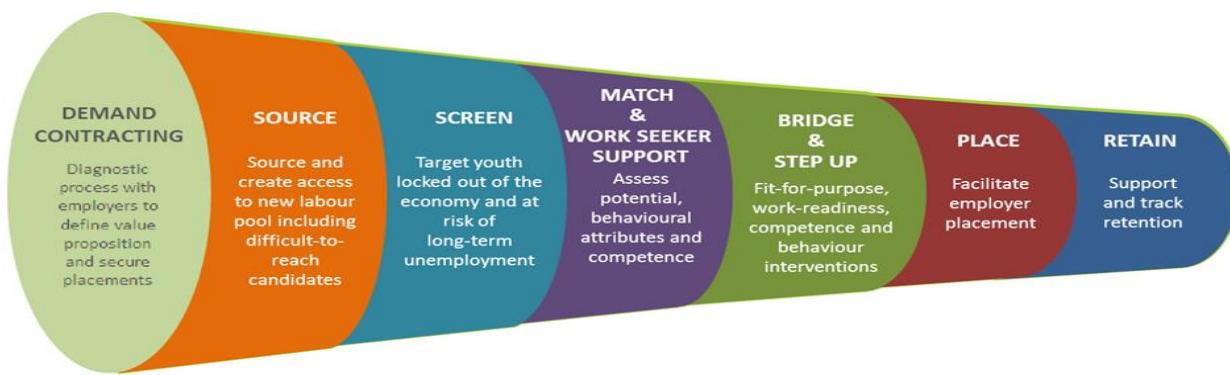


Figure 4.1. Harambee's process flow. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

The various phases show how candidates move through their system into long-term employment. The various figures and tables provided by Harambee originate from internal documents and presentations shared personally by Rob Urquhart in July 2015. These phases are explained below.

4.2.1 Demand contracting

As mentioned, the Harambee model is demand driven. They start by securing job demand before proceeding to source young people to be matched to those jobs. It is important to note that Harambee furthermore seeks to place people in jobs that are not more than one taxi ride away from their home, especially in the case of retail jobs, as longer distances have shown to have a negative impact on retention due to high transport costs and time spent travelling. Table 4.1 compares the amount of money that a person with a learnership salary (R2 000 to R2 500) will have in order to cover daily expenses, in scenarios of spending differing amounts of daily transport (R25, R35, and R50, respectively).

Table 4.1

Daily transport costs in relation to money available per day

Daily transport costs	Rands per day to live on earning R2 000 per month	Rands per day to live on earning R2 500 per month
R25	R49	R66
R35	R42	R59
R50	R32	R48

Note. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

The impact of high transport costs on funds available has in turn been shown to have a negative impact on retention (Figure 4.2).

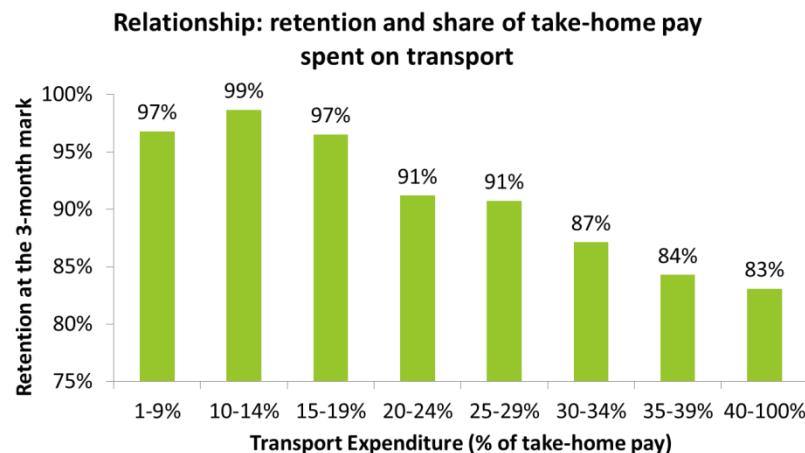


Figure 4.2. Relationship between retention and take-home pay spent on transport. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

4.2.2 Sourcing and screening

Harambee recruits people through various methods, including street teams in communities, radio, social media, their mobile website, partnerships with NGO's, community leaders, referrals, and importantly, word of mouth - which they see as very important for creating a credible brand image. Hopeful candidates can apply through a variety of methods linked to the above-mentioned recruiting platforms, but mainly through their mobile website. Harambee specifically visits township areas in order to recruit candidates, as they understand that many of them lack the resources to send in a curriculum vitae or travel for interviews (Harambee, n.d.)

They screen large numbers of hopefuls at a time and select only a small percentage for the training programme (Helen Smith, personal communication, March 13, 2012). Harambee targets people 18 to 35 years old. Applicants also should meet the following minimum requirements:

- Be a South African Citizen.
- Have a matric certificate.
- Never have been blacklisted.
- Have no criminal record.
- Have attended a township or a rural school.
- Be currently unemployed.
- Have not been permanently employed for more than 12 months.
- Have been actively looking for work for more than 6 months

There are a number of significant motives behind most of these simple requirements. The significance of candidates having passed matric, for example, is that Harambee, also aiming to encourage education, recognises that the candidates have made some effort towards an education and endured the hardship that may have likely been associated with achieving even this basic level of education. Harambee believes that this shows that the candidate does have some level of tenacity. Candidates need to have spent at least six months actively looking for work, otherwise they may not know how hard it is to find work and may subsequently not appreciate the true value of an employment opportunity. Many of the Harambee candidates have in fact actively been looking for work for two to four years. Harambee specifies less than 12 months of continuous employment, since this places the candidates in the highest risk category, as Harambee sees people with more than one year work experience as likely to have built up a sufficient network and knowledge base to enable them to find a job by themselves (Harambee, n.d.; Rob Urquhart, personal communication, June 29, 2015).

Harambee will not assist candidates who do not meet their requirements. They also provide career guidance, advice on education (including learnerships, artisan training, diplomas, and bursaries), job-hunting tips, referrals to other companies and volunteer organisations, as well as advice on applying for social grants to unsuccessful applicants. Candidates who do meet the criteria, are then invited for assessments. Once a candidate is assessed, their information stays on the Harambee database for future reference and also for the aforementioned additional benefits (Harambee, n.d.).

The process starts with a brief telephonic screening, which includes a social means test which ensures that disadvantaged candidates remain the priority. The successful candidate will receive a mobile text message (or SMS) instructing them to come for the first day of assessment (Phase 1) if there is a job available in their area (Harambee, n.d.)

For this first phase the candidate has to be able to provide his/her own transport to the nearest Harambee office or assessment centre. The assessment, selection, and then subsequent processes are described below, as per a detailed explanation by Mosuoe Sekonyela, Harambee's head of assessment; Rob Urquhart, Harambee's head of research; and others interviewed at the Harambee offices (personal communication, June 29, 2015), as may be specified.

4.2.2.1 Phase One assessments

Assessment includes various aspects, including psychometric evaluations, language and mathematics evaluations, and interviews (Helen Smith, personal communication, March 13, 2012).

Assessment lasts for approximately 5 hours on the first day, including an introduction to Harambee and also possibly interview training for candidates (Harambee, n.d.).

Upon arriving for the first assessment, candidates (or “Harambees”) are provided with an initial briefing on the Harambee process, an energizing motivational talk, and a light meal. Harambee stresses the importance of providing food for the candidates, as, according to their historical data, this has been shown to have a significant positive effect on assessment performance.

The first step of the process is checking again if candidates match the Harambee criteria. Many candidates are often immediately screened out due to having provided incorrect information. This is usually 5 to 15 percent of the group. There is attrition at almost every point in the programme. For example, even before phase one, there is a loss of about of 50 percent of people who have been sent an SMS invitation to attend and those who actually show up. There are various reasons for candidates falling out of the Harambee programme, including that some candidates facilitate their own placement into jobs through the skills that they have learned or information that they have gained during the process.

Candidates are then exposed to a brief computer tutorial on the use of a mouse, as all of the processes are computerised, and many of the new candidates never have had any experience of working on a computer.

Thereafter, they are briefed on the various assessments they will be doing. There is then immediately another information confirmation survey which collects their biographical information, as well as other data, which may be relevant to employers (for example having a driving or forklift licence).

The first assessment that they do is the learning potential assessment. This is done first as candidates need to be fresh and focused for this cognitively challenging test. The test used is one of the sub-sets of the TRAM-2 test created by Aprolab, as discussed earlier. Only the concept formation test (CFT) is used. This takes about 45 minutes and provides a score for the candidate's fluid intelligence. All of the outputs from the assessments are converted to a score out of ten. The assessment instruments are discussed in detail in a later section of this thesis.

After the learning potential test, the Shadowmatch profile assessment is administered. This takes 50 minutes to one hour and involves a larger amount of reading but is less mentally taxing. Shadowmatch is a qualitative measurement tool that summarises behaviours of the candidate in terms of nineteen habits and indicates the strongest five habits (out of the nineteen) of the candidate. The results of the candidates are compared to a previously determined benchmark habit profile that is created by combining the profiles of a small group of top performing entry level employees in the client organisation. A percentage match on all nineteen habits and also the core benchmark of the five strongest habits is provided. This ensures that candidates can exhibit qualities needed for success in a particular environment and subsequently meet the requirements

of Harambee's partner organisations (Mosuoe Sekonyela; Nhlabathi, 2013). The Shadowmatch method, and particularly the benchmarking process, is examined in detail in a later section.

At this point in the assessment process, the applicants fill out the Harambee Baseline Questionnaire. This surveys background information and explores where the candidate is in his/her life and career as Harambee aims to ultimately track this information over a period of five years.

After a quick break the candidates make their way back to the computer lab. The next step in the process is creating a Google e-mail (Gmail) account, or to help them to make their personal email account and address more professional and appropriate for the business world. The aim of this endeavour is to make the candidates digital citizens. Harambee uses this email address to communicate job-related information to them at a later stage.

At this point in the day (usually around 13:00) all the assessment results are ready. After sending the candidates a test e-mail, their assessment reports are also mailed to them along with a large volume of job-related information. The assessment results are also discussed briefly.

The candidates receive interview training (called 'Present yourself for success') for one hour and then receive feedback on the practical elements of this training before going home.

4.2.2.2 Phase Two assessments

No candidates are screened out of the process after phase one. All of those who attend phase one are invited for phase two, although attrition from phase one is still between 30 and 40 percent. There are, however, two different groups that candidates are divided into at this stage, namely the retail and hospitality, and corporate groups, based on their results from the phase one assessment. These groups are based on demand from the Harambee client organisations. The retail and hospitality group will be placed in jobs such as cashiers, merchandisers, and customer service. Corporate positions are usually with business process outsourcing (BPO) and financial services clients, and usually in call centres.

The candidates divided into the corporate group will have a learning potential score of five or above and will also match any one of the four core profiles on the Shadowmatch benchmarks. Harambee has two generic benchmark profiles and usually two others, however, when training candidates for a specific client, they will be matched to the benchmark already created for/with that specific employer. Candidates are bound to match a benchmark for one of Harambee's many client companies but can be matched to the bridging programme through the generic Harambee profiles mentioned above. The retail and hospitality candidates are selected with any learning potential score; however, they must match the Shadowmatch benchmark profile of a client company. Candidates with high learning potential scores that do not match the corporate habit

profiles are given the opportunity to move to the retail group, as some retail clients insist on high learning potential candidates.

4.2.2.3 The corporate group – Phase two

The group of candidates divided into the corporate group starts off day two with the Foundational Learning Competency (FLC) assessment. This is an ABET level test provided by Media Works and tests basic language ability. There is also a numeracy test that has been developed internally by Harambee. Candidates who achieve at least a score of five on the literacy test and three on the numeracy test will be successful and will go into an ‘awaiting phase three’ state. The reason for this cut-off is that Harambee has found that they could train a candidate from a three to a five score with relative ease, versus training someone up from a one score, which is much more difficult and much less cost efficient. Candidates who are not successful are invited into the step-up programme (discussed in a later section).

The reason Harambee still includes these assessments in a battery that already contains learning potential and behavioural assessment is that there is still a minimum level of competence required for people in the jobs that Harambee provides. Some employers also still require it.

4.2.2.4 The corporate group – Phase three

This phase is only part of the corporate programme and the retail counterpart does not have this section. This section is necessary because of the substantial resources invested into a candidate who proceeds beyond this phase. It is therefore implemented to mitigate the risk of placing a candidate in the following phases. The process starts with a psychologist interview. In the interview the psychologist rechecks that the candidates fulfil the Harambee criteria and whether he/she may suffer from any disability or psychological disorders. The interview is conducted according to a pre-established matrix. Candidates who are cleared by the psychologist will then be screened for criminal and credit history. These checks are done by submitting a digital scan of the person’s fingerprints to a third-party service provider. The fingerprints are actually taken much earlier in the process (end of phase two) but are only submitted at this point due to the cost implication.

The final test is a telephonic test which is done by a speech and hearing specialist (or audiologist) who checks the candidates for issues that may impede their ability to work over the phone. This is important due to the fact that, as mentioned earlier, most of the corporate positions are call centre positions. Applicants who are successful at this point proceed to the bridging programme. Only about ten percent of candidates who start the process will make it to this point.

4.2.2.5 Retail and hospitality group – Phase two

The retail and hospitality group start their second day of the Harambee process with an interview that assesses ‘sales readiness’. This is due to the fact that many of the retail jobs will be customer facing or even in direct sales. They then undergo a literacy test that is the same as for the corporate group; however, they undergo a simplified numeracy test that has been developed by Harambee. Harambee has two 30-minute numeracy tests and also a separate test that is developed by a large retail client, specifically for their applicant candidates, and has also been approved by their relevant trade union. This test takes about 1.5 hours and is not converted to a point out of ten. After this test the candidates are provided with lunch and then receive about 2 hours of interview training and practice. They also enter their curriculum vitae (CV) data onto the computer system. This CV is, however, not made available to the candidates. They then receive feedback on their success in the numeracy and literacy assessment. The minimum passing score/grade for the numeracy is five out of ten. The two tests of the aforementioned retail client have passing grades/scores of 18 out of 25 and 10 out of 15 respectively.

Candidates who are successful are divided into sales or non-sales groups based on their initial sales assessment. About one out of five of candidates who apply to Harambee make it to this point. Retail candidates are usually placed directly into a job at this point or may receive a short (six day) tailored bridging programme.

Candidates who failed the numeracy assessment will be given the opportunity to enter the appropriate retail step-up program but are also given the option to quit the program and are then marked on the system as ‘no longer eligible’ (NLE).

4.2.2.6 Step-up programmes

The step-up programme has been implemented for candidates who fail to perform adequately on the numeracy assessments. The step-up programme is managed by Thiru Govender (personal communication, June 29, 2015). The step-up programme helps to lift the candidates’ proficiency in basic mathematics. Candidates in these programmes are paid a small stipend to cover their transport costs to attend the sessions. After the programme they receive a retest on the numeracy test, and about 98 percent make it into the bridging programme or appropriate job placement.

The step-up training programme is completed through an online platform called the Khan Academy. Khan Academy is a non-profit organisation based in the USA that operates internationally and offers free material and resources to support personalised education for learners across the age spectrum. The system contains practice exercises, instructional videos, dashboard analytics, and teacher tools which empowers learners. The system adapts to the needs of individual learners and tracks their progress on their individual goals and creates personalised recommendations about course content. Other subjects also available through the

Khan Academy system are Physics, Biology, Economics, Art, History, Computer Science, Health, Medicine, and others (Khan Academy, 2015).

Harambee uses the basic mathematics training tool from the Khan Academy. This free course allows the Harambee facilitator to choose specific modules according to their requirements. The two separate step-up courses for the corporate and retail programmes have their own standard Khan Academy modules that are assigned by Harambee. The system provides an easy way to track candidates' progress and also an excellent coaching platform as facilitators can see where candidates are spending too much time on a specific problem and where they are struggling. The interface of the programme has been described as highly attractive and engaging and the training is highly 'gamified' to make it more appealing to participants. The programme starts with easier problems and becomes progressively harder.

The link to the course is emailed to the candidates and they work through it on a self-directed basis with appropriate coaching and guidance by the facilitator. They work through problems for at least two hours at a time and then do a basic practice test, after which they receive feedback on their achievement and progress. The themes of the questions in the practice test will be contextualised for the corporate or retail group that they find themselves in. The practice test algorithm randomly draws 25 questions from a pool of 300 questions; therefore, candidates receive mainly different questions for every test and also different questions from one another. Notably, this test is at a level that someone with a matric qualification should theoretically be able to pass with relative ease. The results of the test are discussed in peer groups and candidates help each other to solve the problems that they are struggling with. The whole session lasts about four hours and there is only one session per day. The candidates typically show daily gains in their performance and this has a very positive effect on the self-confidence of the candidates (Thiru Govender, personal communication, June 29, 2015).

The programme is designed to last for four weeks; however, the candidates can pass the course by achieving three consecutive 'green scores' on the practice tests and then proceed to the rewrite of the numeracy test. This is a score of higher than 72 percent or 18/25. About half of the candidates achieve this within two weeks.

Some candidates have also been placed in a learner driver course in order to get their motor vehicle license in order to be better qualified for positions which may require them to drive a motorcar or other vehicle. Harambee has also been made aware of a large demand for scooter drivers. There is also a further interview skills training programme for candidates who are to be 'self-placed' into jobs.

4.2.2.7 Bridging programme

After the assessments, or a relevant step-up programme, candidates undergo the Harambee bridging (work readiness) programme. Applicants in the bridging programme are grouped according to similar positions or if one client requires a large enough number they will make up only one group. The size of the groups is typically between 70 and 100 candidates, but can be as large as 120 for retail bridging programmes. Note that only the corporate bridging programme is discussed further, since the retail bridging programmes vary greatly in content and are of a short duration. The corporate bridging programme is usually eight full (mainly six-day) weeks and has more standardised content. It is thus also easier to track and study. Harambee offers generic and tailored bridging options, neither of which are accredited with any SETA. The lack of accreditation allows them to remain flexible in adapting to different organisations' requirements. The generic programmes usually contain small adaptations for specific clients, although these changes are mainly merely thematic in nature and do not impact the core of the programme. There are two other eight-week bridging programmes that Harambee offers in addition to the corporate bridge. These are the higher end programmes for data analysis (and similar jobs) and technical skills (Gina Stoltz, personal communication, June 29, 2015).

The skills taught in the bridging programme include basics of work life, time management, basic maths and language skills, computer skills, personal budgeting, and other skills. The course also includes a large motivational element (Harambee, n.d.). These skills are aimed at helping the beneficiaries become truly functional in the work environment, able to cope with maintaining a job, and help them in managing the personal income resulting from it. These are meant to cover typical issues employers worry about when hiring first time employees. The programme is thus very much focused on context, rather than content. The programme is designed to teach habits and dispositions, so there is a large focus on behaviour change (Sivuyisiwe Prusent, personal communication, June 29, 2015). It is thus a work socialisation experience which creates the first work experience for the trainees to some degree. Many tasks are completed in groups. The bridging programme is very much like work, for example, retail trainees will be required to complete the eight-hour training day in a standing position. BPO trainees spend a lot of time typing and learning to cope with other mundane tasks. The bridging manager handles the performance management of individuals and teams in the bridge. Trainers are tough on the candidates and push them for high performance, thus fulfilling the role of a typical line manager. They are also geared towards creating a positive and energetic environment for the trainees. The aims of the training are behaviour change, personal mastery, self-reflection, and self-engagement. It aims to improve the candidates' competence, attitudes, and behaviours. Harambee believes that employers can provide job-specific skills through training as needed in the future.

The elements covered by the bridging programmes are referred to internally by Harambee as 'building blocks', and include the personal mastery section, communication training, cognitive training, interview preparation, customer service training, and elements of computer literacy. The various building blocks are not presented as distinct modules, but training is scheduled as such that most of these building blocks are covered throughout the training. The training does however start with two days of personal mastery upfront, which is deemed by the bridging managers to be very important. This motivational section of the bridge is aimed at giving candidates a sense of personal responsibility for their own success and helps them to understand the matter of personal choice in attaining success. The training is very much geared at a process of self-discovery. Trainees are helped to understand their own behaviour and emotional triggers. Candidates are guided into understanding the value of their own experience and attributes for a potential employer.

The most fundamental elements of the programme are done in the first four weeks in order to ensure that the most important things are covered, should the client organisation change dates or requirements they have of the candidates, or in the event that a job position becomes available sooner than expected.

A large part of the training is dedicated to interview and curriculum vitae writing skills. There is also a big focus on customer interaction. The programme has a lot of role-playing exercises for this purpose. Specific product knowledge related to a specific client organisation will be taught toward the end of the programme. Programmes are flexible and are somewhat adapted to the needs of the group as they become apparent during the training.

4.2.2.8 Cognitive training (Coglab)

Trainees also undergo training in cognitive skills. The Coglab programme is a computerised learning tool that develops both analytical and conceptual thinking skills. Analytical skills involve deriving a desired answer from a mass of information (deductive reasoning), usually by organising or manipulating the information in some way first. This requires trainees to work with tables of data and they may have to categorise data in spreadsheets in order to extract certain information or produce a simplified result to meet some requirement. Conceptual thinking helps the individual work with categories of information and finding patterns and linkages (inductive reasoning). In simpler tasks he/she is required to use concepts or categories that have already been defined, but in more complex tasks he/she has to identify or adapt concepts, or even form new ones to suit a certain requirement. For example, the person may have to classify a set of faults a complex system may experience and doing this in a way that would facilitate trouble-shooting. It thus teaches candidates new thinking processes and strategies that are useful in solving such novel or complex problems that are regularly encountered in managerial and technical work. In fact, these skills form the basis of almost all types of intellectually challenging activities. They are highly

portable and can be applied by a successful learner when mastering a new discipline or set of skills. The main reason the teaching of these skills is necessary is that the national education system, which relies heavily on rote learning and formulaic methods of instruction, has not developed these fundamental capacities and as such school-leavers are ill-equipped to cope with novel tasks and the solving of problems where a linear application of knowledge is not sufficient in finding a solution (Aprolab, 2007). In the call centre jobs where Harambee candidates will be placed, for example, problem-solving is a constant requirement and candidates need to be groomed to solve problems by themselves before referring it to a team leader (Sivuyisiwe Prusent, personal communication, June 29, 2015).

Coglab is provided to Harambee by Aprolab, owned by Terry Taylor (mentioned earlier). There is also a classroom version of Coglab available but is not used by Harambee. The computer version has a once-off software cost, as well as an annual licence fee. There is a cost per learner for each section of the course and also separately for workbooks and online support for learners throughout the duration of the course.

Coglab training is done mostly on a self- and peer-driven basis, with some assistance from a tutor. The programme is split into eight half-day (four hour) sessions, since it is mentally taxing. There is thus one Coglab session per week in the corporate bridging programme. The programme starts with a paper-based pre-assessment, and then has on-going computerised tests included in the Coglab modules. For the pre-test, up to 70 percent of the candidates score lower than 60 percent. Harambee has also developed its own assessment for the Coglab modules. The system's own summative assessment produces two separate scores for analytical and conceptual thinking skills, and also a combined score (Sylvester Moepya, personal communication, June 29, 2015).

Coglab has been shown to increase scores on a critical thinking test in a controlled study done in a large organisation (Aprolab, 2007). The programme now also forms part of the core of the Harambee bridging programme. It helps the candidates develop systems thinking that can be applied directly in the workplace and also helps them to build self-confidence for other parts of the programme. There is a new version of Coglab (Coglab 3) that includes a section on judgement and decision making.

4.2.2.9 Evaluation

The training involves on-going formative evaluation, comprised of daily measurements and also a major summative evaluation at the end of each section (Helen Smith, personal communication, March 13, 2012). Evaluation is thus done by the bridging facilitators in accordance with the specific outcomes of the building blocks included in a day's training. The trainers also perform checking of attitudes and behaviours associated with curiosity, energy, and positive attitude. The behaviours are evaluated on a 'mystery shopper' type basis where smaller cohorts of candidates

are monitored somewhat randomly during the day. Punctuality and attendance are monitored specifically every day and are key success factors. Candidates who score poorly on these elements face harsh penalties and quick expulsion from the programme. The scores are on a rating scale that is based on colours, which are generally linked to a percentage score for performance—these are:

- Dark green – 90 percent plus
- Light green – 80-89 percent
- Yellow – 70-79 percent
- Orange – 60-69 percent
- Red – less than 60 percent

The score for Coglab is however modified into a different score (colour) on the scorecard system, as the Coglab system is very challenging and the candidates produce relatively low percentage scores which do not appropriately reflect if they have made adequate progress.

Bridging managers and facilitators discuss candidates on a weekly basis and arrive at the individual scores. This information is then entered into the Rolefit database system.

These scores are combined into a total for the week which is then included in a cumulative total for the bridging programme. There are also bonuses and penalties allocated to foster behavioural change. In Figure 4.3, one can see the weekly scorecard for a group of candidates in one bridging programme. The large blank spaces are where the researcher has removed the names of individual candidates (to ensure confidentiality), and also the exact module names to preserve Harambee's intellectual property.

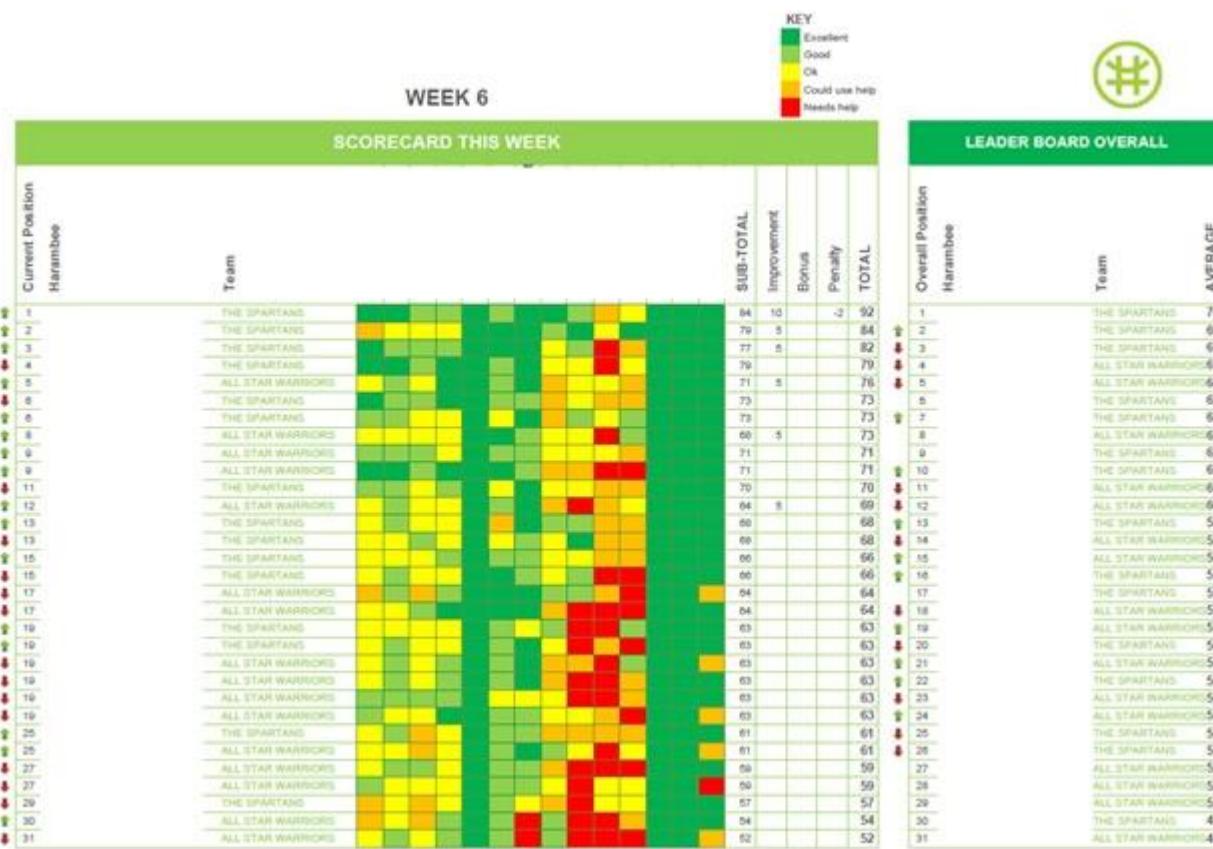


Figure 4.3. Corporate bridging programme: weekly scorecard. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

This printout is shared with the trainees to foster competition and teamwork. Harambee claims that this competitive and team-based approach has a large positive impact on training success. One can see the individual elements each receiving their own score. The scorecard is not done in the first week of training, and often in the last week of training it may also fall away due to candidates already being removed for interviews and work opportunities.

It is important to note that the scorecard system itself is also used as a behaviour change tool. Knowing that the candidates are made privy to the scores, and that the training room is a competitive environment, trainers can use the scores to motivate specific behaviour change. In other words, the ultimate goal of the training is success in completing the entire bridging programme. The scoring system, apart from indicating success or failure, and identifying problem areas for individuals, is meant to facilitate this. This means that a candidate may receive a particularly low or high score, based on a specific behaviour or action, which is not uniformly standard in the measurement of all candidates, due to the fact that the trainers may feel that such a score will achieve a specific goal. This means that although useful in this regard, bridging scores are not necessarily a completely accurate representation of 'individual training success'.

4.2.2.10 Feedback

Feedback forms a key part of the Harambee process and is built into every step. In the training, candidates will have one 'scorecard check-in' per week. This involves discussing results on the various elements of the scorecard and reflecting on ways to improve. Teams will also play a role in helping individuals in improving scores. This is due to the fact that individual scores impact team performance.

An important part of the training is the journaling process that the candidates have to partake in. This journal facilitates a positive process of reflection and self-discovery throughout the bridging programme. The journal is a high quality 82-page booklet that is printed in colour. Trainees are to write in the journal daily. The first section the candidate fills in has to do with why they want a job, commitments to themselves and Harambee, and other personal motivational information. The rest of the journal has sections for daily reflections, and specific areas of discovery and self-assessment. There are also sections and exercises for preparedness for work, managing customer relations, interview preparation, and specific outcomes of the bridging programme. The journal is submitted weekly and on Wednesday mornings there is a group discussion session on the journal progressions made.

4.2.2.11 Placement into jobs

Candidates who are successful in the training are allowed to be interviewed for jobs that may be available and suitable to them in Harambee's client organisations. Candidates are usually bridged for a specific client company, those not taken on by the specific client are kept on hold for one to two weeks while being paid a stipend, sent to other companies, and given three interview chances. Most of these candidates end up employed.

Placed candidates are monitored to some extent - specifically to the 3-month retention mark. If candidates do not make it to this mark, Harambee will replace them at no cost to their client company. Corporate retention is over 90 percent, while it is 65-70 percent for retail candidates (Harambee, n.d.).

Since Harambee has noticed that candidates struggle to cover living expenses and travel costs until their first paycheck, they have given people an advance on their salary or continued to pay stipends until the candidates earn their own money. This decreases churn rates and also prevents candidates from borrowing money at high interest rates, as is often the case.

In the Harambee programme the employment of a candidate is considered priority, this means that candidates will exit the program the moment an employment opportunity becomes available to them.

4.2.2.12 Employment journey survey

Harambee monitors all the people who go through phase one of the assessments. Candidates who are placed by Harambee or those who are ‘self-placing’ are all surveyed. This is done by an employment journey survey that is sent to all candidates. The goal is to track them over a five-year period. The survey is linked to a lucky draw in which candidates can win cellular phone airtime in order to motivate participation. The survey tracks work-seeking behaviour and the employment outcomes of the candidates, for example, whether or not they were placed in a job by Harambee, where they in fact remained employed, or, for example moved to another job or left the employment for another reason. Employed candidates are asked about employment conditions, satisfaction, and coping. The 2015 survey had a 27 percent response rate, according to Rob Urquhart.

4.3 Benefits of the Harambee Programme

Harambee aims to reduce the risk for companies to employ first-time workers, by following a rigorous, scaled process model to ensure that high-potential candidates are sourced and trained appropriately for a specific job (if available).

For employers the use of Harambee’s services carries many benefits, including the mitigation of the risk of employing first time job seekers, improved retention, lower HR expenditure, and hiring skilled employees with development potential from a desirable and largely untapped talent pool.

Another benefit for employers is that Harambee has a level 2 BBBEE rating. This means that all costs can be claimed as preferential procurement. Harambee is also a Category A enterprise development beneficiary, so if the client pays them on the invoice date, 15 percent of the amount (excluding Value Added Tax) can be claimed as enterprise development expenditure, likewise with the full amount of any donation (Harambee, n.d.).

Harambee’s services also benefit the South African society through benefitting the communities from which it draws its candidates. More than half of those who graduate from the development programme come from child- or grandparent-headed households in which government grants are the only source of income. Permanent work and a decent salary make these young people the breadwinners for households of, on average, eight people, significantly improving their spending power and quality of life (Harambee, n.d.). Harambee candidates have displayed an increased desire to take up leadership roles and volunteer work in their communities. Harambee candidates also form a network of their own, with 48 percent of them keeping contact with each other after training. Harambee’s research has shown that 64 percent of placed candidates have helped friends to get jobs.

Harambee demonstrates the available opportunities for the inclusion of affirmative development within a selection and placement scenario.

4.4 Profile of Harambee Candidates

The profile of the average Harambee candidate confirms that the programme creates value for those who are struggling in the lower tiers of society. Harambee has done on-going research into the profile of the candidates that come through their system. Below are some research findings of their 2014 tracer survey:

- 73 percent of candidates live off social grants
- An additional 17 percent live in households without any formal or grant income
- 16 percent of the candidates live in informal dwellings
- The majority (66 percent) of candidates live in households of 4-11 people
- The average household income earner supports more than 4.6 other people
- 43 percent of Harambee candidates have children of their own

Where there is employment by a member of their household, the chart below (Figure 4.4), which is based on information gathered by the Baseline survey tool, shows what kind of work they are involved in:

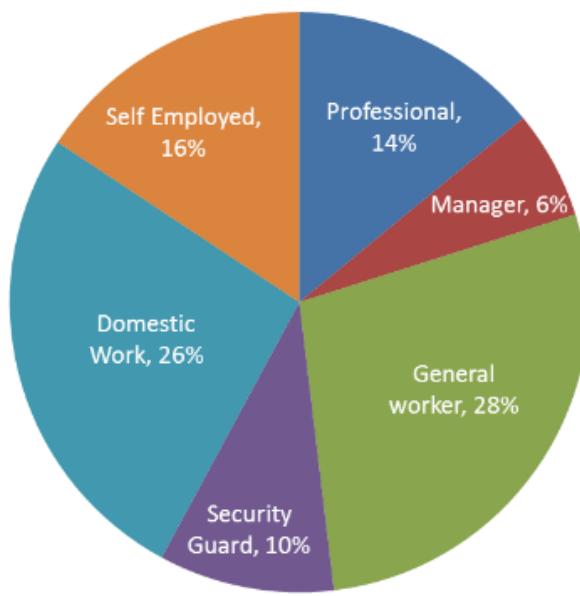


Figure 4.4. Employment in candidates' households. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

It is notable from the above that the people in the candidate's immediate environment and network are mainly not involved in professional or corporate work. This shows that these people do not have strong networks that could help them find opportunities and also that they will most likely not even be aware of the kinds of entry level opportunities available to them. More than half of candidates have no prior employment themselves, and 22 percent of those who have had prior work experience have not been in a job for more than three months and a further 26 percent for less than 6 months. There are various reasons why people from this group fail to find employment. As mentioned earlier, these include geographical constraints, insufficient networks, lack of information, and restricted financial means. In Figure 4.5 ten different reasons are shown why the youth struggle to find employment. This is based on Harambee's 2014 tracer survey, which had a sample of 256 unemployed youth. This confirms the reasons stated previously and shows that these young people face seemingly legitimate reasons for remaining unemployed.

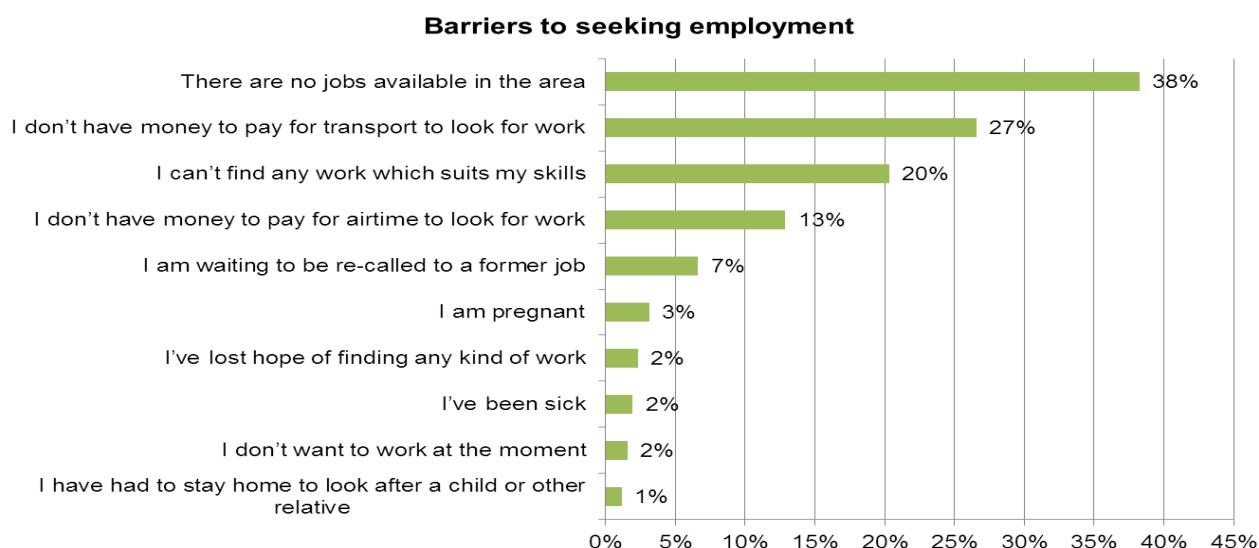


Figure 4.5. Barriers to seeking employment. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

As far as prior education and future educational intentions of candidates is concerned, one can see in Figure 4.6 that the overwhelming majority of candidates attended either township or rural government schools.

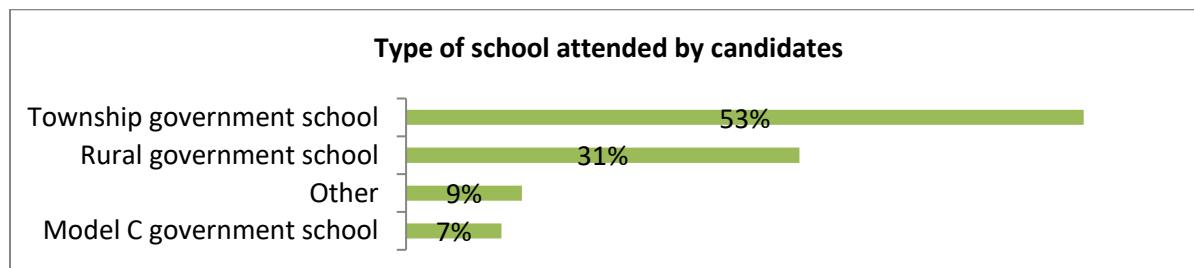


Figure 4.6. Type of school attended by candidates. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

Approximately half of the youth population lives in major metropolitan areas, and 12 percent of South African youth lives in the Western Cape specifically.

When investigating the intentions of candidates to engage in further studies, it becomes evident, as per Figure 4.7, that most candidates, who have placed studies on hold or failed to complete studies, have done so due to financial constraints. Harambee surveys have shown that 55 percent of their candidates have not embarked on further studies, 30 percent have studies placed on hold, and a further 15 percent indicate that they will not complete their studies.

Reasons for not completing studies

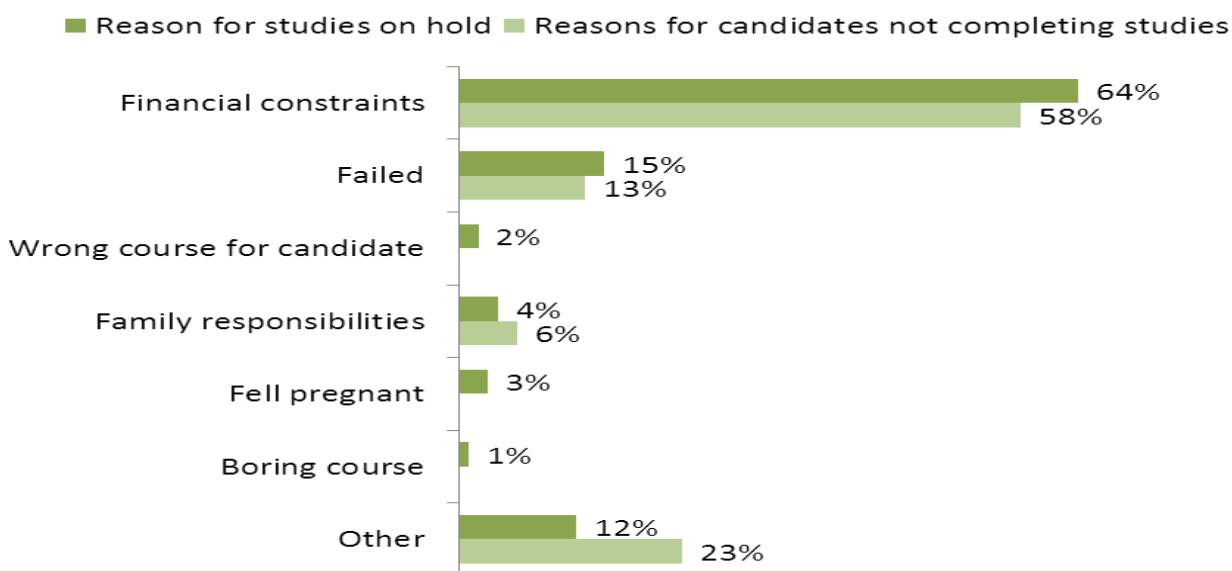


Figure 4.7. Reasons for not completing studies. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

4.5 Harambee's Philosophy Around the Creation of their Model

Harambee is an entrepreneurial organisation with rapid innovation cycles. Harambee has an action-based approach that sees them engaging in the solving of problems and making adjustments to their approach as they progress. Their culture supports nimble responses to new market information, data-driven experimentation, and calculated risk-taking.

4.6 Harambee's Strategy and Goals – Current and Future

Harambee started with the intention of resolving churn and vacancy in entry level positions in partner companies by aiming to provide work-ready candidates with the right attitudes and

behaviours required to meet employer expectations. Retention is the key metric by which they gauge success. They drive the candidates to be able to remain in employment, with the focus on the 12 months employment mark, as mentioned earlier, due to the research finding that a person employed for one year has an 85 percent chance of lifetime employment. This is mainly because the person will be able to build their own employment network and assimilate the expectations of the work environment. Harambee has tracked retention of some placed candidates. According to a number of internal surveys conducted from 2013 to 2014, their retention rates at three months are 97 percent (financial services), 85 percent (hospitality), 94 percent (retail), 96 percent (domestic BPO), 86 percent (international BPO), and 96 percent (technical work). Retention rates are slightly lower for the one-year mark and are also harder to track. Available retention rates for the one-year mark include 85 percent (financial services), 63 percent (hospitality), and 70 percent (domestic BPO). Harambee has stated that they wish to find ways with clients to drive retention. This involves creating a conducive environment for the candidates in the company after being placed. Harambee does provide ongoing support to clients through their respective key account managers. These managers also monitor the success of the placed candidates to some degree and assist in improving it.

Harambee's numerical goals for 2020 include 500 000 people going through their systems; which includes 400 000 people through phase one work-seeker-assistance training, 50 000 people having some form of work experience training, such as a learnership, internship, part-time, or volunteer work, and 50 000 placements into full time jobs.

Although Harambee is focussed on trade and hospitality, they have branched out to other types of jobs. There are also programmes for graduates with second tier degrees who are groomed for business analyst positions. Harambee is also involved in the mining sector. They even ran a fitness programme to help miners pass their medical assessments. They increased the pass rate from 8 percent to 77 percent in six weeks.

Harambee is also expanding by opening new offices and also expanding their mobile operations. In terms of marketing, they are making large investments in their mobile website and also in radio.

Harambee also must consider and reconsider their own sustainability. They cannot rely on social investors indefinitely. Their vision is to become a sustainable labour market solution. One way of doing this, is by not expanding the costly bridging operations, but rather focussing on ways of increasing the employability of people and enabling them to be 'self-placing'. They also have a desire to create blended learning solutions, creating new content for step-up programmes, and investing in scalable platforms for learning.

Figure 4.8 shows a graphic that indicates Harambee's strategy for resolving supply and demand issues for the foreseeable future.

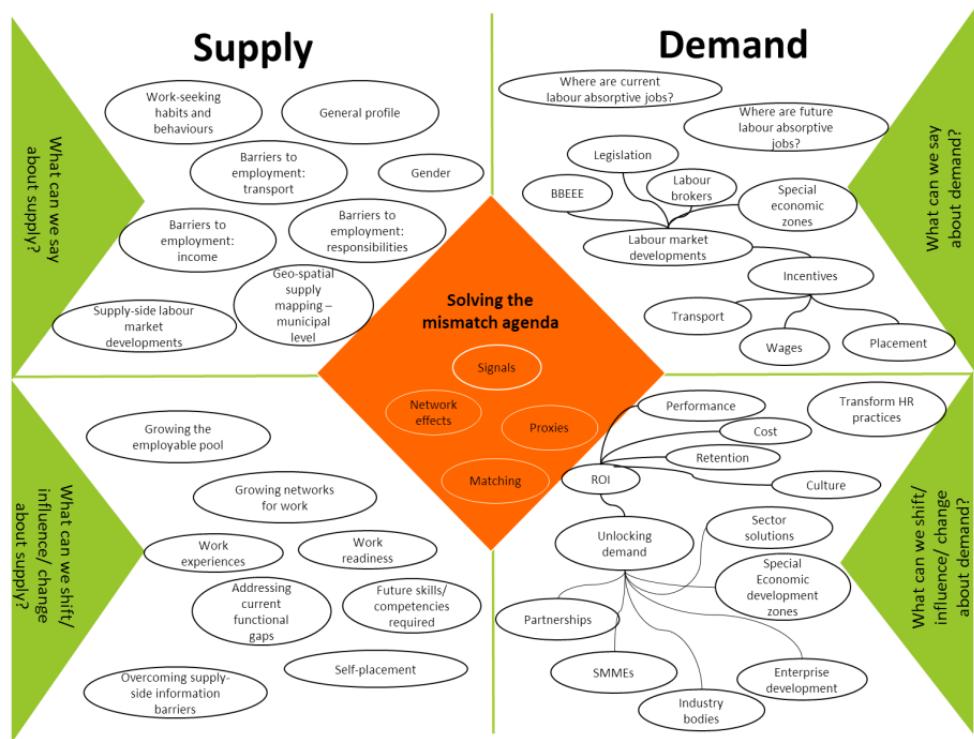


Figure 4.8. Harambee supply and demand dynamics. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

In the block in the middle are the most important focus areas for the company; these include:

- Signals – ways in which target candidates show employability.
- Network effects – how to link people with employment networks.
- Matching – helping employers find the right candidate.
- Proxies – indicators that can be used to provide useful information about candidates.

4.7 Harambee Measurement Tools and Outputs: Shadowmatch

The following sections outline the measurement instruments used and assessment outputs generated by Harambee. Harambee matches candidates to the environment of their clients' organisations with the Shadowmatch tool.

4.7.1 Shadowmatch introduction and premise

Harambee uses the Shadowmatch system to match candidates to the environment of their client companies. Harambee's goal behind this is to ensure that candidates have the largest possible chance of continued successful employment after they have been placed. The intention is thus to have candidates matched to a job before they commence training.

Shadowmatch, as defined by Deloitte, and as quoted in the Shadowmatch Research and Validation Manual (De Villiers & Converse, 2014, p. 42):

Shadowmatch is a ‘Black-box’ type tool that presents an individual with a list of tasks in order to determine habits in the behavior of the individual. It simulates tasks for the individual to indicate how he/she will act by selecting from a list of multiple answers. The system then identifies trends in the way an individual has indicated how he/she will act in the specified circumstances and calculates the consistency with which answers were selected. The result is a graph that indicates the level to which these habits are embedded in the behavior of the individual as per a set of behavior definitions. A high score indicates that the individual has consistently selected answers that indicate a strong preference towards behaving in a specific manner. A low score indicates that the individual didn’t (sic) consistently select answers that would represent congruent behavioral patterns of the specific nature calculated as a habit. On the list of 19 habits, the score can even be less than zero. This indicates an “anti-habit” also referred to as a counter habit. The person then indicated a habit against the habit being calculated.

According to Pieter De Villiers (personal communication, November 5, 2015), Shadowmatch, as personal assessment, originated from a desire to navigate the complexities of the human mind in a meaningful way. The system was designed over a five-year process that started with an attempt to map factors in a work environment that would lead to success, or that candidates can be matched to, in order to ensure fit. The developers found that this approach was problematic due to the fact that there are too many variables to track in a work environment. Shadowmatch then resorted to the studying of behaviours of top performers in a company as a proxy for the characteristics of the environment. They based the approach on Phil Richards’ 70 habits and refined these to start with 30 habits of their own. This list of habits was then further refined over the period and distilled into the nineteen habits and other elements included in Shadowmatch at present.

The hypothesis that underlies Shadowmatch is that the person-environment-fit will determine job performance through a harmony between people’s tasks, work environment, qualifications, and behavioural preferences. The premise of behavioural similarity in the company or group has sufficient merits, according to the developers, and the usage of behaviours, rather than other attributes, promotes diversity due to the fact that different people, with different personalities and other attributes, can exhibit the same behaviours. Anecdotal examples have shown wide diversity in benchmark groups. Shadowmatch maintains that success is driven by habits and is ultimately a function of the connection between person and environment. People will perform in the work if they have the right qualifications and experience, right behaviours and, are given the right environment.

Behaviour tends to form a consistent recurrent pattern over time. Such behaviour is generally known as 'habits'. Habits thus tend to have high predictability over time. Different behaviour patterns will tend to lead to different levels of success in different contexts. Similar behaviour may also have different underlying causes in different people. The logic proposed by Shadowmatch is thus that since behaviours generate performance, and as such, the presence of sought-after behaviour is an end in itself, therefore it can be argued that the underlying reasons for those behaviours are irrelevant, if the behaviours themselves are indeed already present in the form of consistent habits.

The theoretical basis for this theory is the definition of job performance as an aggregated value to the organisation of the discrete behavioural episodes that an individual performs over time (Motowidlo, Borman & Schmit, as cited by De Villiers & Converse, 2014). Schein's (as cited by De Villiers & Converse) well known framework of organisational culture includes shared habits as a first level variable of organisational culture. There is also much research demonstrating the important interaction between individuals and their environment in predicting performance. When a person fits the environment, they are expected to experience positive attitudes, motivation, and increased performance. This congruence has also been shown to increase organisational commitment, lower levels of job strain, and improve contextual performance (Kristof-Brown, Zimmerman, & Johnson, as cited by De Villiers & Converse). The developers of Shadowmatch also postulate that by managing the habits of people entering the organisation, that organisational culture could in so doing be modified or maintained.

Shadowmatch maps the habits of the individual and compares it to a benchmark score of top performing incumbents in the context that the candidates are being screened for. It thus generates a measure of fit in order to illustrate the level of expected success in the targeted context based on the premise explained above.

There is some basis to consider that this approach, which is based on clusters of behaviours, may in fact share some underlying principles with the competency modelling approach discussed earlier. The Shadowmatch habits, in theory, do have some overlap with the concept of competency and also to a large extent with the domain of competency potential variables, as discussed earlier. There will undoubtedly be uncertainty as to the treatment of these habits if entered in a larger competency model, and the creators of Shadowmatch do not ascribe to the same approach as discussed earlier. In fact, they do lean more toward the American approach to competency, which makes sense, considering that they do have a number of clients from the USA. Below, the habits measured will be explained after which the benchmarking and matching process will be delineated.

4.7.2 Habits

A habit is an action that repeats itself with minimal or no conscious planning on the part of the individual. This behaviour thus tends to repeat itself if the situation is conducive or if it promises to fulfil a meaningful need or goal for the individual. Figure 4.9 shows the output of the Shadowmatch system for the nineteen behaviours measured with their respective scores. The Shadowmatch report that the user would receive introduces the results by assuring the user that there are no 'good' or 'bad' habits, and that scores on habits do not indicate levels of skills, competence, or ability. Habits merely indicate recurring patterns of learned behaviour (De Villiers & Converse, 2014).

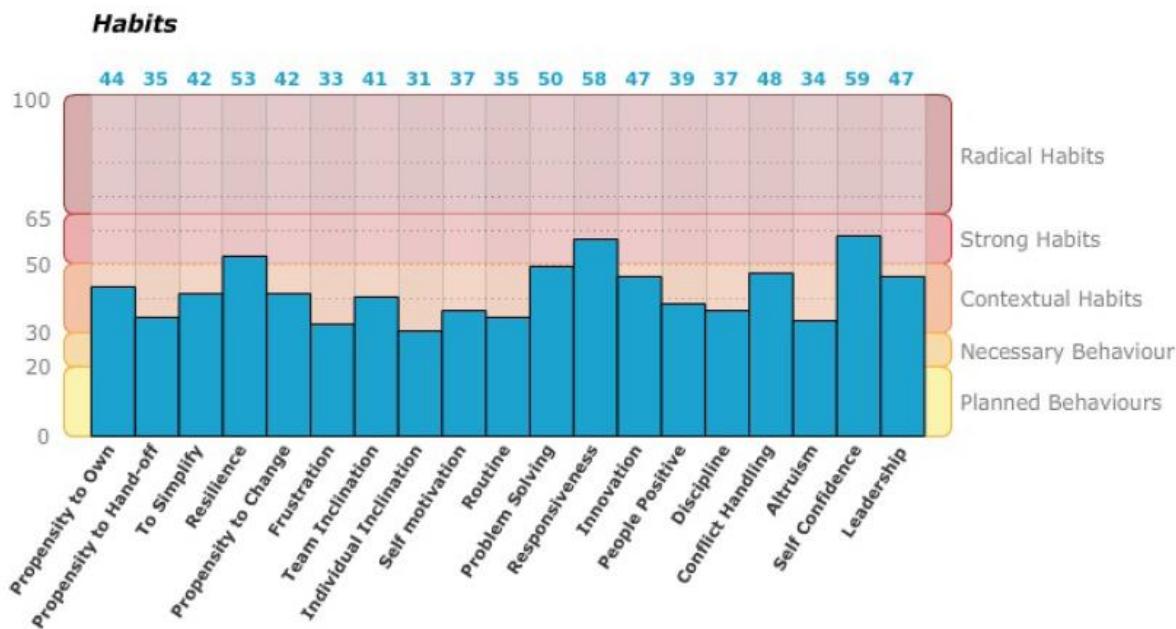


Figure 4.9. Shadowmatch report output for 19 habits. Adapted from a sample test provided by Shadowmatch, in this instance, the researcher's own habit profile.

The scores indicate the level of the preference for the respective habits. Habits that fall under 20 are classified as planned behaviours that will only be engaged in when the individual explicitly prepares to act in a specific manner in a given situation. Habits with a score of 20-30, are seen as necessary behaviours, when the individual will only display the habit in situations where it is absolutely necessary in order to achieve a certain result. Scores between 30 and 50, refer to contextual behaviours. This means that the individual will display the behaviour in certain situations and not in others, like when they feel the situation is conducive to the behaviour, they would be able to display the behaviour with fair comfort. Habits of this strength can be seen as being balanced and neutral in nature which indicates a positive balance in the person's approach to applying such behaviour in an appropriate context. Habits measuring between 50 and 65 are strong habits which indicate that the individual will show that behaviour in a recurring pattern and

display it across situations. Habits with scores above 65 are radical habits, which are habits that are beyond the control of the individual, which may even become counterproductive in the event where the person does not have a match to the context they are in. A score on a habit of 34 would typically be interpreted as that the person would naturally act in such a manner or display the habit in question in 34 out of 100 situations containing a similar stimulus (De Villiers & Converse, 2014).

An explanation and interpretation of the meaning of all the habits is presented below, in accordance with the definitions ascribed to by Shadowmatch, as per De Villiers & Converse (2014):

- Propensity to own and propensity to hand-off

These two habits indicate whether the individual takes ownership to solve a problem and handles a challenge him/herself, or whether he/she prefers an outside agent to solve problems, handle difficulties, or even execute tasks. With this habit, there is a strong conceptual similarity to the personality variable locus of control. In some jobs, a habit of handing-off a task is necessary, while in others, it is not. This may also be referring to empowering or delegating behaviour or alternatively, to avoidance behaviour. According to Shadowmatch some environments may favour one type of behaviour or the other, though in some contexts a combination may be required.

- Self-confidence

Self-confidence refers to a behaviour-pattern that indicates the person's tendency to act with conviction and commit to a decision. Self-confidence is the habit of acting with a high level of trust in one's own abilities, qualities, and judgment, together with an understanding of personal limitations. A high score indicates that an individual has a habit of acting in a secure and confident manner, though a low score does not convey general insecurity, but rather varying levels of self-confidence.

- Self-motivation

Some people have the habit of energising themselves (internal motivation) whilst others are dependent on external energisers to stay positive, driven, and active. Shadowmatch calculates the habit towards the capacity of the individual to behave with high levels of energy despite the absence of external motivating agents. Self-motivation is thus the behaviour of continuous positive action towards a desired outcome in the absence of external energizers.

- Resilience

Resilience refers to the habit to overcome challenges despite the difficulties experienced. This habit is strongly linked to concepts such as tenacity and grit, and links strongly to the self-

confidence habit, by definition. The test subject may, however, indicate a negative level of resilience. This indication is that the specific person tends to disembarke from a task not because he/she experienced the task to be tough but because he/she anticipates it to be tough without even trying. If this is a habit (giving up without even trying) the individual will also tend to develop a habit of low self-confidence.

- Discipline

This is the preference for working under extreme levels of discipline in a highly disciplined working environment where adherence to structure, and rules, and regulations are imperative. People with a high (above 70) score on this habit may likely even create structures of discipline for themselves and others to adhere to. Individuals with an extremely low score do not easily conform to structure, discipline, and strict order. This habit thus does not refer to self-discipline, but rather a preference for structure and order and the ability to follow rules and protocols with ease.

- Routine

The routine graph is an indicator of an individual's habit towards structure, repetition, and similarity. It determines whether the individual has a habit of behaving in harmony with an environment of repetition and patterns of the same behaviour. A high graph indicates a high propensity towards a positive blend between the individual and an environment where structure and routine results in a reality whereby the contextual experience has low day-to-day variability.

- Propensity to change

Some people find it very difficult to adapt to change and become comfortable with new methods, new ways of doing things, new environments, and new technology. On the other hand, there are people who advocate change and tend to venture towards new frontiers. This habit links closely to the personality variable of openness to experience. It presents a basic continuum from mere adaptability to an almost 'daredevil' entrepreneurial spirit. It indicates the individual's propensity of dealing and working with change and new experiences and challenges in an effortless and positive manner. A person with a high score on this variable may even facilitate or drive change – even if unnecessary to do so. A negative reading may indicate resistance to change.

- Innovation

This is the habit of finding new ways and identifying better processes and methods to improve on current methods of working. Shadowmatch defines innovation as the behaviour of an individual doing things that are new, designing new practical functionalities that improve on the way things are done, and even creating new realities. Someone with creative ideas is not regarded as

innovative by this definition. This habit indicates practical creativity, with an emphasis on the actual implementation of ideas.

- Propensity to handle frustration

This Shadowmatch calculator indicates an individual's habit towards applying positive behaviour when dealing with frustrating circumstances. Frustration occurs when the individual is obstructed from reaching his/her goal. A high graph indicates a strong habit of positively handling setbacks in order to gain task completion, instead of succumbing to overwhelming feelings of frustration. The behaviour types that Shadowmatch measures are those acts whereby the individual deals with the obstructing source/interference in such a way that his/her actions towards successful results stay on track.

- Team/individual inclination

The system calculates, according to the answers given, whether the individual prefers working as part of a team or whether he/she prefers working as an individual. When these two calculations are similar, it indicates that the individual is equally comfortable working in a team or as an individual. This habit does not indicate whether or not the person can work in a team or not, but rather the preference of the nature of either context.

- Problem-solving

This is the habit of engaging with challenges on a conceptual, social, and practical level and managing these difficulties/challenges towards resolving them successfully. People with a strong embedded habit of problem solving become easily intrigued by challenges and riddles to be resolved, whereas a person who does not display this habit will find it easy to bypass or even ignore a problem that needs some effort to be resolved.

- Conflict handling

This habit refers to habit of dealing with conflict in a positive way towards an outcome with no or minimal negative consequences for either party, as opposed to avoiding or ignoring conflict.

- To simplify

This refers to the habit of breaking complex scenarios down to linear challenges that can be resolved more easily. It can be seen as the habit of taking an easier route towards solving complex challenges. It is linked to condensing information, summarising information, and clarification, rather than complication, of an issue. This habit normally relates to efficiency where an individual has developed the ability to find a simple way to resolve challenges/problems. The habit of simplification can develop in tandem with the habit of problem-solving. When both these habits

are well formed the individual might develop extremely strong behaviours towards effectively solving problems by applying simple ways towards a solution.

- Responsiveness

This indicates the individual's reaction speed to outside stimuli, in other words, the habit of acting immediately, if, and when, necessary. A low score will merely indicate that an individual does not have the habit of acting immediately, whilst a high score indicates the habit of acting immediately.

- People positive behaviour

This calculates whether the individual has the habit of working with people in a positive way and building positive relationships. It also tracks the way a person influences people toward a positive and meaningful experience of life. This habit typifies a natural people-oriented person who is not easily frustrated by others.

- Altruism

This reflects a person's charitable willingness to serve the needs of others without expecting a return. A low score would indicate that a person will be inclined to give to others on a more selective basis. According to Shadowmatch, these people do well in service-driven jobs. Shadowmatch has gathered evidence to the effect that a high score on altruistic behaviour does not always implicate a high score on people positive behaviour.

- Leadership

This score indicates the propensity to act immediately and with confidence in leading a group. It is the habit of taking the lead. It is derived through an average of some of the other habits in the measurement. Shadowmatch defines leadership as the ability to integrate resilience, discipline, the propensity to act immediately, self-confidence, and a team-oriented approach, with an attitude of positive involvement.

4.7.3 Attitudes

The Shadowmatch system also measures four attitude categories. A person will have a combination of the categories and will typically have a dominant attitude category and also a secondary category. The four quadrants are as follows:

1. Involvement, unassertive
2. Involvement, assertive
3. Lack of involvement, assertive
4. Lack of involvement, unassertive

Attitudes are defined by Shadowmatch as a person's general approach to work and life. Attitude categories 1 and 2 share the habit of involvement. Categories 2 and 3 share the habit of assertiveness, sometimes even aggressive, behaviour. Categories 3 and 4 share the habit of less or even lack of involvement in the world around them. Categories 1 and 4 share the habit of unaggressive behaviour. These attitudes are described by Shadowmatch as follows:

- Attitude category 1: Un-assertively involved

People who show dominance in this category tend to be positively involved in the world around them. To participate and to get involved will seem easy for them, they may do it without effort and it is typically embedded in their normal behaviour patterns. Strong category 1 people have a habit of participation and engage actively and in an unaggressive way. They typically have strong principles in life and tend to hold on to what they see as the right things to do. They are motivated internally to improve their context and display a willingness to contribute substantially towards this priority. They tend to be friendly but firm, positive, and progressive. The majority of Category 1 people tend to work and participate without emphasis on serving other people but to serve a principle.

- Attitude category 2: Assertively involved

A person with a high presence in this category will be actively involved in everything around them. They tend to be assertive (sometimes aggressive), and also willing to stand for what they want and how they prefer things to happen. They have personal gain as a strong driver of their participation. They tend to do things more with the expectation to gain some form of personal benefit in order to further their own interests. Category 2 people are normally very successful in terms of business, financial independence, and positions of power. When faced with adversity or obstacles, they may tend to drive towards their outcome and put others under pressure to perform. People who demonstrate this attitude category tend to be controlling in nature and insist on dealing with factual information. This category related closely to what is known as Type-A behaviour.

- Attitude category 3: Assertively uninvolved

Although individuals in this category have an assertive/aggressive approach towards their world, they are very different from the category 2 group. This difference lies with the fact that category 3 people are not involved, and they also do not easily become involved in the environment and situation around them. They tend to be quick tempered, easy to become upset, and very quick to react. There is a tendency for them to over-react and to pre-react to situations. In other words, they may react aggressively to an incident before knowing all of the facts to the matter. They also tend to threaten, and voice their feelings when frustrated, but they seldom do anything tangible

about the problem. They tend to be permanently frustrated, over critical, and irritable. In the extreme, they can become abusive and personal in their attacks. Despite this behaviour, they lack the energy to participate actively towards a solution. Working with strong category 3 people can become very challenging as they are not easily satisfied. They can be over critical whilst they prefer not to get involved in order to resolve or repair the cause of their dissatisfaction.

- Attitude Category 4: Un-assertively uninvolved

Category 4 people do not easily get involved in the inner working of the contexts where they live and work. They keep their knowledge levels with regard to the day-to-day activities in life down to a working minimum. They tend to only learn the basics necessary to do what needs to be done. A good example can be found in the way they might use modern technology. They will know what to do in order to get the technology to do what they need and for the rest they will prefer to stay uninformed. They are generally quiet, not demanding, not willing to argue and very unaware of many things around them. They do not attend to detail and small issues. They are not driven by personal obsessions. They cannot deal with conflict, do not like too much attention, and may easily disengage from activities that do not interest them. Some of them are highly specialised people in one area of their business or in life in general. Working with them is very easy if their attitude is suitable for the task and the environment. They typically do not get frustrated easily nor do they become irate. They just want things to work, though they may not always want to understand how it works.

4.7.4 Other Shadowmatch measures

There are also four other scores produced by the Shadowmatch system. These are:

- Conceptual fitness

This shows the ability of the person to apply his/her mind to conceptual problems by means of the application of his/her abstract ability. Conceptual fitness is measured with ten questions that present the candidate with complex information that they have to read, process, and use to solve the problem at hand. Of these ten questions, three are on a grade seven level, and three are on a matric level. The remaining four conceptual questions are tougher questions at a higher level. The conceptual questions present everyday problems which are set in familiar situations. The performance amongst people of 'average' intelligence has been found to show a normal distribution. A higher score on the conceptual section is not necessarily better if higher than that of the benchmark.

- Time

Shadowmatch measures the time taken to complete the whole questionnaire and also shows the time spent on the conceptual questions separately. A slow internet connection will not affect this indicator.

- Task Efficiency

When someone completes the Shadowmatch worksheet, it represents an end-to-end task during which every individual tends to present a level of efficiency. These efficiencies are being presented as recurring patterns or habits. This is a combination of how they manage their time, how efficient they are in doing the job end-to-end, and how successful they are in getting the job done correctly. The Task Efficiency graph calculates the relative efficiency with which the individual has completed the task of working through the Shadowmatch worksheet. It combines total time, conceptual results, and time used for the conceptual questions into a single percentage of relative efficiency. This is a factual calculation of how the individual has taken ownership of completing the Shadowmatch worksheet task successfully and effectively. This measure is not related to job efficiency, but rather efficiency of completing the instrument.

- Back-clicks and changes

The Shadowmatch system tracks how many times a candidate clicked back to review a previous question and also how many times an answer was changed when doing this. There are many possible hypotheses about why people may click back. Some motivations may include thoroughness and congruency but may also be for reasons such as manipulation and insecurity. In the matching process this metric is compared to the benchmark group, however no specific interpretation is provided.

4.7.5 Critical habits/core profile

From the candidate profile, his/her five strongest habits are selected and reported as the critical habits. This core profile is the most important when comparing habits to a benchmark group.

4.7.6 Benchmarks

As mentioned previously, Shadowmatch is used to match candidates to a specific work context. In order to do this, a benchmark, which is intended to serve as a contextualised norm group, is created. The benchmark is used to compare the scores of the candidate on the habits and other factors mentioned above to the top performing incumbent employees in the specific environment in which the candidates are to be placed. This benchmark thus serves as a proxy in matching the individual to the company environment, as it is believed that the top performing employees in the

specific environment will be those who have demonstrated the behaviours which are most conducive to reaching success in that environment.

A benchmark group is selected by the client company (in the case of Harambee) and these individuals would then complete the Shadowmatch worksheet. The habit profiles are analysed, and through congruency mapping, shared habits are identified. The system then creates an output of a benchmark habit profile against which the profiles of applicant candidates are compared (or 'matched') in order to ascertain fit between the applicant and the client organisation.

The benchmark group must consist of at least two top performers; however, it will usually be five to fifteen employees. The criteria for selecting top performers into the benchmark group are:

- They must be working in the operation and current position for a period of more than eight months.
- They must consistently be amongst the top performers in the operation on all levels of the work they do (quality of work, quantity delivered, and task efficiency in doing the job).
- They must have a positive influence on the team they work with and play a motivating role in the group (all people they work with must experience them as positive and enthusiastic towards their environment and the work they do).
- They must be the most skilled and knowledgeable workers in the operation.

There are, however, options available, should there not be employees who meet these criteria, including creating a temporary benchmark based on a similar department or using industry data from other similar contexts (as supplied by Shadowmatch). Benchmarks are to be reviewed every six months or when the specific environment changes – though after being given three months to stabilise. It is important to note that benchmarks differ across companies – even for people performing similar jobs – and that they are highly sensitive to changes in the environment.

Harambee has generated about 200 benchmarks through their operations with clients. A new candidate's profile will, directly after assessment, be imported into Harambee's database (Rolefit system) and will automatically be compared to the whole database of benchmark profiles.

Harambee has however created two generic benchmarks for sales positions and customer service positions respectively. They are also in the process of re-creating generic profiles for candidates who have shown exceptional performance in the bridging programmes.

The generic benchmark for customer service includes the habits of self-confidence, team inclination, altruism, conflict handling, and resilience, as the top five critical habits. A high conceptual score and task efficiency is also required. The attitude category of involved and unaggressive has also been indicated as critical, while an assertive and uninvolved (category 3) attitude should not be displayed.

The generic benchmark for sales includes the habits of discipline, self-confidence, conflict handling, altruism, and resilience, as the top five critical habits. A relatively high conceptual score and task efficiency is also required. As with the above benchmark, the attitude category of involved and unaggressive has also been indicated as critical, while an assertive and uninvolved (category 3) attitude should not be displayed.

4.7.7 Matching and scores

This section explains the output generated by the Shadowmatch system for use in decision-making. The Shadowmatch system comes with a complete management software platform. All of the output can be generated from this system. For Harambee however, although they have access to such a system, the basic data is imported directly into their database.

The excerpts from Shadowmatch output below demonstrate the application of the system. Figure 4.10 is an example of the output for an individual that is a poor match on this specific benchmark.

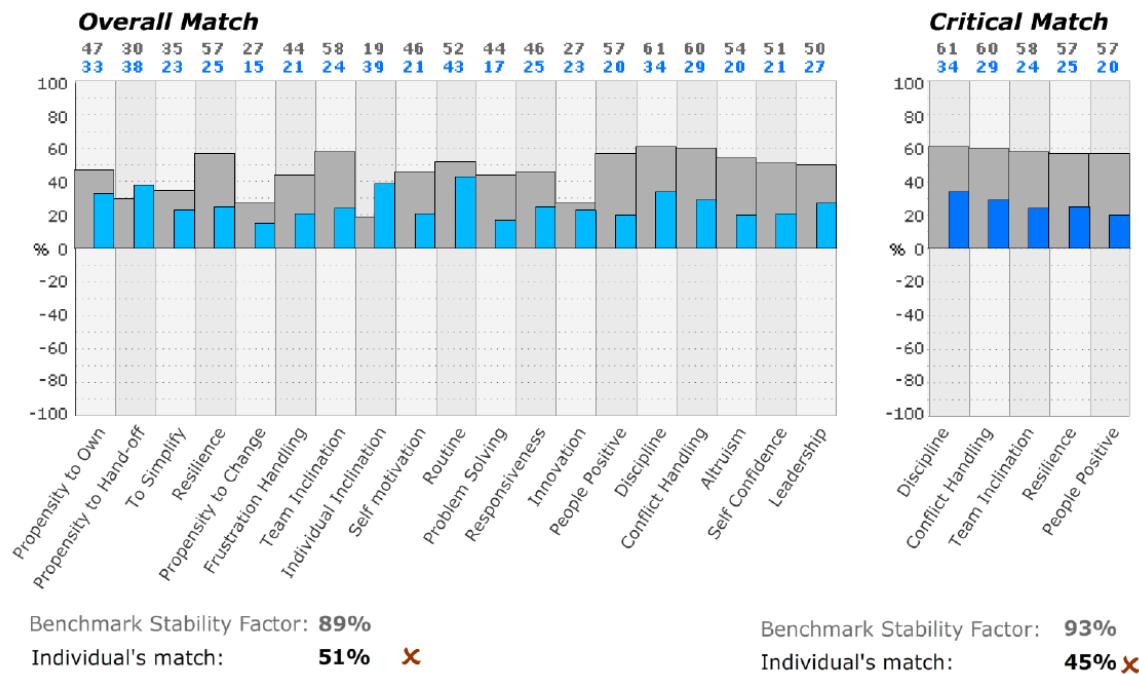


Figure 4.10. Shadowmatch profile: poor match to benchmark. Adapted from a sample results sheet provided by Shadowmatch. Copyright Shadowmatch 2015.

The levels of the presence of the habits in the candidate (narrow blue bars), differ greatly from that of the benchmark group (wider grey bars); and also in terms of the critical match of the top five habits. The percentage match of the individual is correspondingly indicated. The benchmark stability factor, which is a measure of internal reliability, congruence, and similarity of the combined profiles of those in the benchmark group, is also indicated. This indicator must be over 75 percent for the benchmark to be considered stable. The question marks and crosses next to

the measures represent a simulated clinical evaluation of the match between the candidate and the benchmark indicators. These would show ticks in the case of a good match. Note though that this indicator seeks almost exact matches and therefore even a small difference might be indicated as a question mark or cross. Figure 4.11 shows the indication of the time scores of the individual on the worksheet. In this case the individual completed the worksheet much quicker than the benchmark group. This is considered not to be a match and as mentioned earlier 'quicker' times and higher scores than the benchmark on any element are not to be seen as positive, as the aim is particularly matching the benchmark.

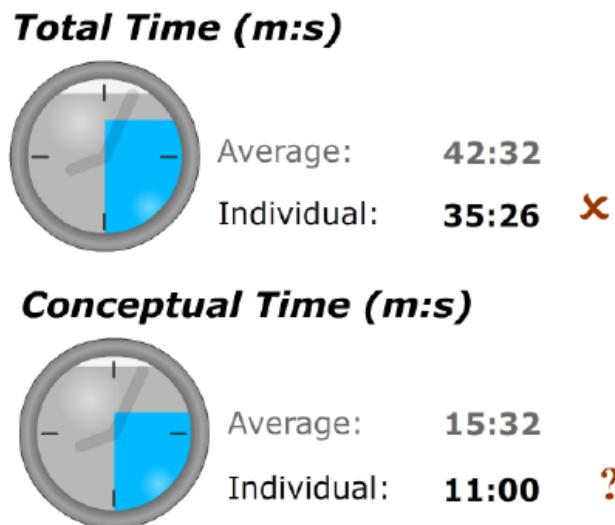


Figure 4.11. Time results of Shadowmatch test-taker compared to benchmark. Adapted from a sample results sheet provided by Shadowmatch. Copyright Shadowmatch 2015.

Similarly, the conceptual fitness score and task efficiency in Figure 4.12 do not indicate a match. Shadowmatch will interpret this kind of difference to mean that the individual may be frustrated in an environment where he/she cannot adequately apply his/her conceptual fitness or perform tasks in a highly efficient manner.

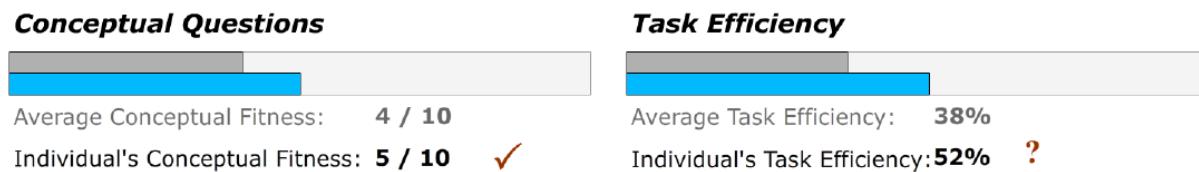


Figure 4.12. Conceptual and task efficiency compared to benchmark. Adapted from a sample results sheet provided by Shadowmatch. Copyright Shadowmatch 2015.

In Figure 4.13, the attitude profile of the candidate is mapped out in comparison to the benchmark group.

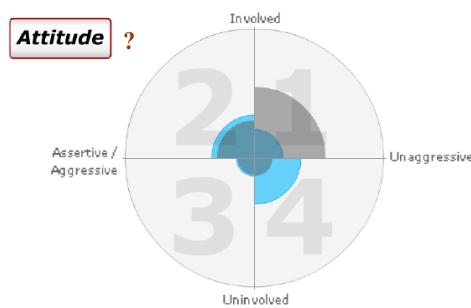


Figure 4.13. Attitudes compared to benchmark. Adapted from a sample results sheet provided by Shadowmatch. Copyright Shadowmatch 2015.

Figure 4.14 shows the final verdict on the match of the candidate that takes all the matching criteria into consideration. The figure includes an indication of matching over the entire habit profile, the five critical habits and also the conceptual, time management and attitude matches. An overall recommendation is provided. The faint text on the left of the 'poor match' summary below shows the back-clicks, and changes made, compared to the benchmark averages.

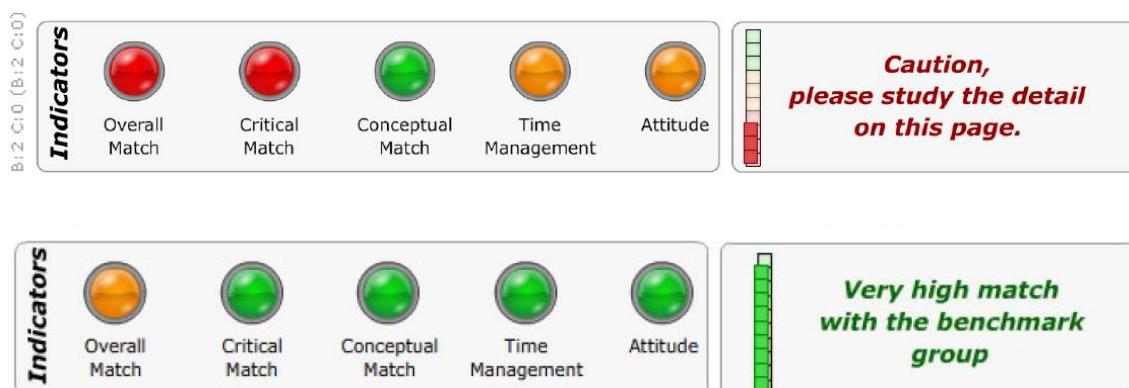


Figure 4.14. Matching results – poor and good match. Adapted from a sample results sheet provided by Shadowmatch. Copyright Shadowmatch 2015.

Shadowmatch does not provide a decision on the candidate, but rather just an indication of the match on the profiles.

4.7.8 Psychometric properties: Habits as separate factors

The Shadowmatch worksheet contains 64 questions, of which ten measure conceptual fitness. One may be concerned that the remaining questions would not seem to be adequate to capture sufficient data to make meaningful observations about nineteen different habits. Shadowmatch has, however, not been designed according to the traditional Watsonian model of psychometric testing. The worksheet does not employ linear mapping of the constructs, where one answer is linked to one factor, but rather the scoring formula for the habits is in a matrix format. One question can thus load onto up to 15 habits. The answers are processed with a fuzzy logic calculator, which

is typically a type of algorithm that allows computers to make decisions using linguistic rules to understand continuous informational variables and produce scaled results. This identifies behaviour patterns, which are then weighted against recurrence patterns, as well as the relative strength of the behavioural indicator. The scoring system of the Shadowmatch worksheet is based on the principle of a Quantitative Function Deployment (QFD) Calculator. This calculation system, linked to the Six Sigma management philosophy, is also called the 'House of Quality' and is usually deployed effectively to perform customer needs analysis. This system maps data onto a matrix while assigning importance ratings, weightings, and correlates between variables (Pieter De Villiers, personal communication, November 5, 2015).

Overlap exists between the Shadowmatch habits and personality variables. Shadowmatch, however, deliberately steers away from personality measurement, due to the fact that the developers believe that habits are much easier to define and understand than personality. It must be noted however, that when Shadowmatch was being validated, that it was tested for what can be described as construct validity, by examining correlations with variables on personality tests. These showed high correlations. Although the habits are defined in terms of preference for behaviours, there does seem to be elements of skills and competencies, and also personality variables, encapsulated in the substantive definitions.

The habits measured by the worksheet also show high overlap with each other. Shadowmatch also notes specific elements on their test which do tend to show pairing patterns. These strongly correlated habits and attitudes tend to form and pair together and tend to influence each other in predictable patterns. These are discussed below:

4.7.9 Pairing Habits

According to the Shadowmatch research, when an individual has developed habits that are related, these behavioural patterns compound, and they then become radical habits. They support each other to increase the predictability of the behaviour. When certain habits are well-defined and developed (more than 50 points on the Shadowmatch results) they can support each other and become extreme habits with high levels of predictable behaviour. According to a summary provided by Pieter de Villiers of Shadowmatch, the following pairing habits must be read within a framework of identifying pairing behaviour. If these habits both measures more than 50 points, they should both be seen as very well-defined, strong habits:

- Problem solving and Conflict handling.
- Problem solving and To simplify.
- Resilience and Discipline.
- People positive and Altruism.
- Discipline and Routine.

- Propensity to change and Innovation.
- Propensity to own and Self-confidence.
- Self-confidence and Self-motivation.
- Individual inclination and Dominant category 4 attitude.
- People Positive and Dominant category 1 attitude.
- Self Confidence and Dominant category 2 attitude.
- Propensity to hand-off and Dominant category 3 attitude.

4.7.10 Shadowmatch and psychometric measurement

Shadowmatch is to be seen as a qualitative measurement that produces observations linked to numerical indicators and should be seen as falling in the same milieu as simulation assessments. No self-insight is required on the part of the test-taker. According to Shadowmatch, people may in any event have very limited insight into their own psychology and may have a limited frame of reference.

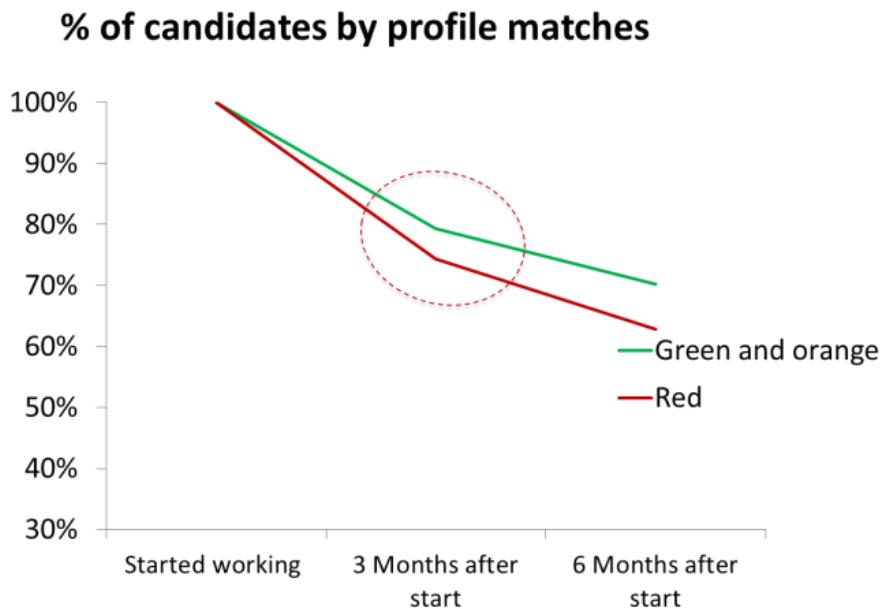
Shadowmatch has been submitted to the Health Professions Council of South Africa (HPCSA) for registration, on the insistence of a Shadowmatch client, but was rejected due to apparently not conforming to the definition of a psychometric test, although one may be inclined to argue that it does contain hankерings toward the definition of a 'psychological act'. Shadowmatch has, however, also made available to the researcher a letter, from Professor Karl Mauer, of the University of South Africa (UNISA), who served as the Chairman of the Professional Board of Psychology during the time of the drafting of the Health Professions Act no. 56 of 1974, confirming that Shadowmatch does indeed not infringe on the domain of psychology. He goes on to explain this notion based on the following arguments:

- The fact that the developers of Shadowmatch did not take established psychological theories into account and use habits, rather than personality, cognitive abilities, or emotions as their point of departure.
- Shadowmatch at no point implies that their results are of a psychological nature.
- That the fact that Shadowmatch may use statistical techniques that owe their heritage to the field of psychology does not make it a psychological test.
- Shadowmatch does not fall under the rubric of 'other similar assessments' referred to in the heading of section 8 of the Employment Equity Act.
- There is no pretence in Shadowmatch, or by the authors of Shadowmatch, that it is a suitable tool that could replace psychological testing and that there are numerous other applications of the device such as team building, group dynamics, and coaching, that do not invade the realm of psychology.

This classification of Shadowmatch – as a device that is not a psychological measurement, allows the easier and wider use of the device due to the fact that no specific qualifications are needed to apply and interpret the worksheet and its results (Pieter De Villiers, personal communication, November 5, 2015).

4.7.11 Utility of results: Shadowmatch testing and validation

Shadowmatch claims to have developed a market share in both South Africa and the USA due to the utility clients experience from using the system. Candidates who are matched to a position are more likely to be successful in their jobs. Harambee has established through internal research that the matching of candidates results in improved retention, though not much information is available about this study at the current time (Figure 4.15). The top line in the graph is the one that represents candidates with a green or orange match on a Shadowmatch profile. UNISA has also taken to using Shadowmatch on a large scale internally.



Source: Harambee Knowledge & Learning Team Analysis

Figure 4.15. Retention of candidates by profile matches. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

According to the Shadowmatch technical manual, the battery has been tested and validated for test-retest reliability, system robustness, construct validity, adverse impact, and job relatedness. Regarding test-retest reliability, the worksheet was completed twice, within a period of three weeks by 24 individuals, with generally acceptable results (De Villiers & Converse, 2014).

Evidence related to construct validity was obtained by investigating the convergent and discriminant validity of the Shadowmatch Worksheet habit measures. In particular, scores for 115 individuals on 19 Shadowmatch habits, as well as the Task Efficiency scores, were compared to scores on 15 previously validated personality measures. Each Shadowmatch variable was matched with a theoretically similar (convergent) and a theoretically distinct (discriminant) personality construct. Results demonstrated strong evidence of construct validity, as all of the habits had statistically significant relationships with their theoretically related constructs, and all the habits demonstrated non-significant relationships with their theoretically unrelated constructs (De Villiers & Converse, 2014).

A system validation study by Deloitte, which had eight subject matter experts complete the Shadowmatch worksheet in order to force the presence and absence of randomly assigned habits, determined that Shadowmatch does indeed discriminate the presence of habits embedded in an individual's behaviour as per the Shadowmatch behaviour definitions (De Villiers & Converse, 2014).

Shadowmatch is said to be very robust against test-taker manipulation. A candidate will have to get up to 15 questions 'wrong' before they are able to have a meaningful negative effect on their profile (De Villiers & Converse, 2014).

Shadowmatch has also been examined for differences across gender and race groups. One USA-based study on 328 participants showed some differences for race and gender groups. When a further study was conducted using a simulated selection situation, it was found that no statistically significant differences in selection ratios for different groups were present. Another study on a sample of 3 500 employees in the same organisation found that there are some group-based differences on some of the elements measured by the Shadowmatch worksheet. According to the Shadowmatch technical manual, these differences did not demonstrate enough consistency in the correlations to indicate that Shadowmatch is inherently constructed to cause adverse impact. Similarly, a simulated selection environment was created and the selection ratios, based on pre-selected 'cut-off points,' for candidates compared to a benchmark generated from a representative sample and a separate benchmark created of White male candidates. The impact ratios generated for these comparisons were both consistently above .9, and well above .8. The study was taken further to include a comparison to all historic benchmarks on the Shadowmatch database and this again yielded an impact ratio consistently well above .8 for all race groups and also both genders (De Villiers & Converse, 2014).

The job-relatedness of Shadowmatch was tested in a number of case studies. One study, involving 56 branch managers, showed strong statistically significant correlations between certain Shadowmatch habits and some Key Performance Indicators (KPI's) of the managers. The task efficiency score of the Shadowmatch tool also yielded the highest correlation with job

performance, when compared to some established psychological tests. Similar correlations with job performance were also found in a study of sales representatives (De Villiers & Converse, 2014).

In terms of predicting learning potential, a study at the University of Pretoria showed that there are indeed correlations between Shadowmatch habits and academic performance (De Villiers & Converse, 2014).

4.7.12 Shadowmatch personal development programme and other applications

Shadowmatch does provide specific services in relation to their assessment. To develop certain sought-after habits, the company can provide a Personal Development Programme (PDP) that a person can work through over an extended period (12 months) with the assistance of a mentor. The person will do certain exercises, reflect, and talk to their mentor. This programme can lift a given habit up by 25 points on the Shadowmatch profile. Higher habits are however less likely to change. Shadowmatch can also be applied to career planning and development and team building. Shadowmatch also offers the opportunity to compare the profiles of two people in a given relationship and provide them with areas that may cause friction or will need to be adjusted to. This is available for co-workers, different types of romantic relationships, and other family or friendship relationships. Interview packs to validate habits and scores are also available for the Human Resources manager (Pieter de Villiers, personal communication, November 5, 2015).

4.8 Numeracy and Literacy Assessment

As discussed earlier, Harambee uses the Assure computer-based assessment at the level of Foundational Learning Competency (FLC) assessment. This is an Adult Basic Education and Training (ABET) level test provided by Media Works. Harambee only uses the basic test that provides a score out of ten for literacy levels. For numeracy, they use a self-developed test to establish a score out of ten for numeracy skills.

4.9 Learning Potential Testing

Harambee “learned the hard way” that literacy and numeracy tests simply show prior disadvantage, according to Rob Urquhart (personal communication, June 29, 2015). They used these tests to screen candidates out initially and this led to a big fall-out rate (78 percent). Harambee then rather opted to test raw learning potential and found that 61 percent of candidates have high learning potential and 84 percent have sufficient learning potential for an entry level position. Figure 4.16 shows this overlap from an internal Harambee study on a large sample of unemployed candidates.

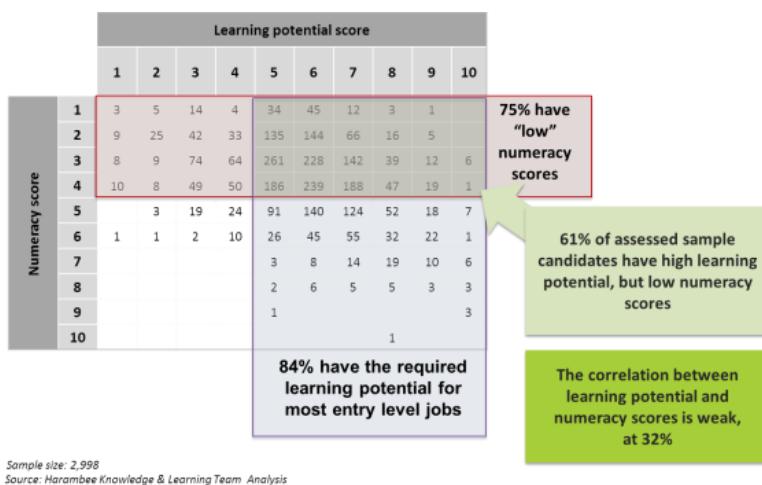


Figure 4.16. Learning potential versus numeracy scores. Adapted from Harambee overview presentation - internal Harambee documents. Copyright 2015 Harambee.

As mentioned earlier, Harambee still has to apply base levels for numeracy and literacy as different jobs have different requirements, and therefore still use these tests.

The first learning potential test used by Harambee was an Israeli developed test provided by a company called HR Vision (Helen Smith, personal communication, April 24, 2012). They now employ a subscale of the TRAM test, known as the Concept Formation Test (CFT) score, as mentioned earlier. Although, technically, this does place their assessment outside of the area of 'dynamic assessment,' as mentioned earlier, the CFT (or 'g') score does represent the domain of learning potential, albeit in a narrower sense, focusing on abstract thinking ability. Anecdotal results from within Harambee have shown that learning potential testing is an effective method of identifying high potential candidates, but that it does have some limitations.

4.10 Tracking of Matric Marks

Harambee has started tracking high school marks and has chosen only to document Mathematics and Physical science. The availability of this information for research is, however, only restricted to certain more recent cohorts of candidates (Rob Urquhart, personal communication, June 29, 2015).

4.11 Harambee and the Multi-Stage Selection Model

The Harambee model, as discussed, is the closest approximation of the multi-stage selection model that is known in South Africa. Although there are significant substantive differences, which are discussed in a later section, candidates are assessed with a learning potential measure, provided with accelerated development, and then entered in a standard selection process with a client organisation.

Having considered the available literature and research at hand, the researcher subsequently identified the Harambee model as a sufficient proxy for the investigation into the utility of the multi-stage selection model. The study of the Harambee programme would thus serve the purpose of investigating possible answers to the research initiating questions, namely what approaches can be followed, and also, what questions still need answering in order to make use of (some version of) the multi-stage selection method in practice. Evaluating a practical application of this type of approach would help the present researcher identify gaps in the current knowledge base and assist in directing research and practice going forward. Harambee has as such thus been identified as a sought-after partner in research into learning potential testing and the remedying of unemployment in South Africa.

4.12 Harambee as Research Partner

Harambee was identified as having meaningful potential as a research partner within the niche area research of the Department of Industrial Psychology at Stellenbosch University discussed at the onset of this thesis. The following factors make Harambee attractive as research partner:

- Similar philosophy and approach to affirmative development.
- Appropriate target population.
- Large throughput of candidates.
- Large volumes of computerised and archival data.
- Testing of learning potential and other variables.
- Application of theory to practice.

The intention of a collaboration with Harambee would thus aim to foster a long term mutually beneficial research partnership. There are also advantages for Harambee in collaborating with the Stellenbosch Industrial Psychology Department:

- Scientific academic research in partnership with a respected research institution.
- Application potential of research in terms of measuring learning potential, improving training, and facilitating an enabling working environment for candidates once they enter employment.
- Availability of eager researchers in the niche area.

The researcher first approached Harambee in 2012, interacting at the time with Helen Smith, then the manager of their Cape Town branch. At this point the organisation had only just been formed and had only operated formally from 2011. Harambee informed the researcher that they did not wish to pursue a research relationship in the short term, due to the fact that their model, at the time, was young and still in the formation process. Helen Smith also mentioned confidentiality concerns.

The researcher kept contact with Harambee and in 2015 started interacting with Rob Urquhart, head of research, and Mosouoe Sekonyela, head of assessment. The researcher met with them at their Johannesburg offices in June 2015 and Rob Urquhart and Mosoue Sekonyela then made a brief presentation at the Stellenbosch University Empowering Development Conference on 17 July 2015. The researcher proceeded to sign a preliminary Memorandum of Understanding (MOU) with Harambee in order to facilitate the exploration of further research opportunities with them. In September 2015 the researcher spent a day at the Johannesburg Harambee office and interviewed relevant members of staff in order to gain the understanding of their model presented here. In October the researcher met with staff from the Cape Town office and spent a number of days in the beginning of 2016 observing, and sometimes assisting in, their operations.

In 2017, after consultation with a number of Harambee employees, a final agreement was signed between Harambee and the researcher. Harambee agreed, in principle, and with conditions, to provide the researcher with a data sample of candidate information for statistical analysis. The following stipulations were put in place by Harambee:

- Sufficient provision for confidentiality and ethical conduct, especially regarding the stipulations of the Health Professions Council of South Africa (HPCSA) and relevant laws.
- Sufficient opportunity to prevent commercial or reputational damage.
- No modification of processes or employment of funds in order to change current processes for research purposes.
- The acknowledgement of some limitations of available data for research purposes.

The researcher and Harambee subsequently engaged in a transparent consultative process in order to facilitate the above. Although due care was taken, and all information pertaining to this study was made available to Harambee, the researcher does make note that the content of this thesis, including, but not limited to, the relevance and credibility of the research conducted, any views expressed, or any findings of this thesis, are not necessarily endorsed by Harambee. The researcher undertook appropriate measures to ensure the above was complied with in addition to the recommendations of the Ethics Committee.

The following chapter explains the research approach taken to evaluate the Harambee model to come to conclusions about the matters relating to the research initiating questions.

CHAPTER 5

RESEARCH METHODOLOGY

This section delineates the approach taken to seek an answer to the research-initiating question(s) through the pursuit of the achievement of the research objectives.

5.1 Research approach

The research approach selected for this thesis is programme evaluation. Babbie and Mouton (2001) define and explain various types and categories of social research and pay extensive attention to programme evaluation as a sub-category of social research, although they do start by defining programme evaluation as a research purpose rather than a separate research method as such. The intention of programme evaluation is to gauge the impact and actual consequences of social interventions. Many methods of analysis can thus be used to this effect. Programme evaluation has become an increasingly active and popular research speciality. Babbie and Mouton discuss this method largely in connection with large government sanctioned evaluations of social programmes in the USA.

Ruthman (as cited by Babbie & Mouton, 2001), states that programme evaluation entails the use of scientific methods to measure the implementation and outcomes of programmes for decision-making purposes and further defines a programme elsewhere as any intervention or set of activities mounted to achieve external objectives – which may be to meet some recognised social need or solve an identified problem. Rossi and Freeman (as cited by Babbie & Mouton) define evaluation research as the systematic application of the whole range of social research procedures for assessing the conceptualisation, design, implementation, and utility of social intervention programmes. Evaluation research thus addresses some of the most important issues that arise from interventions (Babbie & Mouton, 2001).

Programme evaluation reflects the desire of social scientists to make an actual difference in society and is therefore very much in line with the original intention of this study. According to the earliest social theorists, it is the ultimate aim of all social science inquiry to improve the human condition - as such, knowledge must be useful to mankind. Social science should be interventionist and prescriptive in nature (Goodwin, as cited by Babbie & Mouton, 2001).

Various approaches to programme evaluation exist, including judgement-oriented, knowledge-oriented, and improvement-oriented evaluations. These are discussed briefly below:

- Judgement oriented evaluations

These are evaluations aimed at establishing the intrinsic value, merit, or worth of a programme and is the most often cited reason for evaluating a programme. This type of evaluation asks questions of success, objectives, effectiveness, and the reaching of the target population. These summative evaluations are often particularly focussed on determining the future funding or continued implementation of interventions. A key issue in this approach is the criteria to be employed to make a judgement about the intervention, which depends on the stakeholders involved. Patton (as cited by Babbie & Mouton, 2001) suggests a four-stage deductive pattern, namely of, selecting criteria of merit or worth, setting standards of performance; measuring performance; and synthesising results into a judgement of value.

- Improvement oriented evaluations

These types of evaluations, which involve more inductive strategies, and less formal criteria, search for areas of strength or weakness which may emerge from the detailed study of a programme. It includes evaluations such as formative evaluation, quality enhancement, responsive evaluation, and empowerment evaluation. It involves asking questions of strength and weakness, implementation effectiveness and efficiency, constraints on proper implementation, and the nature of the response of the recipients. Improvement evaluation typically involves collecting data for specific periods during start-up phases, or early in the implementation in order to make suggestions for improvement, to solve unanticipated problems, and/or to make sure participants are making desired progress towards objectives. The approach thus usually involves the utilisation of information systems to track implementation and to provide regular feedback to programme managers (Babbie and Mouton, 2001).

- Knowledge oriented evaluations

Both above cases are driven by concerns for use and application, and the end result is a decision or action. Sometimes though, programmes are evaluated to improve understanding of how programmes work and how it affects change in subjects/recipients. The purpose is thus just to generate new knowledge. Knowledge oriented evaluations may have very specific aims, for example, to clarify a model or underlying theory, to distinguish between different types of intervention, or to elaborate policy options. They may have more general aims, such as seeking to understand the programme better, reducing uncertainty of risk or failure, or enlightening stakeholders. This enlightenment aim of evaluation has various effects when its insights are disseminated into society's stock of knowledge, for example by the creation of generalisations, theories, models, and ideas that help shape the development of policy (Weiss, as cited by Babbie & Mouton, 2001).

All three of the above motivations are relevant to the current study on a conceptual level. Carey (as cited by Babbie & Mouton) classifies four types of evaluation studies, which are related to the various intentions which may underlie evaluation research, as described above; these include:

- Evaluation of need

This involves assessing the need as precondition to effective programme planning and therefore, also for evaluation. This involves asking questions, such as:

- What are the particular unmet needs of a target population with respect to the type of programme being considered?
- What forms of service are likely to be attractive to a particular group?

- Evaluation of process/implementation

After design and development, an intervention is implemented in a certain context or setting, and it may be asked whether it is being implemented as designed and intended. Other questions behind this form of evaluation include:

- Does it serve the target population?
- Is the right administration and management infrastructure in place?

- Evaluation of outcome

After the implementation of an intervention, attention shifts to intended and unintended outcomes, which may include behavioural changes, attitudinal change, better services, or various others. The evaluator must establish the intended outcomes of the programme and implement valid measures of these outcomes in order to ascertain whether the intervention was successful or not.

- Evaluation of efficiency

The outcome of a programme may not be achieved at any cost. Stakeholders demand that cost be measured against benefits accrued to the target population. Questions in this regard include:

- Are funds spent on the required purpose?
- Does the programme achieve its outcomes at a reasonable cost?
- How does the cost of the programme compare to other programmes costing the same or less, in terms of level of success?

The selection of one of the above types of programme evaluation and the application of such an evaluation to the Harambee programme, in a manner that serves the principles of programme evaluation and satisfies the scope and intention of this thesis, has, however, proved problematic,

especially considering the available information and access to further information. Due to the questions raised around the use of learning potential testing and the use of a selection model that involves a development component, the most salient area of investigation for this thesis is the determination of the predictive validity of the prediction model used by Harambee. It is relevant to test, as a first order of business, a fundamental premise of the multistage selection model, namely that learning potential testing could be used in selecting disadvantaged individuals for development. As such, this quantitative investigation has been selected as the core focus of this thesis. The availability of additional data furthermore presented the opportunity for explorative analyses, as is discussed later. In terms of achieving some form of relevant evaluation of the Harambee programme itself, a qualitative assessment is undertaken, applying the principles and concepts of programme evaluation informally to the available information. This qualitative assessment of the Harambee model will thus lean upon the conceptual basis of all three of the intentions of evaluation research, namely judgement-, improvement-, and knowledge-oriented evaluations, as is described below:

In terms of judgement-oriented evaluations, the value of the Harambee model must be evaluated in terms of its contribution to its direct stakeholders, and the South African social and economic landscape as a whole. This entails, on a conceptual level, an evaluation of need, process/implementation, outcome, and efficiency. It must be decided to what extent Harambee is relevant, given the South African context described. The whole model is to be discussed in terms of its coherence and effectiveness.

Related to the above, this study, as mentioned, has a strong focus on the generation of knowledge that would further the learning potential and affirmative development literature. It is essential to ascertain the extent to which parallels can be drawn between the Harambee prediction model and the envisioned multi-stage selection model discussed earlier in order to further determine what insights can be drawn to evaluate, improve, apply, and/or expand the model and also the sequentially linked Performance@learning competency model. There may also be general applications for the business environment where a similar approach to affirmative development could be utilised that may only be partially linked to the selection function.

For this research to benefit Harambee as research partner an improvement-oriented evaluation intention is required that will involve an evaluation of efficiency and of process/implementation. The aim will be to provide insights that can be used to improve the model and to contribute to the achievement of their current goals and future strategy, where possible.

The following research aims have thus been established, given the available data and the scope of this thesis:

- The empirical validation of the predictive validity of the Harambee prediction model, particularly evaluating the predictive validity of learning potential testing in the prediction of training success in terms of the total training experience, cognitive training, or other individual elements of the development programme, and in comparison with other predictors;
- Explorative data analyses on available measurement data to identify linkages that may serve as impetus for future research or indications of available programme improvements; and
- A qualitative-conceptual assessment of the Harambee programme and its outcomes in accordance with available literature and other information.

5.2 Research Design and Statistical Analysis

This section explains the approach and design of the research study in order to achieve the first two objectives set above, which make up the quantitative analysis of the Harambee prediction model.

5.2.1 Validation of the Harambee prediction model

The research design for the current study is an *ex post facto* correlational design. This is because historical data is used with no possible manipulation of the test subject or testing environment (Theron, 2010d).

A series of multiple linear regression analyses were used in order to accomplish the research objectives. Generally, the objective of multiple linear regression is to find a linear composite of independent variables/predictors that would maximally correlate with the dependent variable and would minimise the (squared) errors of prediction (Theron, 2010e).

To ascertain whether Harambee has an effective prediction model, in terms of predictive validity, simple correlational analyses and standard multiple regression with the CFT scores, numeracy, and literacy, with bridging and Coglab scores as dependent variables, were used. Most importantly, the relative predictive power of the CFT score, versus the numeracy and literacy score, when predicting the training success were regarded as important - especially when borne in mind that the candidates are from a target population that is highly relevant to this field of study, due to the fact that they are unemployed youth, mainly of the designated group.

5.2.2 Explorative data analyses

Explorative analyses will be applied to all the Shadowmatch habits. The existing body of knowledge on learning potential, especially the studies on the non-cognitive determinants of

learning performance, however, seem to emphasise the possibility that the following habits may correlate with measures of learning performance:

- To Simplify.
- Resilience.
- Self-motivation.
- Problem solving.
- Discipline.
- Self-confidence.

The scores of task-efficiency and conceptual fitness may also be shown to correlate with learning performance. These are thus included with the main predictors.

The utility of this explorative research will be located in the possibility that it will inform future basic research in the field of learning potential, in terms of investigating bundles of behaviour which may be included as learning competencies or learning competency potential variables deduced from the habits. Harambee and Shadowmatch will furthermore be interested in noting the results of the correlations with Shadowmatch and the dependant variables, as these will indicate whether there is additional predictive power dormant in the existing Harambee measurement battery, and, according to Harambee, Shadowmatch correlates could perhaps help in condensing the bridging programme. Logically, results that indicate opportunities for cost-cutting will be of high value. These results will also be interesting when compared to existing generic Shadowmatch benchmarks kept by Harambee.

Furthermore, Shadowmatch has, as mentioned earlier, no definitive indication of how its additional tracked variables (for example number of back-clicks) could be utilised and has expressed an interest in examining their relevance going forward. This research attempted to assist in this regard by investigating this during data analysis, although no explicit hypotheses were ventured upfront.

Harambee has also indicated that a comparison between regions would be interesting to examine, and these descriptive statistics were thus generated as such. For the sake of checking on the homogeneity of the sample, similar analyses were conducted on the two different year groups included in the sample.

5.3 Data Gathering and Sampling

Harambee keeps a large volume of archival data stored on their central database, and other data on a more fragmented basis between various managers. For the last couple of years Harambee has been asking their participants to sign a waiver or informed consent form that will allow any data gathered to be used for research purposes, providing that personal data be kept private. It

was consequently decided that a sample of candidates would be drawn from the Harambee database to enable the analyses described above.

According to Theron (2010c), the intention of sampling is to draw a sub-group of participants from a larger population in such a way that the studying of this sample group will allow findings to be generalised to the larger population group. In other words, the sample group needs to be selected in such a way that there is control of extraneous variance, so the sample group should be homogenous in terms of extraneous and non-relevant variables.

In the case of Harambee, the population will effectively be all candidates that have passed through the Harambee programme, and considering their general profile, these individuals also present a highly relevant group for study, in terms of affirmative development candidates in the broader South African context. The candidate profile mentioned earlier also leads to the assumption that the characteristics of the population group will also not differ greatly from similar relevant developmental contexts. Studying this whole population, as in most research endeavours in the social sciences, is, however, very problematic, and even selecting a suitable sample presents some notable challenges. Many candidates only pass through the initial assessment, some are placed immediately, and others are dealt into different bridging programmes. The retail and sales bridging candidates attend programmes that vary greatly. These programmes are also rather short. As mentioned earlier, the corporate candidates, however, have a much more standardised experience and also present a better research group as a whole. The reasons for this include that they are trained longer, and subjected to much more intense development, and such, produce more data. The corporate bridging candidate and programme also match more closely the type of individual and context that an affirmative HR intervention, as envisioned by this thesis, would probably cover. It is for these reasons that the corporate group was selected for study.

There were also some constraints with data gathering though, as different bridging programmes throughout the Harambee history will have differing data available. All bridging programmes throughout their history will not have the exact same content and also there have been differences in assessment. After 2015 however, drawing an organised sample from a fairly homogenous group out of some recent bridging programmes became more possible.

Various sampling strategies exist in the categories of probability and non-probability sampling. According to Gravetter and Forzano (as cited by Van Heerden, 2013), in probability sampling, the entire (sampling) population is known, everyone in the population has a specific non-zero probability of selection, and sampling is done by a random process. This category of sampling thus includes, amongst others, random sampling, stratified sampling, and systematic sampling methods.

With non-probability sampling procedures, the population is not known in its entirety, individual probabilities cannot be known, and the sampling method is based on factors such as common sense or ease, with an effort to maintain representativeness and avoid bias. There are various methods of non-probability sampling. In quota sampling, knowledge of strata of the population is used to select sample units that are considered representative or 'typical' and suitable for certain research purposes. Purposive sampling is characterised by using judgment and a deliberate effort to obtain representative samples by including presumably typical areas or groups in the sample. Kerlinger (as cited by Van Heerden) describes accidental sampling as the weakest form of sampling but also states that it is likely the most frequently used. With accidental sampling the researcher takes available samples at hand, for example, members of a specific academic class or department (Van Heerden, 2013).

For the current study, purposive sampling seems the most relevant, although the cohorts selected, with reference to the candidates therein, probably equates accidental sampling to some degree, as explained below.

The decision was made to draw a non-probability convenience sample out of previous corporate bridging programmes that Harambee has completed, that is of sufficient size to provide ample statistical power, and to control for irrelevant variables. Therefore, it was decided that a sample group was to be created by accessing lists of past similar corporate bridging groups. This information was sourced from various Harambee bridging managers. The basic criteria would thus be that a group of candidates who have attended largely the same bridging programme and who have completed the same assessments – and the informed consent form – will be selected. As with all non-probability sampling, it is questionable whether the sample selected is representative of the population. In this instance, considering the constraints faced, and decisions made, as discussed below, it could be argued that the sample selected would be adequately representative of the population studied, and highly relevant to the organisational development context discussed earlier.

Despite the large volume of data available, it was decided that it is best for 200 to 300 subjects be chosen for analysis. The reason for this chosen range for the number of participants is that it would represent a credible number in terms of known norms of social research, it would satisfy known requirements of statistical validity (Stack exchange, 2014), and represent a manageable dataset for the research partner to generate and compile. This would mean that only a small number of bridging programmes would have to be combined to reach the sample size, thus minimising extraneous variance caused by variations across cohorts. This would also minimise the workload of entering and managing data, as the bridging assessment data would have to be captured manually and other data would have had to be combined from various source documents.

After discussions with bridging managers and one of Harambee's key account managers, it was decided that a sample that would serve the above purposes could be created by combining data from two groups of candidates placed with a large and well-known corporate client of Harambee who operates in the financial services industry. This decision meant that there would already be complete lists of these candidates, who have undergone very similar bridging programmes. The bridging scorecards could be provided by bridging managers and the assessment data of these candidates could then be drawn from the Harambee database. The two candidate groups, placed in consecutive years (2016 and 2017), also consist of candidates from different provinces. The 2017 group was mainly a Gauteng and Cape Town group, while the 2016 group had a small number of candidates bridged and placed in Durban and Bloemfontein respectively.

There was also the question of data availability on retention and/or work performance after the bridging programme, in that the ideal scenario would be to trace the success of the candidates after the programme, and investigate the effectiveness of assessment, the bridging programme itself, and even possibly the direct predictive power of the assessments used by Harambee on ultimate work performance. This was unfortunately not possible for various reasons, including the logistics with the involvement of another party, and the obvious sensitivities relevant to approaching a client of our existing research partner. Should the scope of this project have been increased to include the study of retention and/or performance data nonetheless, there would still have been the issues of ultimate availability, accessibility, and format of such data. What can be said however of the retention of these candidates, is that Harambee measured near perfect retention for the candidates in the 2016 group at the three-month mark – which means that there is practically no observable variability in this specific success indicator that would have been worth to examine.

The final sample selected was thus a combination of these two groups of 2016 ($n=129$) and 2017 ($n=115$) candidates into one combined sample ($n=244$), consisting of 105 males and 139 females. For the purposes of the statistical method to be used, namely multiple regression, this sample size is considered sufficient (Stack exchange, 2014).

During the synthesis of the data a small number of candidates' data entries were deleted listwise due to large gaps in their individual available data. For most of the variables (discussed below), data were available for all, or nearly all, of the candidates. Most of the data for the Coglab programme are, however, not captured beyond the point of assessment, or the end of the bridging programme, and as such, only limited and fragmented data were available for some variables related to this and was mainly only recoverable for the 2017 group. Case-wise deletion was thus applied in the analyses involving these variables and the resulting sample subsets for these analyses were thus much smaller. The data available were however still considered sufficient for statistical analysis (Stack exchange, 2014), although this will be a consideration when interpreting

their results. Statistica 13.5 was used to analyse the data. All predictor variables were entered into the regression model simultaneously. Normal probability plots were inspected for normality and were judged to be acceptable. For multicollinearity, tolerance indexes were calculated and were in all cases found to be $>.2$.

5.4 Operationalisation

The assessment measures employed by Harambee have been discussed in great detail in an earlier section of this thesis. The TRAM CFT, Numeracy, and Literacy scores out of ten were available for every candidate in the sample, save for one or two gaps per respective variable. Note that the corporate candidates do have higher CFT scores (five and above) which does restrict the range of the scores to some extent.

The TRAM CFT score is treated as independent predictor variable measuring learning potential. The numeracy and literacy scores serve as two other independent predictor variables. Candidates allowed in the corporate bridge should generally have a CFT score higher than 5, a numeracy score higher than 3, a literacy (communications) score higher than 5, and match a Shadowmatch benchmark profile for a client organisation, as discussed.

From the Shadowmatch system, a score was available for each of the following behavioural tendencies or habits:

- Propensity to own.
- Propensity to hand-off.
- To Simplify.
- Resilience.
- Propensity to change.
- Frustration.
- Team inclination.
- Individual inclination.
- Self-motivation.
- Routine.
- Problem solving.
- Responsiveness.
- Innovation.
- People positive.
- Discipline.
- Conflict handling.
- Altruism.

- Self-confidence.
- Leadership.

Shadowmatch also makes available scores for the following attitude categories:

- Attitude 1: Involved/Unagressive.
- Attitude 2: Involved/Agresssive.
- Attitude 3: Uninvolved/Aggressive.
- Attitude 4: Uninvolved/Unagressive.

The Shadowmatch scores for conceptual fitness and task efficiency were also available. Other data produced by the Shadowmatch assessment include the number of back-clicks, changes to answers made, and number of breaks taken per candidate during the assessment. The time taken to complete the entire worksheet and a separate indicator of time taken to answer the conceptual questions are also available.

The Shadowmatch data are not used by Harambee to predict any performance related to their model, and are only for matching purposes, as per the Shadowmatch system method. However, considering their composition and plausible relation to learning and other performance indicators, when considering the available theory, as discussed, it was decided that they may yield value as independent variables and show predictive relations with the measures of learning performance.

From the bridging assessment, data available include the weekly sub-totals for all the building blocks combined and weekly totals after bonus points and penalties have been taken into consideration. The individual weekly building block indicators were not appropriate for study, as the flexibility in the programme meant that these presented comparability issues. The weekly totals were thus combined into a total score and averaged across the number of weeks a candidate was in the program. Despite the fact that all the candidates were placed in the same company, and underwent mainly the same bridging programme, data is not available for the same number of weeks for all the candidates and some candidates have scores missing for weeks in the middle of the programme. It is for this reason that the average was calculated per week present. Due to the fact that, as mentioned previously, facilitators use the scores awarded weekly to deliberately elicit sought-after behaviours, the same average was calculated for the weekly sub-totals, as there was a consideration that these scores, unaffected by further penalties and bonuses, may represent a somewhat truer indication of raw performance in the development programme (bridge). These two separate scores for the bridging programme performance are thus used as dependant variables indicating learning performance during training.

Coglab, which is a cognitive training programme, split into two separate sections of analytical and conceptual thinking, is part of the bridging programme. There is a written pre-test, and then there

are formative modular assessments during the programme, followed by a last (summative) test or post-test. The Coglab scores are not stored or tracked specifically by Harambee, as discussed in the previous section. As such, these data were gathered by sourcing and combining various spreadsheets from different bridging managers. All of the different Coglab scores can be treated as separate measures of learning performance, and as such, serve as dependant variables in analysis. As it is a cognitive training programme, it is particularly relevant in this context, when considering the implication for the multi-stage selection model. The following scores were the most readily available for Coglab:

- The final post-test combined score for analytical and conceptual thinking was available for 187 candidates in the sample.
- The separate analytical and conceptual scores for the post-test was only available for 90 candidates.

Other scores for Coglab that are only available for a limited number of candidates:

- Weekly Coglab scores were available for 58 of the candidates. These were combined into a weekly average score. The first week's score, which was the pre-test score – a round number out of one hundred – was separated from these. This pre-test score was available for 57 of these candidates.
- A difference score – which is the available pre-test data minus their respective corresponding post-test score – was calculated for the candidates with these data available. This difference score serves as a rough indicator of the gain these candidates achieved in their cognitive functioning as a result of completing the programme, although, as described in an earlier section, there are some serious statistical considerations around this practice.

5.5 Statistical hypotheses

The variables included as predictor variables (independent variables) are:

- CFT (Concept Formation Test) subscale of the TRAM-2 measure.
- Media Works Communication/Literacy assessment.
- Media Works Numeracy Assessment.
- Shadowmatch Conceptual Fitness .
- Shadowmatch Task efficiency .

Additional independent variables for analysis:

- Shadowmatch: 19 habits.
- Shadowmatch: 4 attitude categories.

The variables included as criterion variables (dependent variables) are:

- Coglab
 - Coglab final score.
 - Coglab analytical component of final score.
 - Coglab conceptual component of final score.
 - Coglab difference score.
 - Coglab weekly average score.
- Bridging/training performance
 - Average of weekly bridging totals.
 - Average of weekly bridging sub-totals.

Statistical hypotheses as such include:

- Hypothesis 1: The predictor variables will individually demonstrate positive correlations with each of the independent variables.
- Hypothesis 2: The predictor variables will collectively explain significant variance in the each of the independent variables.
- Hypothesis 3: The additional independent variables may individually demonstrate correlations with each of the independent variables.

Prior to the analysis it was expected that the CFT score, and the other predictors, will show a positive and significant correlation with elements of learning performance, even though these may be smaller in some instances. There was a consideration of the possibility of low to zero correlations with the bridging outcomes, due to the limitations of the data as indicators of learning performance, as discussed. The explorative analyses were expected to yield interesting correlations between some habits and training performance which would direct further study.

CHAPTER 6

RESULTS OF THE STATISTICAL ANALYSES AND DISCUSSION

This chapter contains all the relevant results from the statistical analyses described in the previous chapter. The results are also interpreted and discussed.

6.1 Reporting of Results

This section contains all of the relevant output from the statistical analyses.

6.1.1 Descriptive statistics

The descriptive statistics for the variables in the current sample are displayed in Table 6.1.

Table 6.1.

Descriptive statistics for all variables in the Harambee sample

Variable	Mean	Std. Dev.	Minimum	Maximum	n
CFT Learning Potential	6.99	1.33	3	10	243
MWN Communication	6.81	1.35	4	10	244
MWN Numeracy	4.29	1.4	1	10	242
SM Conceptual	4.08	1.6	0	8	244
SM Task Efficiency	36.5	8.16	17	63	244
Coglab Pre-Assessment	53.33	26.82	0	100	57
Coglab Weekly Average	68.33	13.15	40.6	94	58
Coglab Analytical	32.3	7.71	14	47	90
Coglab Conceptual	24.02	8.2	7	49	90
Coglab Final Score	64.49	18.49	11	98	187
Coglab Difference	12.02	28.26	-72	86	58
Weekly Total Average	62.25	8.67	30	85.5	238
Weekly Sub-Total Average	58.92	8.25	29.17	81.29	238
Propensity to Own	42.82	6.86	24	64	244
Propensity to Hand-Off	32.76	6.51	15	54	244
To Simplify	32.85	10.25	7	58	244
Resilience	47.8	9.46	12	75	244
Propensity to Change	30.8	9.58	9	58	244
Frustration	43.26	9.49	15	73	244
Team Inclination	54.73	10.14	30	80	244
Individual Inclination	24.31	7.34	10	48	244
Self-Motivation	42.37	7.94	25	64	244
Routine	40.85	9.43	12	63	244
Problem Solving	42.48	7.84	11	63	244
Responsiveness	43.12	9.06	19	70	244
Innovation	30.86	9.2	9	58	244
People Positive	49.34	10.12	24	79	244
Discipline	53.62	8.3	18	73	244
Conflict Handling	51.59	10.58	24	79	244
Altruism	51.41	11.22	23	80	244
Self Confidence	46.69	8.3	26	73	244
Leadership	46.16	5.88	26	62	244
SM Attitude Category 1	46.33	8.12	27	66	244

Table 6.1 (continued)

Variable	Mean	Std. Dev.	Minimum	Maximum	n
SM Attitude Category 2	31.49	6.96	10	53	244
SM Attitude Category 3	13.82	5.7	2	35	244
SM Attitude Category 4	17.42	5.73	5	34	244
SM Number of Back-Clicks	0.91	2.74	0	34	244
SM Number of Changes	0.38	0.92	0	5	244
SM Time Conceptual	1066.18	318.2	469	2560	244
SM Time Total	2806.6	585.49	1481	5417	244

6.1.2 Correlational analyses

This section contains the output from the various correlational analyses conducted. Table 6.2 shows the correlations between the variables included in the set of predictors, for the sake of this study, and the various separate Coglab indicators, used as criterion variables, indicating different aspects of learning performance in evaluation.

Table 6.2.

Correlation analyses of the set of predictor variables and the Coglab criterion variables

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
SM Conceptual	Coglab Analytical	.14	.19	90
SM Conceptual	Coglab Conceptual	.08	.44	90
SM Conceptual	Coglab Final Score	.04	.62	187
SM Conceptual	Coglab Difference	-.33	.01*	58
SM Conceptual	Coglab Pre-Assessment	.33	.01*	57
SM Conceptual	Coglab Weekly Average	.15	.25	58
SM Task Efficiency	Coglab Analytical	.12	.25	90
SM Task Efficiency	Coglab Conceptual	.01	.95	90
SM Task Efficiency	Coglab Final Score	.01	.85	187
SM Task Efficiency	Coglab Difference	-.27	.04*	58
SM Task Efficiency	Coglab Pre-Assessment	.12	.37	57
SM Task Efficiency	Coglab Weekly Average	.05	.70	58
CFT Learning Potential	Coglab Analytical	.43	<.01**	89
CFT Learning Potential	Coglab Conceptual	.39	<.01**	89
CFT Learning Potential	Coglab Final Score	.43	<.01**	186
CFT Learning Potential	Coglab Difference	-.06	.67	58
CFT Learning Potential	Coglab Pre-Assessment	.40	<.01**	57
CFT Learning Potential	Coglab Weekly Average	.50	<.01**	58
MWN Numeracy	Coglab Analytical	.45	<.01**	90
MWN Numeracy	Coglab Conceptual	.29	<.01**	90
MWN Numeracy	Coglab Final Score	.24	<.01**	185
MWN Numeracy	Coglab Difference	-.40	<.01**	57
MWN Numeracy	Coglab Pre-Assessment	.47	<.01**	56

Table 6.2 (continued)

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
MWN Numeracy	Coglab Weekly Average	.26	.05	57
MWC Communication	Coglab Analytical	.22	.03*	90
MWC Communication	Coglab Conceptual	.39	<.01**	90
MWC Communication	Coglab Final Score	.27	<.01**	187
MWC Communication	Coglab Difference	.00	.99	58
MWC Communication	Coglab Pre-Assessment	.37	<.01**	57
MWC Communication	Coglab Weekly Average	.57	<.01**	58

Note. *p < .05, **p < .01

The Shadowmatch Conceptual score showed statistically significant ($p < .01$) correlations with both the Coglab Difference Score and the Pre-test score. The Shadowmatch Task Efficiency score, which is derived from the time measurements and the performance on the conceptual questions, correlated (negatively) with the Coglab Difference Score only. The CFT Learning Potential score showed, in aggregate comparison to the other predictors, good correlations with the dependent variables, particularly in the case of the Coglab final score. The CFT did not correlate with the straight difference score, however. The Numeracy measurement showed correlations with all of the independent variables (with $p=.05$ for the Coglab Weekly Average), and interestingly, a negative correlation with the Coglab Difference Score. The Communication measure also correlated with all of the criterion variables in the analysis, save for the Coglab Difference score, and correlated strongly with the Coglab Weekly Average score. Table 6.3 shows correlations between the set of variables included in the analyses as predictors and the Weekly Total Average and Weekly Sub-Total Average scores the candidates achieved in the bridging programmes.

Table 6.3.

Correlation analyses of the set of predictor variables and the weekly bridging scores as criterion variables

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
SM Conceptual	Weekly Total Average	.04	.49	238
SM Conceptual	Weekly Sub-Total Average	.06	.35	238
SM Task Efficiency	Weekly Total Average	-.03	.67	238
SM Task Efficiency	Weekly Sub-Total Average	-.01	.87	238
CFT Learning Potential	Weekly Total Average	.26	<.01**	237
CFT Learning Potential	Weekly Sub-Total Average	.26	<.01**	237
MWN Numeracy	Weekly Total Average	.20	<.01**	236
MWN Numeracy	Weekly Sub-Total Average	.20	<.01**	236
MWC Communication	Weekly Total Average	.26	<.01**	238
MWC Communication	Weekly Sub-Total Average	.27	<.01**	238

Note. *p < .05, **p < .01

The Shadowmatch variables did not show any statistically significant ($p < .05$) correlations in this regard. The other predictors all showed very similar correlations with these measures of learning performance, which technically indicates classroom-based displays of learning of behavioural content. One would note that the correlations for the Total and Sub-Total scores are virtually the same for all predictors.

Table 6.4 shows the correlational analyses between the nineteen Shadowmatch habits and four Attitude Categories and the various Coglab scores.

Table 6.4.

Correlation analyses of Shadowmatch habits and attitudes with the various Coglab scores

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
Propensity to Own	Coglab Analytical	.09	.38	90
Propensity to Own	Coglab Conceptual	.03	.75	90
Propensity to Own	Coglab Final Score	-.02	.82	187
Propensity to Own	Coglab Difference	-.07	.58	58
Propensity to Own	Coglab Pre-Assessment	.01	.95	57
Propensity to Own	Coglab Weekly Average	-.04	.76	58
Propensity to Hand-Off	Coglab Analytical	-.18	.10	90
Propensity to Hand-Off	Coglab Conceptual	-.17	.10	90
Propensity to Hand-Off	Coglab Final Score	-.01	.84	187
Propensity to Hand-Off	Coglab Difference	.10	.44	58
Propensity to Hand-Off	Coglab Pre-Assessment	-.01	.95	57
Propensity to Hand-Off	Coglab Weekly Average	.04	.76	58
To Simplify	Coglab Analytical	-.04	.74	90
To Simplify	Coglab Conceptual	.01	.91	90
To Simplify	Coglab Final Score	-.00	.97	187
To Simplify	Coglab Difference	-.24	.07	58
To Simplify	Coglab Pre-Assessment	.29	.03*	57
To Simplify	Coglab Weekly Average	.17	.20	58
Resilience	Coglab Analytical	.02	.83	90
Resilience	Coglab Conceptual	-.16	.13	90
Resilience	Coglab Final Score	-.05	.48	187
Resilience	Coglab Difference	-.18	.17	58
Resilience	Coglab Pre-Assessment	.01	.93	57
Resilience	Coglab Weekly Average	.10	.43	58
Propensity to Change	Coglab Analytical	.04	.67	90
Propensity to Change	Coglab Conceptual	.03	.80	90
Propensity to Change	Coglab Final Score	.03	.68	187
Propensity to Change	Coglab Difference	.05	.70	58
Propensity to Change	Coglab Pre-Assessment	-.05	.69	57
Propensity to Change	Coglab Weekly Average	-.02	.88	58
Frustration	Coglab Analytical	.01	.92	90
Frustration	Coglab Conceptual	-.04	.69	90
Frustration	Coglab Final Score	-.06	.44	187
Frustration	Coglab Difference	-.02	.90	58
Frustration	Coglab Pre-Assessment	-.01	.97	57
Frustration	Coglab Weekly Average	.04	.77	58

Table 6.4 (continued)

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
Team Inclination	Coglab Analytical	-.06	.60	90
Team Inclination	Coglab Conceptual	-.21	.04*	90
Team Inclination	Coglab Final Score	-.07	.36	187
Team Inclination	Coglab Difference	.12	.36	58
Team Inclination	Coglab Pre-Assessment	-.17	.22	57
Team Inclination	Coglab Weekly Average	.05	.71	58
Individual Inclination	Coglab Analytical	.04	.68	90
Individual Inclination	Coglab Conceptual	.17	.10	90
Individual Inclination	Coglab Final Score	.05	.47	187
Individual Inclination	Coglab Difference	-.06	.67	58
Individual Inclination	Coglab Pre-Assessment	.12	.37	57
Individual Inclination	Coglab Weekly Average	.01	.93	58
Self-Motivation	Coglab Analytical	-.02	.86	90
Self-Motivation	Coglab Conceptual	-.09	.40	90
Self-Motivation	Coglab Final Score	.03	.67	187
Self-Motivation	Coglab Difference	-.06	.65	58
Self-Motivation	Coglab Pre-Assessment	.02	.89	57
Self-Motivation	Coglab Weekly Average	.12	.37	58
Routine	Coglab Analytical	-.05	.63	90
Routine	Coglab Conceptual	-.24	.02*	90
Routine	Coglab Final Score	-.04	.58	187
Routine	Coglab Difference	-.02	.90	58
Routine	Coglab Pre-Assessment	.04	.79	57
Routine	Coglab Weekly Average	.06	.65	58
Problem Solving	Coglab Analytical	.13	.23	90
Problem Solving	Coglab Conceptual	-.08	.46	90
Problem Solving	Coglab Final Score	.03	.68	187
Problem Solving	Coglab Difference	-.16	.22	58
Problem Solving	Coglab Pre-Assessment	.12	.37	57
Problem Solving	Coglab Weekly Average	.20	.12	58
Responsiveness	Coglab Analytical	.13	.23	90
Responsiveness	Coglab Conceptual	-.04	.73	90
Responsiveness	Coglab Final Score	.00	.97	187
Responsiveness	Coglab Difference	-.20	.14	58
Responsiveness	Coglab Pre-Assessment	.15	.26	57
Responsiveness	Coglab Weekly Average	.15	.27	58
Innovation	Coglab Analytical	.08	.44	90
Innovation	Coglab Conceptual	.04	.72	90
Innovation	Coglab Final Score	-.02	.80	187
Innovation	Coglab Difference	-.18	.17	58
Innovation	Coglab Pre-Assessment	.10	.44	57
Innovation	Coglab Weekly Average	.09	.50	58
People Positive	Coglab Analytical	.08	.44	90
People Positive	Coglab Conceptual	-.01	.96	90
People Positive	Coglab Final Score	-.02	.83	187
People Positive	Coglab Difference	-.01	.92	58
People Positive	Coglab Pre-Assessment	.05	.69	57

Table 6.4 (continued)

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
People Positive	Coglab Weekly Average	.08	.55	58
Discipline	Coglab Analytical	.00	.98	90
Discipline	Coglab Conceptual	-.14	.20	90
Discipline	Coglab Final Score	-.05	.48	187
Discipline	Coglab Difference	-.04	.76	58
Discipline	Coglab Pre-Assessment	-.01	.97	57
Discipline	Coglab Weekly Average	.13	.34	58
Conflict Handling	Coglab Analytical	-.03	.75	90
Conflict Handling	Coglab Conceptual	-.14	.19	90
Conflict Handling	Coglab Final Score	-.02	.73	187
Conflict Handling	Coglab Difference	.05	.69	58
Conflict Handling	Coglab Pre-Assessment	.07	.59	57
Conflict Handling	Coglab Weekly Average	.10	.44	58
Altruism	Coglab Analytical	.08	.48	90
Altruism	Coglab Conceptual	-.03	.77	90
Altruism	Coglab Final Score	-.00	.99	187
Altruism	Coglab Difference	.03	.81	58
Altruism	Coglab Pre-Assessment	-.01	.93	57
Altruism	Coglab Weekly Average	.14	.29	58
Self Confidence	Coglab Analytical	.03	.78	90
Self Confidence	Coglab Conceptual	-.04	.74	90
Self Confidence	Coglab Final Score	-.02	.78	187
Self Confidence	Coglab Difference	-.21	.12	58
Self Confidence	Coglab Pre-Assessment	.22	.11	57
Self Confidence	Coglab Weekly Average	.22	.09	58
Leadership	Coglab Analytical	.01	.91	90
Leadership	Coglab Conceptual	-.15	.17	90
Leadership	Coglab Final Score	-.05	.52	187
Leadership	Coglab Difference	-.12	.36	58
Leadership	Coglab Pre-Assessment	.03	.85	57
Leadership	Coglab Weekly Average	.16	.24	58
SM Attitude Category 1	Coglab Analytical	.05	.66	90
SM Attitude Category 1	Coglab Conceptual	-.00	.98	90
SM Attitude Category 1	Coglab Final Score	-.07	.36	187
SM Attitude Category 1	Coglab Difference	-.16	.23	58
SM Attitude Category 1	Coglab Pre-Assessment	.09	.51	57
SM Attitude Category 1	Coglab Weekly Average	.10	.47	58
SM Attitude Category 2	Coglab Analytical	-.09	.41	90
SM Attitude Category 2	Coglab Conceptual	.01	.90	90
SM Attitude Category 2	Coglab Final Score	.03	.66	187
SM Attitude Category 2	Coglab Difference	-.02	.88	58
SM Attitude Category 2	Coglab Pre-Assessment	-.08	.57	57
SM Attitude Category 2	Coglab Weekly Average	-.04	.75	58
SM Attitude Category 3	Coglab Analytical	-.05	.61	90
SM Attitude Category 3	Coglab Conceptual	.01	.96	90
SM Attitude Category 3	Coglab Final Score	.09	.24	187
SM Attitude Category 3	Coglab Difference	-.02	.90	58

Table 6.4 (continued)

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
SM Attitude Category 3	Coglab Pre-Assessment	.10	.45	57
SM Attitude Category 3	Coglab Weekly Average	.02	.87	58
SM Attitude Category 4	Coglab Analytical	-.04	.70	90
SM Attitude Category 4	Coglab Conceptual	-.02	.86	90
SM Attitude Category 4	Coglab Final Score	.05	.54	187
SM Attitude Category 4	Coglab Difference	.15	.27	58
SM Attitude Category 4	Coglab Pre-Assessment	-.08	.54	57
SM Attitude Category 4	Coglab Weekly Average	.07	.59	58

Note. *p < .05, **p < .01

There are very few correlations to report from this analysis. The habit 'To Simplify' showed a statistically significant ($p < .05$) correlation with the Coglab Pre-Assessment; and Team Inclination and Routine both correlated ($p < .05$) negatively with the Coglab Conceptual score.

Table 6.5. shows the correlational analyses between the nineteen Shadowmatch habits, and four Attitude Categories, and the weekly bridging scores for the sample group. There were no statistically significant correlations in this regard.

Table 6.5.

Correlation analyses of Shadowmatch habits and attitudes with the weekly bridging scores

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson	p	N
Propensity to Own	Weekly Total Average	.07	.25	238
Propensity to Own	Weekly Sub-Total Average	.06	.34	238
Propensity to Hand-Off	Weekly Total Average	-.05	.40	238
Propensity to Hand-Off	Weekly Sub-Total Average	-.03	.61	238
To Simplify	Weekly Total Average	.06	.38	238
To Simplify	Weekly Sub-Total Average	.07	.27	238
Resilience	Weekly Total Average	.03	.62	238
Resilience	Weekly Sub-Total Average	.04	.57	238
Propensity to Change	Weekly Total Average	.05	.47	238
Propensity to Change	Weekly Sub-Total Average	.04	.52	238
Frustration	Weekly Total Average	.01	.86	238
Frustration	Weekly Sub-Total Average	.01	.86	238
Team Inclination	Weekly Total Average	-.05	.48	238
Team Inclination	Weekly Sub-Total Average	-.05	.42	238
Individual Inclination	Weekly Total Average	.02	.74	238
Individual Inclination	Weekly Sub-Total Average	.02	.78	238
Self-Motivation	Weekly Total Average	.12	.06	238
Self-Motivation	Weekly Sub-Total Average	.11	.08	238
Routine	Weekly Total Average	-.07	.27	238
Routine	Weekly Sub-Total Average	-.07	.25	238
Problem Solving	Weekly Total Average	.07	.25	238
Problem Solving	Weekly Sub-Total Average	.08	.23	238

Table 6.5 (continued)

Independent Variable (Predictor)	Dependent Variable (Criterion)	Pearson p	N	
Responsiveness	Weekly Total Average	.10	.14	238
Responsiveness	Weekly Sub-Total Average	.10	.13	238
Innovation	Weekly Total Average	.08	.21	238
Innovation	Weekly Sub-Total Average	.09	.16	238
People Positive	Weekly Total Average	.02	.70	238
People Positive	Weekly Sub-Total Average	.03	.67	238
Discipline	Weekly Total Average	.07	.28	238
Discipline	Weekly Sub-Total Average	.06	.33	238
Conflict Handling	Weekly Total Average	-.04	.52	238
Conflict Handling	Weekly Sub-Total Average	-.04	.58	238
Altruism	Weekly Total Average	.03	.66	238
Altruism	Weekly Sub-Total Average	.02	.74	238
Self Confidence	Weekly Total Average	.07	.29	238
Self Confidence	Weekly Sub-Total Average	.08	.20	238
Leadership	Weekly Total Average	.06	.32	238
SM Attitude Category 1	Weekly Total Average	.01	.90	238
SM Attitude Category 1	Weekly Sub-Total Average	.00	.99	238
SM Attitude Category 2	Weekly Total Average	.06	.35	238
SM Attitude Category 2	Weekly Sub-Total Average	.07	.31	238
SM Attitude Category 3	Weekly Total Average	.08	.20	238
SM Attitude Category 3	Weekly Sub-Total Average	.08	.20	238
SM Attitude Category 4	Weekly Total Average	-.07	.28	238
SM Attitude Category 4	Weekly Sub-Total Average	-.08	.23	238

Note. *p < .05, **p < .01

Table 6.6 shows the correlations between the set of predictor variables.

Table 6.6.

Intercorrelation analysis of the predictor variables

Predictor Variable 1	Predictor Variable 2	Pearson p	N	
CFT Learning Potential	MWC Communication	.41	<.01**	243
CFT Learning Potential	MWN Numeracy	.36	<.01**	241
CFT Learning Potential	SM Conceptual	.10	.12	243
CFT Learning Potential	SM Task Efficiency	.07	.25	243
MWC Communication	MWN Numeracy	.25	<.01**	242
MWC Communication	SM Conceptual	.12	.07	244
MWC Communication	SM Task Efficiency	.03	.69	244
MWN Numeracy	SM Conceptual	.16	.01*	242
MWN Numeracy	SM Task Efficiency	.17	<.01**	242
SM Conceptual	SM Task Efficiency	.35	<.01**	244

Note. *p < .05, **p < .01

The CFT Learning Potential scores showed statistically significant (p < .01) correlations with both the Communication and Numeracy scores. The Communication and Numeracy scores correlated

with one another and the Numeracy score showed a low correlation with the Shadowmatch variables. The Shadowmatch predictors did correlate, however, as discussed, the Task Efficiency score is a function of the time variables and the Conceptual score, and as such, these are bound to correlate.

Table 6.7 is the correlation analysis between the Coglab and bridging criterion variables.

Table 6.7.
Intercorrelation analysis of the criterion variables

Criterion Variable 1	Criterion Variable 2	Pearson	p	N
Coglab Analytical	Weekly Total Average	.58	<.01**	90
Coglab Analytical	Weekly Sub-Total Average	.54	<.01**	90
Coglab Conceptual	Weekly Total Average	.51	<.01**	90
Coglab Conceptual	Weekly Sub-Total Average	.53	<.01**	90
Coglab Final Score	Weekly Total Average	.53	<.01**	185
Coglab Final Score	Weekly Sub-Total Average	.52	<.01**	185
Coglab Difference	Weekly Total Average	.06	.62	58
Coglab Difference	Weekly Sub-Total Average	.03	.90	58
Coglab Pre-Assessment	Weekly Total Average	.44	<.01**	57
Coglab Pre-Assessment	Weekly Sub-Total Average	.47	<.01**	57
Coglab Weekly Average	Weekly Total Average	.77	<.01**	58
Coglab Weekly Average	Weekly Sub-Total Average	.77	<.01**	58

Note. *p < .05, **p < .01

The Coglab variables showed relatively strong correlations with the bridging performance, save for the Difference score. The Coglab Weekly Average had a high correlation with the bridging scores. The Coglab Weekly scores are however factored into the calculation of the bridging total score. The weighting of the elements comprising the Weekly bridging scores is not known to the researcher, however, the Coglab assessments that are done weekly during the programme are included with up to fifteen other building blocks that are scored weekly or as they occur.

6.1.3 Multiple regression analyses

The grouping of the predictor variables was entered into a linear multiple-regression analysis with each of the dependent variables. Redundancy of Independent Variables analyses were conducted in each instance and showed that there are no concerns of collinearity among the predictors. Due to the use of the same set of independent variables in each instance, the values of the tolerance measures were very similar and in most cases almost identical. Tolerance measures ranged between .65 and .86. Due to these similar and consistent findings the results from these analyses are not reported on below. Table 6.8 shows the multiple regression analysis of the set of predictors on the Coglab Analytical score.

Table 6.8.***Multiple regression analysis of the set of predictors on the Coglab Analytical score***

$R = .54864152$ $R^2 = .30100751$ Adjusted $R^2 = .25889953$ $F(5,83) = 7.1485$ $p < .00001$ Std. Error of estimate: 6.6346; $n = 89$.						
	b*	Std. Err of b*	b	Std. Err of b	t(83)	p-value
Intercept			10.64	5.13	2.08	.04*
SM Conceptual	.11	.10	0.50	0.47	1.07	.29
SM Task Efficiency	-.03	.10	-0.03	0.09	-0.31	.76
CFT Learning Potential	.28	.10	1.54	0.56	2.73	.01*
MWN Numeracy	.33	.10	1.81	0.55	3.26	.00**
MWN Communication	.06	.10	0.32	0.54	0.59	.55

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 30.1 percent of the variance in the Coglab Analytical score. The CFT Learning Potential score and Numeracy score both showed a positive and statistically significant *beta* value in this regard. The *beta* value represents a standard regression coefficient that shows how strongly each predictor value influences the criterion value, in other words, it shows by how much the dependent variable is expected to increase when that independent variable increases by one unit, holding all the other independent variables constant.

Table 6.9 shows the multiple regression analysis of the set of predictors on the Coglab Conceptual score.

Table 6.9.***Multiple regression analysis of the set of predictors on the Coglab Conceptual score***

$R = .49106702$ $R^2 = .24114682$ Adjusted $R^2 = .19543277$ $F(5,83) = 5.2751$ $p < .0003$ Std. Error of estimate: 7.3549; $n = 89$.						
	b*	Std. Err of b*	b	Std. Err of b	t(83)	p-value
Intercept			0.67	5.68	0.12	.91
SM Conceptual	.11	.10	0.54	.52	1.02	.31
SM Task Efficiency	-.07	.11	-0.006	0.10	-0.64	.53
CFT Learning Potential	.27	.11	1.54	0.62	2.47	.02*
MWN Numeracy	.12	.11	0.70	0.62	1.14	.26
MWN Communication	.25	.10	1.42	0.60	2.37	.02*

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 24.1 percent of the variance in the Coglab Conceptual score. The CFT Learning Potential score and Communication score both showed a positive and statistically significant beta value in this regard.

Table 6.10 shows the multiple regression analysis of the set of predictors on the Coglab Final Score.

Table 6.10.***Multiple regression analysis of the set of predictors on the Coglab Final Score***

$R = .44552924$ $R^2 = .19849630$ Adjusted $R^2 = .17598216$ $F(5,178) = 7.1485$ $p < .00000$ Std. Error of estimate: 16.889; $n = 184$.						
	b*	Std. Err of b*	b	Std. Err of b	t(178)	p-value
Intercept			19.02	9.26	2.06	.04
SM Conceptual	.01	.07	0.08	0.86	0.09	.93
SM Task Efficiency	-.04	.07	-0.09	0.17	-0.52	.60
CFT Learning Potential	.35	.08	4.71	1.06	4.46	.00**
MWN Numeracy	.09	.07	1.13	0.94	1.20	.23
MWN Communication	.11	.07	1.55	1.04	1.49	.14

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 19.8 percent of the variance in the Coglab Final Score. The CFT Learning Potential score showed a positive and statistically significant beta value in this regard.

Table 6.11 shows the multiple regression analysis of the set of predictors on the Coglab Difference score.

Table 6.11.***Multiple regression analysis of the set of predictors on the Coglab Difference score***

$R = .49039544$ $R^2 = .24048769$ Adjusted $R^2 = .16602569$ $F(5,51) = 3.2297$ $p < .01311$ Std. Error of estimate: 26.013; $n = 57$.						
	b*	Std. Err of b*	b	Std. Err of b	t(51)	p-value
Intercept			47.10	29.26	1.61	.11
SM Conceptual	-.23	.15	-4.00	2.61	-1.53	.13
SM Task Efficiency	-.05	.15	-0.19	0.57	-0.34	.74
CFT Learning Potential	-.06	.14	-1.43	3.21	-0.45	.66
MWN Numeracy	-.36	.14	-7.62	2.84	-2.69	.01*
MWN Communication	.20	.15	4.74	3.51	1.35	.18

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 24 percent of the variance in the Coglab Difference score. The Numeracy score showed a positive and statistically significant beta value in this regard.

Table 6.12 shows the multiple regression analysis of the set of predictors on the Coglab Pre-Test score.

Table 6.12.***Multiple regression analysis of the set of predictors on the Coglab Pre-Test Score***

$R = .58698286$ $R^2 = .34454887$ Adjusted $R^2 = .27900376$ $F(5,50) = 5.2567$ $p < .00059$ Std. Error of estimate: 22.923; $n = 56$.						
	b*	Std. Err of b*	b	Std. Err of b	t(50)	p-value
Intercept			-30.22	26.02	-1.16	.25
SM Conceptual	.24	.14	4.01	2.31	1.73	.09
SM Task Efficiency	-.08	.14	-0.31	0.51	-0.61	.54
CFT Learning Potential	.27	.14	5.62	2.83	1.98	.05*
MWN Numeracy	.32	.13	6.66	2.67	2.49	.02*
MWN Communication	.05	.14	1.10	3.14	0.35	.73

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 34.5 percent of the variance in the Coglab Pre-Test Score. The CFT Learning Potential score and Numeracy score both showed a positive and statistically significant beta value in this regard.

Table 6.13 shows the multiple regression analysis of the set of predictors on the Coglab Weekly Average.

Table 6.13.***Multiple regression analysis of the set of predictors on the Coglab Weekly Average score***

$R = .62283411$ $R^2 = .38792233$ Adjusted $R^2 = .32791472$ $F(5,51) = 6.4646$ $p < .00010$ Std. Error of estimate: 10.869; $n = 57$.						
	b*	Std. Err of b*	b	Std. Err of b	t(51)	p-value
Intercept			13.53	12.32	1.10	.28
SM Conceptual	.02	.14	0.19	1.09	0.18	.86
SM Task Efficiency	.01	.13	0.02	0.24	0.07	.95
CFT Learning Potential	.28	.13	2.87	1.34	2.14	.04*
MWN Numeracy	.02	.12	0.25	1.27	0.20	.84
MWN Communication	.41	.14	4.51	1.49	3.04	.00**

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 38.8 percent of the variance in the Coglab Weekly Average score. The CFT Learning Potential score and Communication score both showed a positive and statistically significant beta value in this regard.

Table 6.14 shows the multiple regression analysis of the set of predictors on the weekly total average score on the bridging programme.

Table 6.14.

Multiple regression analysis of the set of predictors on the Weekly Total Average score on the bridging programme

$R = .34300132$ $R^2 = .11764991$ Adjusted $R^2 = .09838462$ $F(5,229) = 6.1068$ $p < .00002$ Std. Error of estimate: 8.2432; $n = 235$.						
	b*	Std. Err of b*	b	Std. Err of b	t(229)	p-value
Intercept			47.14	4.03	11.70	.00
SM Conceptual	.01	.07	0.05	0.36	0.14	.89
SM Task Efficiency	-.08	.07	-0.09	0.07	-1.21	.23
CFT Learning Potential	.15	.07	1.00	0.46	2.17	.03*
MWN Numeracy	.11	.07	0.69	0.42	1.64	.10
MWN Communication	.19	.07	1.20	0.44	2.71	.01*

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 11.8 percent of the variance in the Weekly Total Average score on the bridging programme. The CFT Learning Potential and Communication score both showed a small positive and statistically significant beta value in this regard.

Table 6.15 shows the multiple regression analysis of the set of predictors on the weekly sub-total average score on the bridging programme.

Table 6.15.

Multiple regression analysis of the set of predictors on the Weekly Sub-Total Average score on the bridging programme

$R = .34841260$ $R^2 = .12139134$ Adjusted $R^2 = .10220774$ $F(5,229) = 6.3279$ $p < .00002$ Std. Error of estimate: 7.8328; $n = 235$.						
	b*	Std. Err of b*	b	Std. Err of b	t(229)	p-value
Intercept			43.50	3.83	11.36	.00
SM Conceptual	.02	.07	0.10	0.34	0.30	.76
SM Task Efficiency	-.07	.07	-0.07	0.07	-1.00	.32
CFT Learning Potential	.15	.07	0.95	0.44	2.15	.03*
MWN Numeracy	.11	.07	0.65	0.40	1.63	.11
MWN Communication	.19	.07	1.20	0.42	2.84	.00**

Note. * $p < .05$, ** $p < .01$

The set of predictors explained 12.1 percent of the variance in the Weekly Sub-Total Average score on the bridging programme, which can be seen as relatively low. The CFT Learning Potential and Communication score both showed a small positive and statistically significant ($p < .05$) beta value in this regard.

6.1.4 Further results from the statistical analyses

As mentioned earlier in this thesis, Shadowmatch tracks additional variables which are not used by the system for matching purposes, these include the number of back-clicks by a test-taker while completing the profile, the number of changes made, and the number of breaks taken. The creator of Shadowmatch mentioned to the researcher that there are no specific indications, as yet, as to the practical usefulness of these indicators and that they would be interested in any research results in this regard (Pieter De Villiers, personal communication, November 5, 2015). Correlational analyses were conducted on these variables and all the other variables that data were available for. Included in this additional analysis were the variables of time taken to complete the Shadowmatch worksheet, and the time taken to complete the conceptual questions. This analysis is not reported on in full, as there were no specific hypotheses formulated regarding these variables. The intention in this regard was mere exploration and all the results will be made available to the creators of the instrument. There were, however, very few correlations to report on. The variables listed below showed some statistically significant correlations ranging from .14 to .21. The number of breaks taken was omitted from all analyses due to showing no variance, as no candidate in the sample took a break while completing Shadowmatch. Furthermore, the list below excludes the strong correlations between variables that are composed based on their correlates, and where this composition is known to the researcher to some extent, for example the Task Efficiency variable had strong positive relationships with the time variables, however these correlations are logically expected as the Task Efficiency indicator is calculated as a function of time spent on the questions. Likewise, the composition of variables listed here may have an element of the correlate included, however the derivation of the scores on all the habits are not known to the researcher and are complexly determined, by the Shadowmatch algorithms, as discussed in an earlier chapter. These are the variables that showed some correlation in these additional analyses:

- Number of Changes made and Attitude Category 2.
- Time Conceptual and To Simplify.
- Time Conceptual and SM Conceptual (.15 correlation).
- Time Conceptual and Problem Solving.
- Time Conceptual and Responsiveness.
- Time Conceptual and Self-Confidence.
- Time Conceptual and Leadership.

6.1.5 Differences between the sub-groups in the sample

As mentioned earlier, it is relevant to investigate differences between the cohorts included in the sample by year and by province, as this will provide insight as to the homogeneity of the sample

and will also be of interest to Harambee. The statistically significant differences discovered by year include:

- Coglab analytical: Means for the respective groups on this variable are: 2016: 33.97; 2017: 26.05. Current effect $F(1, 88)=18.988$, $p=<.01$ Mann-Whitney U $p=<.01$.
- Coglab final score: Means for the respective groups on this variable are: 2016: 67.19; 2017: 60.62. Current effect $F(1, 185)=5.8643$, $p=.02$ Mann-Whitney U $p=.09$.
- Resilience: Means for the respective groups on this variable are: 2016: 48.96; 2017: 46.49. Current effect $F(1, 242)=4.2180$, $p=.04$ Mann-Whitney U $p=.04$.
- Discipline: Means for the respective groups on this variable are: 2016: 54.82; 2017: 52.28. Current effect $F(1, 242)=5.8216$, $p=.02$ Mann-Whitney U $p=.02$.
- Attitude category 1: Means for the respective groups on this variable are: 2016: 47.36; 2017: 45.17. Current effect $F(1, 242)=4.5283$, $p=.03$ Mann-Whitney U $p=.04$.
- Attitude category 2: Means for the respective groups on this variable are: 2016: 30.57; 2017: 32.52. Current effect $F(1, 242)=4.8436$, $p=.03$ Mann-Whitney U $p=<.01$.

The sample included candidates from four regions, namely the Western Cape, Gauteng, Free State, and Kwa-Zulu Natal. The group from Bloemfontein (Free State) comprised of only ten candidates and the Durban group (Kwa-Zulu Natal) were only fourteen. The other two groups comprised the rest of the sample. As such, much larger differences are required to indicate as statistically significant when comparing these smaller groups to the other two, and also, these differences should be interpreted carefully. Due to Harambee's extended network in the larger regions, they are referred to here by province and not by city, as the other two.

Statistically significant differences by province:

- CFT (learning potential): Means for the respective groups on this variable are: Western Cape: 6.55; Gauteng: 7.14; Bloemfontein: 7.20; Durban: 7.14. The Western Cape mean is almost half a standard deviation lower than the other three regions, with a statistically significant difference between the Western Cape and Gauteng groups. Current effect $F(3, 239)=3.2698$, $p=.02$ Kruskal Wallis $p=.05$.
- Numeracy: Means for the respective groups on this variable are: Western Cape: 3.75; Gauteng: 4.57; Bloemfontein: 3.90; Durban: 4.07. There is a statistically significant difference between the Western Cape and Gauteng groups. Current effect $F(3, 238)=5.9397$, $p=<.01$ Kruskal Wallis $p=<.01$.
- SM Task Efficiency: Means for the respective groups on this variable are: Western Cape: 31.78; Gauteng: 38.41; Bloemfontein: 34.80; Durban 38.57. The Western Cape scores on this measure are lower than Gauteng and Durban. Current effect $F(3, 240)=11.910$, $p=<.01$ Kruskal Wallis $p=<.01$.

- Coglab analytical: Means for the respective groups on this variable are: Western Cape: 26.05; Gauteng 34.88; Durban 30.29; and data for Bloemfontein are not available for this measure. The output shows a statistically significant difference between Gauteng and the other two groups. Current effect $F(2, 87)=12.428$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Coglab conceptual: Means for the respective groups on this variable are: Western Cape: 21.26; Gauteng: 22.88; Durban: 32.43; no data are available for Bloemfontein on this measure. There is a statistically significant difference between Durban and the other two groups. Current effect $F(2, 87)=11.018$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Coglab final score: Means for the respective groups on this variable are: Western Cape: 53.93; Gauteng: 66.78; Bloemfontein: 88.70; Durban: 62.71. There is a statistically significant difference between Bloemfontein and the other three groups. Current effect $F(3, 183)=13.673$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Weekly total average: Means for the respective groups on this variable are: Western Cape: 62.78; Gauteng: 61.48; Bloemfontein: 71.85; Durban: 61.61. Statistically significant differences exist between Bloemfontein and the other three groups. Current effect $F(3, 234)=4.8153$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Weekly sub-total average: Means for the respective groups on this variable are: Western Cape: 59.22; Gauteng: 58.24; Bloemfontein: 66.40; Durban: 59.76. There is a statistically significant difference between Bloemfontein and other three groups. Current effect $F(3, 183)=3.2557$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Self-motivation: Means for the respective groups on this variable are: Western Cape: 42.74; Gauteng: 41.76; Bloemfontein: 49.80; Durban: 42.07. The is a statistically significant difference between Bloemfontein and other three groups. Current effect $F(3, 240)=3.3751$, $p=.02$ Kruskal Wallis $p=.02$.
- SM Discipline: Means for the respective groups on this variable are: Western Cape: 55.71; Gauteng: 52.64; Bloemfontein: 57.00; Durban: 52.43. There is a statistically significant difference between the Gauteng and Western Cape groups. Current effect $F(3, 240)=2.8024$, $p=.04$ Kruskal Wallis $p=.05$.
- Shadowmatch Time Conceptual: Means for the respective groups on this variable are: Western Cape: 1275.91; Gauteng: 988.19; Bloemfontein: 972.40; Durban: 1022.86. The data shows a statistically significant difference between Western Cape and other three groups. Current effect $F(3, 240)=15.143$, $p=<.01$ Kruskal Wallis $p=<.01$.
- Shadowmatch Time Total: Means for the respective groups on this variable are: Western Cape: 3180.65; Gauteng: 2667.49; Bloemfontein: 2637.50; Durban 2730.93. There exists a statistically significant difference between Western Cape and the other three groups. Current effect $F(3, 240)=14.071$, $p=<.01$ Kruskal Wallis $p=<.01$.

The Coglab pre-assessment, weekly average, and difference score variables were not compared by year or by province due to the unavailability of sufficient data for this statistical test.

6.2 Discussion of Results

In this section the results from the statistical analyses reported in the previous section are interpreted and discussed.

The descriptive statistics show trends that may be kept in mind for the purposes of this discussion or are simply interesting in themselves. The minimum requirements for entry into the corporate bridging programme include a match on a Shadowmatch benchmark, a learning potential score of five or above, a communication score of five or more, and a numeracy score of three or more. This resulted in some range restriction. The descriptive statistics will show however that some candidates were allowed despite having missed some of the aforementioned cut-offs. Examination of the histograms showing the distributions of these scores however reveal that these exceptions only represent a small number of concessions.

Other notable occurrences include:

- The combined sample group scored much higher on the Coglab Analytical component than on the Conceptual component.
- There are no candidates who scored more than eight on the Shadowmatch Conceptual score, and the mean score for this measure, as well as for the Numeracy measure, is lower than the learning potential and Communications measures.
- The Weekly Total and Weekly Sub-Total scores on the bridge are very similar, in other words, the values are almost the same for every metric calculated.
- The minimum for the Coglab Difference Score is negative, indicating that some candidates showed a decline in performance. The suspected simplicity of the Pre-Test may play a role here and as such, any result with either of these indicators should be interpreted carefully.
- Shadowmatch indicated no negative scores (so-called 'anti-habits'), and mean scores on habits mainly fluctuated between 40 and 54. Attitude categories 3 and 4 have much lower means than 1 and 2.

The correlational analyses showed that the Shadowmatch Conceptual score and Task Efficiency score had a negative correlation with the Coglab Difference score, and did not correlate with any other independent variable. The researcher is hesitant to suggest a substantive hypothesis that could be ventured to explain this, especially considering the problematic nature of the Coglab difference score, as discussed; however, one may be inclined to hypothesise that these indicators correlate with the crystallised abilities of the candidate. As such, a greater Coglab difference score

may indicate a larger zone of proximal development for the candidate, due to a lower initial score. The Shadowmatch Conceptual score also correlated positively with the Coglab Pre-Test. A similar plausible hypothesis in explanation of this correlation may be that, due to the fact that the Shadowmatch Conceptual questions are quite difficult, as evident from the maximum score, are more of the same type of questions as traditional ‘brain-teasers’, and have specific contextual and verbal content, they may perhaps correlate more with measures of prior learning. Candidates who are able to answer these questions better may have a higher initial learning level, as indicated by the correlation with the Pre-Test score, and may stand to gain less from the intervention, as indicated by a negative relationship with the Difference Score. This admittedly speculative hypothesis is however questionable, in that a higher-ability candidate should logically score higher on the rest of the programme, and there are no correlations to show this. The limitations of the Coglab Pre-Test and Difference Score should be kept in mind and are elaborated on later in this section.

The CFT Learning Potential score showed good positive correlations with all of the Coglab scores, save for the Difference Score. The Communication score also correlated with all of the Coglab scores, save for the Difference Score, albeit slightly lower all round, except for the higher correlation with the Coglab Conceptual Score and the significantly higher correlation with the Coglab weekly average score. Numeracy correlated with all of the Coglab measures but showed a negative correlation with the Coglab Difference Score.

All of the predictors correlated with the weekly bridging averages, save for the two Shadowmatch predictors. These correlations were all in the same range (.20 to .27). From these similar correlations, and the similar means and standard deviations, it would appear that using both the bridging scores did not add any additional value to this study (when one considers the reasoning for using both, as discussed earlier). The bridging score is (again) a limited indicator of learning performance due to the fact that it is largely aimed at fostering behaviour-change. The bonus-points and penalties awarded in this regard, however, do not corrupt the bridging score as indicator of bridging performance and seem to be in line with the true performance in the programme.

The CFT seems to be able to predict criterion performance in this context to a similar, or slightly better, extent than the Numeracy and Communication variables. The lack of a correlation between the CFT score and the Coglab Difference Score may indicate the problematic nature of using a simple difference score to indicate a person’s performance potential or Zone of Proximal Development.

The Shadowmatch habits only showed three statistically significant correlations with the Coglab variables, and no correlations with bridging performance. As far as these correlations are concerned, there are no theoretical linkages that make substantive sense or seem to be of

practical use. Considering these results, and the results of the correlational analyses between the Shadowmatch Conceptual and Task Efficiency scores and the criterion variables, this study did not find any predictive ability for the Shadowmatch habits in the Harambee model. The reader is, however, reminded that Shadowmatch is not used by Harambee to predict any of these outcomes and that the Shadowmatch outputs are not meant to be applied in the traditional statistical manner. Harambee also reminded the researcher that they do not utilise these data in this way. These results can thus not be seen as any indication of the validity of the Shadowmatch system when used as intended. It was, however, not unreasonable to expect that some of the Shadowmatch variables, particularly the Conceptual Score, and some of the habits, as bundles of behaviours, could very well (as hypothesised earlier), have some relationship with measures of training success. This explorative analysis – although it was a worthwhile attempt at exploiting the availability of data in a sample that is of high relevance in terms of affirmative development – has indeed failed to add any value to this study. Likewise, there are no valuable outcomes to be derived from the analyses involving the additional Shadowmatch variables.

The correlations among the predictors showed that Numeracy scores correlated with the Shadowmatch Conceptual and Task Efficiency measures, perhaps indicating an overlap in the skillsets required to perform on both of these measures. The learning potential measure and the Shadowmatch variables had no correlation, however the CFT score did correlate with both numeracy and communication scores. The Numeracy and Communication scores also correlated with each other.

As far as the criterion variables are concerned, the Coglab scores all showed very similar correlations (around .5) with bridging performance, however the Coglab Difference Score was the exception in this regard and did not correlate with bridging performance. This again shows that the Difference Score should be interpreted with caution.

In studies on learning potential measurements, particularly in comparison to other measures (usually language and/or numeracy) the question is raised as to the additional utility of the learning performance measure over the other measures, in terms of predictive ability. In the multiple regression analyses, the CFT Learning Potential score showed a statistically significant *beta* coefficient in every instance, save for in the case where the Coglab Difference Score was the dependent variable. It also had the only statistically significant *beta* coefficient in the analysis where the Coglab Final Score was the dependent variable. It does seem that the learning potential measure in this study has shown somewhat superior predictive ability due to the fact that it has explained more variance in the most relevant criterion variables, however the Numeracy and Communication measures are certainly valid predictors in this context.

The Numeracy score explained variance in the analyses where the Coglab Analytical score, Coglab Pre-Test score, and Coglab Difference Score were the respective dependent variables. In the case of the Coglab Difference score, the relationship was negative, perhaps indicating that a higher-competency candidate, who has already mastered numeric skills, may stand less to gain from the intervention.

The Communications score explained variance in the analyses where the Coglab Conceptual score, Coglab Weekly Average, and the weekly bridging averages were the dependent variables. Interestingly, it seems that numerical ability and analytical thinking are related and likewise are communication abilities and conceptual ability. It is also interesting to note the Communications in turn score explained variance in the bridging programme performance. This may be due to the higher ability to deal with novel abstract information, which describes a large component of the bridging programme.

The multiple regression analyses do however show that a large amount of variance in the criterion is left unexplained by the current set of predictors. One is reminded of the limitations of the criterion measures used in this study, however it is not unreasonable to conclude that there may be room to improve prediction.

The results of the sub-group comparisons are also worthy to note. The 2016 cohort included in the sample did score significantly higher on the Coglab Analytical section than the subsequent 2017 group. This may also have contributed to the higher final score for this group. This may indicate some difference in Coglab facilitation between the groups. There are also some significant differences in Shadowmatch habits and attitudes between the year groups. In the absence of a plausible explanation for each of these differences, they may very well be ascribed to systematic differences that are inherent in the members of the groups. This may have been caused by some difference in selection or some extraneous variable.

The candidates also demonstrated differences by province. The Western Cape group had a statistically significant lower score on learning potential than the Gauteng group, that was equal in size (although not statistically significant) when compared to the two smaller groups. The Western Cape group also had a lower Numeracy score than the Gauteng group. Western Cape candidates also took much longer than the other provinces to complete the Shadowmatch battery and this is reflected as such in their lower Task Efficiency mean score. On Coglab, Gauteng had a much higher Analytical score than the other provinces where data was available, namely Durban and in the Western Cape; and the Durban group had a higher Conceptual score on Coglab than the other provinces where data was available, namely Gauteng and in the Western Cape. The Bloemfontein group had a much higher Coglab Final Score than the other three groups. It is unfortunate that the breakdown of their final score was not available, however, as the relative contributions of the Conceptual and Analytical elements would have been of interest, and certainly

influenced the aforementioned findings. The Bloemfontein group also had higher weekly average bridging scores. These results may indicate higher quality training in Bloemfontein, or perhaps more lenient scoring in the bridging programme, however the size of this group should be kept in mind and these results should be read with caution. One may be tempted to attribute these higher scores to the smaller class size, however the Durban group seems to not have benefitted disproportionately despite also being a small group. As for Shadowmatch, the Bloemfontein group showed a higher Self-Motivation score. One could be tempted to attribute their higher scores on the bridging programme and Coglab to a higher self-motivation inclination, however this should have been reflected in the correlation analyses. The Western Cape also had a higher score on the Discipline habit than did the Gauteng group. Again, these differences may simply be attributed to slight nuances in selection or some other random factor.

The findings from the empirical analyses allow an informed evaluation of the Harambee model, as these could be used to make judgements on the various elements of their approach. This evaluation is thus concluded in the following chapter.

CHAPTER 7

EVALUATION OF THE HARAMBEE MODEL, RESEARCH LIMITATIONS, CONCLUSIONS, AND RECOMMENDATIONS

The primary goal of this thesis is to evaluate the Harambee model based on the available theory and the results of the statistical analyses in order to draw inferences on the broader utility of their type of approach. The first element of the evaluation, namely that of the prediction model employed by Harambee, is the central aim of this thesis. This is followed by a qualitative theoretical assessment, based on the principals of programme evaluation.

7.1 Harambee Prediction Model Evaluation

The prediction model that Harambee uses is a key element of their programme that is evaluated by this study. The previous chapters have examined the outcomes of the statistical analyses based on the predictive validity of their assessment batteries. The assessment batteries used to select candidates for the Harambee bridging programme need to satisfy the following conditions:

- The assessment model should satisfy Harambee's own assessment goals.
- The prediction model must show predictive validity.
- The assessment model should select individuals with maximal chance of succeeding in the bridging programme.
- The assessment model should maximise the chances of success in the workplace and assist Harambee in producing results that are aligned with key success indicators.

Harambee uses the Shadowmatch system to match candidates to a client company, by comparing their critical profile on a set of habits, attitudes, and other metrics, to a benchmark profile created from successful incumbents in the client company. This is aimed at improving congruency between the behavioural preferences of the individual and the culture of the company, thereby increasing the likelihood of retention. No form of validation of this premise was possible in this study, and as such the data available were used to merely conduct explorative analyses. Although the lack of correlations between the Shadowmatch variables and the learning performance outcomes is somewhat surprising, this application of the data was outside of the regular intended use of it, as the Shadowmatch system uses it for matching of profiles and for individual correlates. As mentioned earlier, Harambee has conducted analyses on the utility of Shadowmatch, and as such, have included it as a critical part of their model. Client companies are also afforded the opportunity to interview candidates before offering them employment, further ensuring that there is person-organisation fit.

The most significant area of evaluation of the Harambee model, as far as this study is concerned, is the application of learning potential assessment. Results from the statistical analyses have shown that the learning potential measure employed by them has predictive utility and that it is a valid predictor of performance in both the Coglab and the Harambee bridging programme. As such, the inclusion and method of application of this measure in their assessment battery cannot be argued against. There are, however, some details to discuss in this regard. Firstly, one notes that Taylor (2013), as the creator of the TRAM-2 measurement, mentions that TRAM-2 is a measurement that should be administered in its entirety. Although the Concept Formation Test sub-scale (of TRAM-2), that Harambee uses as learning potential measure, is very similar to the equivalent sub-test in the ABIL-B battery (which one is allowed to administer modularly), this is worth pointing out as a consideration when evaluating Harambee's use of learning potential assessment. This can hardly be classified as a weakness though, especially in light of the results found, however this concession from Aprolab is a deviation from the originally prescribed application of the test. Secondly, although using the CFT measure, which is essentially a measure of *g* (fluid intelligence), as a direct measure of 'learning potential', is, as discussed, a normal and acceptable practice, the static nature of this assessment does render it outside of the realm of dynamic testing. As such, one must note that this test does not measure learning 'live' and does not conform to the traditional understanding of learning potential testing. Although there is no conclusive evidence to prove that this is a less effective indication of a person's future learning capabilities, logic does dictate that a dynamic measure, which operationalises and samples learning competencies, and measures the construct of learning potential in more detail, may very well provide a more accurate picture of true learning potential. One may lastly also consider that, in light of the now available research on the determinants of learning performance, referring specifically to non-cognitive variables, and the indication in the statistical analyses that there is a significant portion of variance in performance in the Harambee training left unexplained by current measurements, that Harambee's assessment battery, particularly the learning potential element, does leave some ground not covered.

Harambee's intention behind the use of the CFT test, however, is only to include potential candidates who would be left out if the screening was only based on language and numerical proficiency. Harambee simply aims to ensure that candidates have the minimum required cognitive capacity needed to succeed in the bridging training. Thus, considering the results found, and keeping in mind the need and the scope of use of this measure by Harambee, one may conclude that their current usage of the CFT learning potential measure is valid and proportionate to their assessment goals and needs. An interesting point noted during discussions with Harambee, is that they actually do not necessarily have the intention to find candidates who will score top marks in the bridging programme and they claim to have even found that moderate performers in the bridging programme tend to have better retention later. Finding candidates who

would do better in the bridging programme should, however, be advantageous, especially in terms of the cognitive training, as such, providing for a minimum entry level is essential. It could be argued that the Harambee model should actually make an attempt to find candidates who will demonstrate the key behaviours that they require and base the success of the candidate on the bridging programme. These are reliability and energy, curiosity, and a positive attitude. Employers seek these behaviours, and candidates displaying these will be more likely to be successful in the bridging programme and remain employed thereafter. Harambee does undertake great efforts to minimise the risks associated with accepting candidates into the costly bridging programmes, however, one must contend that their current prediction model is not measuring critical behaviours that are measured as success indicators of the programme, and highly sought-after by clients, from the onset. Arguably, the bridging programme itself will weed out candidates who are unable to display these characteristics, however, the cost of these drop-outs is high due to having gone through the whole range of assessments already and having already started the programme. The researcher is, however, unable to make suggestions for measurements or useable proxies that can be used to identify the potential for these behaviours upfront and that are already available in the Harambee prediction model. There may be some value in utilising indicators of crystallised ability for the purposes of prediction. It would certainly be interesting to, for example, evaluate the predictive ability of matric marks. Furthermore, the creation of a rounded competency profile, in terms of the 'ideal' bridging candidate, may be a relevant endeavour in this regard. This may however entail considering other modes of assessment.

It must be added though, that in terms of improving retention, Harambee has also identified and found a workable solution for the transport issues that represent a critical issue that tends to hamper retention of young work seekers.

7.2 Theoretical-conceptual Assessment of Harambee Youth Employment Accelerator

The Harambee programme has been discussed in great detail in a previous chapter. A significant intention behind the current research was to explore current practice in order to come to understand what a meaningful application of available theory might entail and to draw inferences and hypotheses that may provide insight on how the problems discussed may be addressed, especially when one considers the multi-stage selection process discussed earlier. As such, an attempt was made to evaluate the Harambee programme based on the available information. An in-depth programme evaluation, or deeper theoretical evaluation of the bridging programme and its underlying theory of change, would however have been beyond the scope of this thesis. Thus, as discussed, a qualitative assessment is undertaken, based on the principles of programme evaluation.

Due to the size, scope of operations, and obvious success of Harambee, finding an adequate approach to the evaluation was challenging. During the time that the researcher has been

following the activity of the company, they have grown tremendously in their size, outputs, social stature, and public profile. Harambee now boasts a number of prestigious awards and nominations in the field of social entrepreneurship and has a highly recognised brand (as discussed earlier). Even high-level South African politicians within or allied to the ruling party have lent praise to Harambee. This includes (now) President Cyril Ramaphosa, the (then) chair of the Human Resource Development Council and coordinator of an inter-ministerial committee on short-term job creation. During a visit to their premises, he hailed Harambee as a “jobs revolution” (SA News, 2014, p. 1), with the potential to be a model for overcoming unemployment in South Africa. He undertook to investigate ways in which the Harambee model could be replicated, or better supported. Former Higher Education Minister, Blade Nzimande, has also praised Harambee for contributing to youth employment and skills development (Goikos, 2016). In 2014, Yellowwoods, the Mapungubwe Institute for Strategic Reflections (MISTRA), and the National Planning Commission jointly convened a multi-stakeholder conference to align, mobilise, and accelerate efforts to drive inclusive youth employment in support of the implementation of the National Development Plan. The conference covered many aspects related to youth employment promotion, but also celebrated Harambee reaching 10 000 placements (MISTRA, 2014). All of the above points to the effectiveness and public acceptance of the approach followed by Harambee.

A key part of such an evaluation is adequately establishing goals and criteria for success, against which performance can be measured. Harambee’s original goal of improving sustainability in employment within their own group seems to have been almost dwarfed by the scope their operations have achieved since. Harambee set out with the goals of providing high-quality, motivated candidates, improved work performance, satisfactory retention, lowered HR spend, and the lowering of the risk of employing youth. Harambee aims to benefit society by reducing unemployment and aims to benefit candidates by providing them access to jobs. It seems thus that Harambee is successful in achieving their own goals. Their high reported retention rates and large client base testify to this. The large number of candidates placed means that Harambee is effectively providing employment to the extent that it makes a significant difference. Although not solving the plight of the millions of unemployed, they seem to be contributing more than other employment programmes, as discussed later. Harambee succeeds in fulfilling the needs of their clients, candidates, and South Africa as a whole, to the largest extent possible, within their frame of operations. Harambee also now affords their clients the opportunity to contribute to the broader societal goals, when these clients make use of their services. The indications are that Harambee has an effective and efficient process, which is managed efficiently, that leads to the achievement of their laudable goals.

The Harambee business model is designed around the needs of clients, candidates, and the broader South African context. It is clear that there exists a need for this programme, and that it

is created in a way that optimally addresses this need. Unmet needs have however been identified (in terms of addressing the South African socio-economic issues on a wider scale, discussed below), and there are certainly some questions that will plague any employment initiative, especially in South Africa. In terms of the effectiveness of affirmative development in instilling sought-after behaviours, attitudes, and skills, one may rightfully ask whether an intervention programme, that is only a couple of weeks long, will legitimately combat the damage caused by a lifetime of disadvantage. Professor Callie Theron noted at the Empowerment for Development conference in 2015, that psychological damage caused by disadvantage is not irreparable, however, the extent of the intervention actually required to remedy disadvantage may be cumbersomely large. Likewise, one may ask, what about the candidates who did not achieve an acceptable level of potential or score on a selection assessment used, or who were not fortunate enough to be afforded an actual work opportunity? One can never expect any one programme to solve the plight of all the disadvantaged and unemployed, however one may rightfully ask if these unsuccessful candidates are doomed to remain unemployed and trapped in poverty and/or state dependency. Harambee does provide assistance and guidance to those not placed, and it obviously cannot be expected that they should be able to place all hopefults. One may correctly note that there simply are not enough jobs available in South Africa to accommodate all the unemployed. Although Harambee obviously cannot be criticised for not being able to solve the entire unemployment problem, it may be noted that there will always remain an unmet need in this regard, and furthermore there is no model currently employed for engaging discouraged job seekers who have fallen out of the formal economy. Any remedy, utilised on organisational level, will typically be bound by the requirements of producing a strong return on investment in a specific context, however this does not negate the effects thereof and the broader application of these kinds of remedies will certainly result in a larger collective impact.

In terms of the evaluation of the efficiency of the Harambee programme, a cost-benefit analysis is highly relevant. Harambee admits that the cost of a bridging programme such as theirs, is rather high. As such, the model will always rely on social investors and has very little likelihood of ever running at a profit – although this was never the intention. The problem of unemployment is a structural and societal problem and remains in the hands of government to address. As such, private firms should not be forced to cover the costs of addressing this in its entirety. The Harambee programme will not benefit at all from being watered-down for the purposes of cost saving, and arguably, there is also seemingly little scope for significant cost-cutting in their entire business model. Harambee has identified the strategic imperative to become a complete labour market solution that reconciles the needs of the supply and demand side of the labour economy. Harambee seeks to better understand work-seeking behaviours and how best to support work-seekers. They are exploring ways of creating employment networks, growing a pool of employable candidates, facilitating access to employment opportunities and experiences, and assisting

hopefuls toward self-placement. They understand the need for recognising skills that will be relevant in the future and improving the work-readiness of candidates. On the demand side of the labour economy, they are interested in understanding the labour market and identifying current and future labour-absorptive jobs. Harambee seeks to unlock labour demand and form strategic partnerships to link demand to supply. It is relevant to note that Harambee has essentially been formed in answer to an inefficient labour market, and as such this is their primary goal at present, and going forward, rather than solving unemployment and poverty as a whole.

In order to make a thorough evaluation of the Harambee programme, comparison to similar models was considered. If there was an appropriate equivalent or competing employment programme that one could compare Harambee to, this may have shown areas of strength and weakness. There are however few projects or programmes that are known to the researcher that can compare to Harambee in theory, and none that can compare in scope or impact. A full comparative evaluation would also have exceeded the scope of this study and would not have contributed directly to the goals of the present research. The researcher did, however, make attempts to contact other employment programmes, however, and received only sparse replies. As such, some comparative examples are provided below, based mainly on publicly available information.

Harambee is one of the biggest programmes funded by the Jobs Fund. Many of the other programmes listed on the Jobs Fund's official website are in collaboration with government, based on enterprise development, or are based on an incubator model (aimed at placing candidates in a specific industry, project, or enterprise) (Jobs Fund, 2017). One example that bears some similarity to Harambee, is the programme by Guarantee Trust Corporate Support Services. Their work readiness programme prepares and places unemployed tertiary-level graduates and matriculants in permanent jobs in the banking and credit-risk fields. The programme selects candidates through a screening and interview process that tests numeracy, literacy, and communication ability. Shortlisted candidates are trained in soft- and technical skills, including courses in communication, professional conduct, and office orientation. The programme includes a virtual bank simulation to provide practical training. After the training, the programme matches and places candidates in jobs in the banking and credit fields.

Another model supported by the Jobs Fund, the Monyetla Work Readiness Programme, trains unemployed young people to prepare them for employment in the business process outsourcing (BPO) industry. The programme aims to train 18 000 youths and to place 70 percent of them in six-month employment contracts. The model works through partnerships, by placing learners with participating employers, who receive R20 000 per learner trained. These employers must commit to a minimum of 60 learners and must retain at least 70 percent of them (Pule, 2013).

None of these models can, however, be compared directly to Harambee on a conceptual level. Although all of these programmes certainly have individual merit and value in the broader South African context, it does appear that Harambee provides substantially more scalability in their model, and significantly larger gains in employment resulting from their programme, in comparison to these programmes. The Jobs Fund also lists amounts invested in respective programmes, as well as matched funding provided. In comparison to the apparent costs of some of these other programmes, a case for the cost-effectiveness and return on invest of the Harambee programme could certainly be argued, especially when considering sheer output.

The Youth Employment Accelerator (YEA) programme launched by the African Management Initiative (AMI), which operates in Kenya, is a model that is also quite similar to Harambee. The AMI is a social enterprise aimed at producing a scalable or rapidly expandable solution for modern skills development, by empowering African managers, entrepreneurs, and young professionals through a practical and affordable approach to learning. They are active throughout Africa and deliver courses through a web and mobile social learning platform and low cost in-person “Learning Lab” workshops (YEA, 2017, p.1). Like Harambee, the programme has been developed in response to large scale youth unemployment in Kenya, and the complaints from employers about the quality and preparedness of entry-level job applicants. According to the AMI, companies complain that these young employees lack meaningful work experience, an understanding of how business works, and the drive required to be successful in an entry-level job. The programme, funded by the Master Card Foundation, aims to place 300 jobseekers, to start with, mainly in sales and call-centre positions, with partner organisations in the business process outsourcing (BPO) sector. These employer organisations do not commit to hiring graduates upfront but will select from the pool of trained recruits. The material available on the programme does refer to “rigorous screening” (YEA, 2017, p. 1), however it is not clear how candidates are selected into the programme. The training itself is similar to Harambee’s bridging programme, in that it involves teamwork, peer coaching, and work socialisation. The training also relies on community involvement. The training lasts for six weeks. The five-day training week comprises one day of workshops, one day of online training in team format, one day for individual assignments, and two days for team-based community projects. The free training also requires a full commitment, and absence and late-coming result in dismissal. Candidates are, however, not given any compensation, but lunch is provided. The training covers finding a job (CV writing, application forms, and interview skills), mastering the job (guidance for the first day and week, and general work management skills), managing relationships (manager relations, relationships with colleagues, and conflict management), understanding business (understanding companies, sales, service, and the basics of the BPO and related industries), mastering sales, and mastering customer service. They also provide basic training for line-managers who must manage the new

recruits and provide post-placement coaching, training, and support. Detailed contracts are signed with recruits, specifying expectations, commitments, and penalties (YEA, 2017).

The researcher also made contact with another employment initiative that functions as both a jobs website and a recruitment agency that sources candidates from educational institutions, youth networks, social media, referrals, and other job sites. The jobs website is marketed among youth networks and educational institutions. Candidates register online and create their profiles. The agency will review and provide them with feedback and candidates will improve their profiles until the agency approves it. Candidates then apply online for the jobs listed and the agency then submits their profile to the recruiting entity. The section of the programme that operates as a recruitment agency operates mainly on the same principles as the jobs website, as above, however they also do the screening and shortlisting of the candidates for the client company, and may be involved with doing assessments, criminal checks, and qualification checks. In their selection process a candidate submits the answer to a case question as a voice recording, or a written paragraph. Screening is then based on these answers. The agency does brief reference checks on each applicant culminating in another shortlist for final selection interviews. The agency does no other assessments; however, they will administer them based on client demands. Corporate clients tend to use outsourced learning ability tests, and IT companies have their own coding tests which they have developed. According to the agency, few other companies require assessments to be conducted.

There are thus different models that can make an impact on youth employment. In June 2017, The Global Centre for Youth Employment (GCYE) hosted an idea generation session in Brooklyn, New York, to co-design and invest in innovative collective impact solutions to the global youth employment conundrum. From an open competition that drew 200 on-line submissions, from 25 countries, 16 ideas were selected by a panel of GCYE members for discussion at the event. After a round of voting, five ideas were selected to receive seed funding and to work in partnership with the centre. Harambee was among those five models selected, including a project comprising a digital platform aimed at promoting job security, fair wages, safe work, and career growth in Kenya's informal economy; an online tool that aims to accelerate the adoption of high-impact mentoring in all youth training to employment programmes; a mobile gaming platform that educates and empowers youth to hunt for jobs; and an approach to creating blockchain backed digital economic identities for young Syrian refugees and other displaced peoples (GCYE, 2017). Harambee's inclusion in this 'top five', so to speak, does, to some extent, indicate its superiority to other existing approaches to providing youth employment.

The existence of similar models to Harambee is encouraging and it does seem that the fundamental logic underlying their approach is generally accepted. Although there may be some learnings for Harambee to take from these other programmes, for example the provision of

contracts, and the use of mobile job search applications, their future strategic objectives and entrepreneurial model do already take many of these possibilities into account.

This study may also have benefitted from the inclusion of a broad qualitative evaluation on Harambee, including formal interviews and observations of candidates in the bridging programme and then later in employment. Employers could also have been interviewed. Candidates who only passed through assessment and were not placed would also be able to provide interesting insights. This additional evaluation would however have increased the scope of this study to a cumbersome extent and increased the complexities around legal and ethical concerns. There are certainly many examples of companies openly endorsing Harambee, and successful candidates who share inspirational testimonies of transformation through the programme (for example as mentioned by SA News, 2014). The researcher did experience, during the time spent in the Harambee offices, a positive organisational climate, an intention to foster positive change on the part of the competent and committed Harambee employees, and the impactful nature of the programme content. Candidates seemed engaged and hopeful, though very much desperate for employment opportunities.

In terms of the content of their training and development programme, Harambee seems to be focussing on the right areas in their approach, based on relevant performance indicators and the improvement thereof. As stated in a previous chapter, learnership dropout rates seem to be fuelled by poor attitudes and unrealistic expectations. Harambee manages this from the start of their programme. From the mean scores on the Coglab and bridging programme, one can see that candidates do seem to be able to show the required performance after the training. Although no empirical evaluation of the effectiveness of the training is possible, the use of groupwork, competition, motivational elements, variation, continuous feedback, and self-reflection, is appropriate within the understood theory of training effectiveness and adult learning. It would be interesting to determine the relative contribution of the Coglab programme to workplace effectiveness over-and-above the existing bridging approach. Harambee has mentioned that Coglab, which was not included in the programme for the first couple of years, has become a central part of their programme and seems to work effectively.

7.3 Future- and Improvement-oriented Suggestions

An important element of evaluation research is providing guidance for improvement, and this element is often, as discussed, defined as the primary goal of the programme evaluation endeavour. Although the researcher does not operate in the Harambee environment, and as such will be unfamiliar with all of their challenges faced and innovations already tested, there are some suggestions that may be of value and relevant in terms of the principles of programme evaluation applied.

A logical and reasonable first suggestion in terms of improving the Harambee prediction model would be to expand into the use of the full TRAM-2 test battery. Logic dictates that this would provide a more accurate picture of learning potential, as discussed. This suggestion however immediately brings about the severe disadvantages of almost quadrupling testing time, and significantly increasing workload and staffing costs. This expected increase in utility, which would still have to be empirically quantified (at significant cost in time and resources), may likely still not significantly improve Harambee's predictive ability, and even if so, may not be justified due to the increased costs and complications. There is also the possibility of periodic experimentation with regard to the addition of other variables to their assessment model. A measure that predicts performance on the critical behaviours Harambee values and primarily bases bridging success on may be of great benefit to Harambee. Such indicators should also improve the likelihood of choosing candidates who are more likely to meet Harambee's retention targets and satisfy the needs of clients. As mentioned earlier, this is not a simple suggestion. There are not many known cost-effective measures of such qualities or behaviours. Under regular circumstances, employers turn to competency-based interviewing and reference checks. These methods provide very limited applicability in an environment where the candidates do not have many relevant previous experiences to draw on, or past employment records to check. A suggestion in this regard that would have to be painstakingly developed, would be to devise a method for building a credit-score-type profile of a candidate from available proxies. Harambee's clients may also assist in identifying general competencies or competency potential variables that may improve chances of success, especially if an empirical feedback system is employed to monitor candidates who have been placed.

The researcher envisions that mobile applications will be a major part of the Harambee model in the future. Smartphones are becoming more readily available, even in poorer communities, however simpler mobile applications are widely used across Africa for various purposes, especially in banking. Harambee could provide mobile learning content, job matching, and placement services, especially if the cost of mobile data airtime for the end user could be covered or subsidised somehow. Their approach could perhaps be enriched by feedback per smart phone prompts about the in-work-experiences in terms candidates experience of mastery of the job, or similarly, feedback from employers about the alumni on whether they display the desired characteristics.

Dr Terry Taylor has indicated interest in the validation of the Coglab programme as far as its contributions to cognitive advances, attitudinal change, and improved learning and work performance goes (personal communication, April 18, 2013). Harambee could play a major role in cognitive training and would benefit from tracking the data related to Coglab more formally.

7.4 Implications for the Multi-stage Selection Model

The current research was initiated by an interest in the possible application of the multi-stage selection model discussed earlier. As such, it is very important to understand what knowledge can be drawn from the evaluation of the Harambee model to be applied to the multi-stage selection model. It is firstly, however, important to delineate the direct similarities and differences between these two models.

The multi-stage selection model is ideally suited for individual organisations, in a for-profit environment, with large quantities of candidates screened through a psychometric approach for similar positions. The affirmative development component is intended to focus on specific technical competencies and competency potential variables, such as cognitive skills, decision-making, critical thinking, and numerical and language proficiency. Candidates who score highly on learning potential are allowed to participate in this development, and the assessment of learning success forms part of the assessment that is used to predict future job performance, along with other methods of assessment then applied. The intention of this approach seems to be to afford previously disadvantaged individuals the opportunity to compete better with the non-designated group on standard assessment instruments.

The Harambee model is not seen as a competing model in this regard, it is only for purposes of learning by comparison that differences and similarities are discussed. The Harambee model is demand driven and selects and develops a group of individuals who will be interviewed for established positions, rather than entered into a regular selection procedure. The Harambee bridging programme focus on preparing candidates for the role awaiting them, and fosters critical behaviours that employers require, where the original intention of the multi-stage selection model seems to be to improve competencies and competency potential variables that would improve performance on selection instruments and eventually in the job. This difference in approach to training reflects what is required in practice. The application of effective affirmative development in future should cover all of these elements.

Harambee's use of learning potential testing is to ensure that candidates have sufficient cognitive resources to benefit from the programme, whereas the multi-stage selection model implies selecting only those who are destined to benefit the most from the development opportunity. The evaluation of the Harambee model does highlight the pragmatic factors around selecting individuals for development that are key to their success, namely their ability to travel to the training and the workplace, and their fit with the organisational environment. These become very important when managing a large throughput of candidates, whereas the application of such a model in an individual organisation would be able to address these factors later in the programme. Applying the multi-stage model as originally intended would also result in candidates trained and

not placed. Although this is rather costly, it would have a significant benefit for the unplaced candidates (despite not having gained employment).

Harambee's use of learning potential testing shows that even a basic measure of cognitive ability can result in an advantage to the affirmative development programme. The effectiveness of the training, as is evident by the support of large corporates and Harambee's reported retention rates, together with the indications that learning potential testing is effective in selecting individuals for development, does indicate that the premise of the multi-stage selection model is valid. Perfecting this model into an affordable and scalable solution is, however, required for the purposes of application and replication, and the steps of testing for learning potential, and the administering of affirmative development should be clarified, if this model is to be applied as originally intended.

7.5 Limitations of the Current Research

Although the current study managed to execute a workable evaluation of the Harambee model and derive learnings from it for the multi-stage selection model, there are some limitations to the research that should be noted.

Regarding the sample used, the analyses of the sub-groups did reveal some issues around the homogeneity of the final sample group. The most concerning issues in this regard were the differences between the year-groups. Admittedly, combining two groups who have done the same programme a year apart does increase the risk of variance in terms of changes in approach from year to year, though the researcher was assured that the programme essentially stayed the same. Despite the differences observed in the sub-groups in the sample, it can be argued that covering different regions and groups makes the sample more representative of the whole Harambee operation.

There have been various limitations mentioned regarding the data itself. Very little data were available for Coglab variables and the pre-test score seemed to be from a simple and informal written test. Some candidates subsequently displayed negative gain scores. The weekly scores on the bridging programme are not entirely appropriate measures of training success, as they involve a large subjective element and are deliberately manipulated as a tool to foster positive behaviour-change according to individual differences.

The Shadowmatch data were used in this study by taking the individual habits as whole psychological constructs and analysing their correlations with criterion variables. These scores are, however, intended for use in profile matching as per the Shadowmatch algorithms. Although one could expect that these data may be used in this way, especially considering that they are defined as largely separate bundles of behaviour in terms that are generally well understood in the context of psychological assessment, this experimental attempt at finding correlates was ambitious at best and could be seen as distracting from the main aims of this study. The lack of

correlations may also possibly be attributed to the fact that the Harambee bridging programme and the Coglab element thereof do not constitute ‘work environments’ – which is what Shadowmatch is primarily designed to match by. One may further conclude that measuring habits may not be appropriate for predicting performance in a development programme but may be appropriate for work contexts.

The conversion of the predictors (CFT, Numeracy, and Literacy), by Harambee, into scores out of ten may also have caused a loss of variance.

This study only focused on a sample of candidates who completed the programme successfully. The 2016 group also had near perfect retention. The study thus excluded those who were not successful in the programme and who scored below the cut-off points on the selection instruments and could furthermore not report any findings on candidates who would somehow have been unsuccessful in the bridging or job. This range restriction certainly influenced the results of the analyses. The study would have benefitted greatly from having a broader range of data available, for example, biographical information, school marks, or any objective measure of work performance after placement would have greatly increased the significance of the findings. Having added measures of cognitive and non-cognitive determinants of learning performance to the assessment phase could also have allowed richer findings on the nature and operation of the learning performance construct.

7.6 Impetus and Contribution to Current and Future Research

In an earlier chapter, various opportunities and remedies that can be considered in the national interest were discussed. These provide research impetus to the social sciences, business, and economic sciences. Some areas that could yield contributing research results are:

- Improving early childhood development, and primary and secondary schooling in South Africa.
- Poverty alleviation through development, education, and employment/income generation for the large group of disadvantaged adult (Black) individuals currently outside of the economy.
- Workable economic, governance, and service delivery solutions, specifically around large scale employment models and labour laws.
- Effective and inclusive rural social and economic development models.
- A cultural (effectively anthropological), study of the dynamics and interplay of different cultural values prevalent in the South African organisational environment with the aim of deriving an inclusive mutual set of values that can increase harmony and understanding.
- Supporting and developing subsistence entrepreneurs and identifying and assisting radical entrepreneurs.

- Innovative models for delivering development and upliftment to disadvantaged individuals.

Based on the insights gathered from the discussion at the 2015 Empowerment for Development conference, future research in industrial psychology has the responsibility of providing industry with workable and well-packaged solutions, and industry has the responsibility to implement these (Van der Westhuizen, 2015). It is important to take the correct approach in making these solutions commercially viable and communicating the business case thereof in an effective manner. The existing knowledge around learning potential testing and affirmative development needs to be used to create viable measuring instruments and models for affirmative development training. This means that current basic collaborative and cumulative research into learning performance, affirmative development training, and the creation of an enabling organisational environment for the growth and success of affirmative candidates, must continue. The cognitive element of learning should not be neglected, and the improvement of cognitive skills should be investigated. Future possibilities for research in industrial psychology should thus include:

- Basic research into the person- and situation-centred constructs affecting learning performance, and their relation to job performance.
- Testing for learning potential with a combined battery of tests.
- Improving cognitive structures and enhancing learning potential.
- The accelerated affirmative development intervention – trainer's requirements, programme contents, and environmental enablers.
- The reasons for engagement (and/or disengagement) of affirmative candidates with development or improvement initiatives.
- The variables that influence the productivity of the lower level worker in South Africa, for example, core self-evaluation.
- Creating a facilitative environment for affirmative development in an organisation
- Cost effective affirmative development programmes for industry, including small and medium enterprises.
- Investigating the benefits of training in goal-orientation.

7.7 Conclusions

This thesis set out with the aim of evaluating the use of the multi-stage selection model in remedying unemployment, poverty, and inequality in South Africa and what needs to be done to bring this approach to fruition. The evaluation of the Harambee model has shown that there is viability in this approach, and examination of this example and available research has found that practically applicable solutions need to be found to the cognitive and non-cognitive assessment of learning potential, the development of content of affirmative and cognitive development

programmes, the management and delivering of affirmative development training, and the creation of an enabling organisational environment for affirmative development candidates.

The thesis includes an extensive discussion of the socio-economic context and legal and political environment in South Africa. The reason for the inclusion of this detailed discussion is that the researcher believes that open and honest discussion of these topics is needed, and that the development context of South Africa should be understood as a whole. Likewise, the comprehensive understanding of the origins and available approaches regarding learning potential testing had to be discussed in its entirety, as the basic underlying theory of the field need to be understood by researchers going forward.

A key for future development is the synthesising and integration of available theory into workable practical solutions. The current situation in South Africa does require an urgent commitment to social change in every field, and every individual has a role to play in determining a peaceful shared future in the country. The aim of this thesis, which was to guide the research in industrial psychology towards this, seems to have been achieved.

REFERENCES

- Abdulla, Z. (2014, October 30). On my mind: No easy money around. *Financial Mail*. Retrieved November 12, 2014 from <http://www.financialmail.co.za>
- Adcorp. (n.d.). *Adcorp's Employment Index*. Retrieved June 10, 2016 from <http://www.adcorp.co.za/Pages/Industry/AdcorpsEmploymentIndex.aspx>
- Amod, Z., & Seabi, J. (2013). Dynamic assessment in South Africa. In S. Laher & K Cockcroft (Eds.), *Psychological assessment in South Africa: Research and Applications*. (pp. 120-136). Johannesburg, RSA: Wits University Press.
- Aprolab. (2007). *TRAM 1; TRAM 2; History*. Retrieved from <http://www.aprolab.co.za>
- ASL. (2013). *Employment Equity*. Retrieved from <http://aslblog.asl.co.za/?m=201311>
- Babbie, E. & Mouton, J. (2001). *The practice of social research*. Cape Town, RSA: Oxford University Press.
- Barron, C. (2012, 9 December). BEE killed self-reliance, says Richard Maponya. *Business Live*. Retrieved from <http://www.bdlive.co.za/business>
- B-BBEE (2013). *Unpublished course notes*. SEESA Training Academy, Cape Town.
- Benjamin, C. (2013, 15 March). BEE needs bite, but will it get teeth. *Mail & Guardian*. Retrieved from <http://mg.co.za>
- Bhorat, H., Leibbrandt, M., Maziya, M., Van Der Berg, S. Woolard, I. (2001). *Fighting Poverty: Labour Markets and inequality in South Africa*. Cape Town, RSA: UCT Press.
- Burger, R. (2012). *Elaboration and empirical evaluation of the De Goede learning potential structural model*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- BusinessTech (2015, 14 May). South Africa's education system vs the world. Retrieved from <http://businesstech.co.za/news>
- CIA. (2014). *World Factbook*. Retrieved from <https://www.cia.gov/library>
- Coetzee, J.A. (2013). *A methodology to categorise candidate helicopter pilots: A flight safety approach*. Unpublished Doctoral Thesis. The Da Vinci Institute for Technology Management, Johannesburg.
- Coetzee, M. (2005). *The fairness of affirmative action: An organisational justice perspective*. Unpublished Master's thesis, University of Pretoria, Pretoria.
- Commission for Employment Equity (2016). *Commission for employment equity annual report 2015-2016*. Pretoria: Department of labour, Chief Directorate of Communication.
- Conway-Smith, E. (2014, 27 April). 20 years since apartheid: What's changed in South Africa, and what hasn't. *Global Post*. Retrieved from <http://www.globalpost.com>
- Davie, E. (2016, 23 March). Slash unemployment with Job Seekers Exemption Certificates. *Free Market Foundation*. Retrieved from <http://www.freemarketfoundation.com>
- De Beer, M. (2005). Development of the learning potential computerised adaptive test (LPCAT). *South African Journal of Psychology*, 35(4), 717-747. Retrieved from EBSCOHost database.

- De Beer, M. (2006). Dynamic testing: Practical solutions to some concerns. *SA Journal of Industrial Psychology*, 32(4), 1-7. Retrieved from <http://www.sajip.co.za>
- De Beer, M. (2010a). Longitudinal Predictive Validity of a Learning Potential Test. *Journal of Psychology in Africa*, 20(2), 225-231. Retrieved from EBSCOHost database.
- De Beer, M. (2010b). A Modern Assessment Psychometric Approach to Dynamic Assessment. *Journal of Psychology in Africa*. 20(2), 241-246. Retrieved from EBSCOHost database.
- De Beer, M. (2011). The role of the Learning Potential Computerised Adaptive Test (LPCAT) in the vocational guidance assessment of adolescents. *Educational & Child Psychology*, 28(2), 114-129. Retrieved from EBSCOHost database.
- De Beer, M. (2013). The learning potential computerised adaptive test in South Africa. In S. Laher & K Cockcroft (Eds.), *Psychological assessment in South Africa: Research and Applications* (pp. 137-157). Johannesburg, RSA: Wits University Press.
- De Goede, J. (2007). *An investigation into the internal structure of the learning potential construct as measured by the APIL test battery*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- De Goede, J., & Theron, C. C. (2010). An investigation into the internal structure of the learning potential construct as measured by the APIL-B test battery. *Management Dynamics*, 19(4), 30-55.
- De Lange, J. (2015, 8 March). Eskom must shed 1 081 white engineers. Retrieved from <http://www.news24.com>
- De Villiers, P., & Converse, P. (2014). *Shadowmatch Research & Validation Manual: An Overview of the Shadowmatch Behavioral Benchmarking System and Associated Research*. Johannesburg, RSA, Shadowmatch South Africa.
- Department of Higher Education and Training (DHET). (2014a). *Call for comments on the national scarce skills list: Top 100 occupations in demand. Notice 380 of 2014*. Retrieved from <http://www.inseta.org.za/downloads/>
- Department of Higher Education and Training (DHET). (2014b). *Human Resource Development Strategy*. Retrieved from <http://www.hrdcsa.org.za>
- Dlamini, M. N. (2014, 27 October). Youth unemployment is a threat to SA's democracy. *News 24*. Retrieved November from <http://www.news24.com>
- Du Preez, M. (2015, 16 September). A perfect storm is brewing in SA. *Moneyweb Today*. Retrieved from <http://today.moneyweb.co.za>
- Du Toit, B. (2014). *The modification, elaboration, and empirical evaluation of the De Goede learning potential structural model through the incorporation of non-cognitive learning competency potential latent variables*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- Dürr, B. (2013). A toast to South Africa's Black middle class. Retrieved November 10, 2016 from <http://www.un.org/africarenewal/magazine/december-2013>
- Dynamic assessments. (2014). CAP FAQs. Retrieved October from <http://www.dynamicassessment.co.uk>

- EFF. (2016). *About Us*. Retrieved August 24, 2016 from <http://effighters.org.za/about-us/>
- Elliott, J. (2003). Dynamic Assessment in Educational Settings: Realising potential. *Educational Review*. 55(1), 15-32. Retrieved November 10, 2013, from Academic Search Premier.
- Elliott, J.G. (2000). Dynamic assessment in educational contexts: Purpose and promise. In C.S. Lids & J.G. Elliott (Eds.), *Dynamic Assessment: Prevailing Models and Applications, Volume 6 (Advances in Cognition & Educational Practice)* (pp. 713-740). Bingley, UK: Emerald.
- Fernandez-Ballesteros, R., & Calero, M.D. (2000). The assessment of learning potential: The EPA instrument. In C.S. Lids & J.G. Elliott (Eds.), *Dynamic Assessment: Prevailing Models and Applications, Volume 6 (Advances in Cognition & Educational Practice)* (pp. 293-323). Bingley, UK: Emerald.
- Ferreira, L. (2016). *Factsheet: Social grants in South Africa – separating myth from reality*. Retrieved from <https://africacheck.org/factsheets>
- Feuerstein Institute. (2014). *The Feuerstein Institute*. Retrieved from <http://www.icelp.info/>
- Fin24. (2016, 22 June). More South Africans taking home over R100k. *Fin24*. Retrieved from <http://m.fin24.com/fin24/Economy>
- Forslund, D. (2016, 18 March). World Bank finds itself in a Gini fix. *Mail & Guardian*. Retrieved from <http://mg.co.za>
- Friedman, S. (2015, 20 January). Is South Africa sitting on a racial time bomb? 702. Retrieved from <http://www.702.co.za/articles>
- Garcia, M., Fares, J. (Eds.) (2008). *Youth in Africa's Labor Market*. Washington, D.C., USA: The World Bank.
- Gernetzky, K. (2015). *Data reveal SA's ticking joblessness time bomb*. Retrieved September 29, 2015 from <http://www.bdlive.co.za>
- Gilmore, N. (2008). *The relationship between learning potential and job performance*. Unpublished master's thesis, University of South Africa, Pretoria.
- Global Centre for Youth Employment (GCYE). (2017). *Generating, testing, and scaling innovative solutions to global youth unemployment*. Retrieved from <http://gcyerti.com>
- Globes. (2008, 3 June). Feuerstein Institute in South Africa employment project. *Globes Publisher Itonut*. Retrieved from www.globes.co.il
- Goikos, H. (2016, 10 June). Youth centre a valuable tool. *IOL* Retrieved from <http://www.iol.co.za/business/news>
- Harambee. (n.d.). *Harambee*. Retrieved September 10, 2014 from <http://harambee.co.za/harambee/>
- Haywood, H.C., & Lidz, C.S. (2006). Dynamic assessment in practice: clinical and educational applications [excerpt]. United Kingdom: Cambridge University Press. Retrieved 2014 from <http://assets.cambridge.org>
- Hermann, D. (2007). *Die keiser is kaal: Waarom regstellende aksie misluk het*. Pretoria, RSA: Protea Boekhuis.

- Hermann, D. (2013). *Affirmative tears*. Pretoria, RSA: Kraal Uitgewers.
- Hobbs, N. (1980). Feuerstein's Instrumental Enrichment; Teaching Intelligence to Adolescents. *Educational Leadership*, 37(7), 566-568. Retrieved from EBSCOHost database.
- Holmes, T. (2014, 11 April). The 'hidden' billions of SA's elite executives. *Mail & Guardian*. Retrieved from <http://mg.co.za>
- Ikaneng, T. (2016). *R10 bln to be pumped into small business sector*. Retrieved from <http://www.sabc.co.za/news>
- Industrial Psychology Department Stellenbosch University. (n.d.). Departmental research niche area: Empowering Development. Retrieved November 22, 2014 from http://academic.sun.ac.za/industrial_psychology/2005/index_a.htm
- Jacobs, G. (2016, 6 January). SA has a "dumbed down" education system, here are 10 ways to fix it. *The South African* Retrieved from <http://www.thesouthafrican.com>
- Jobs fund. (2017). *The jobs fund, national treasury*. Retrieved from <http://www.jobsfund.org.za/>
- Jones, G. (2014, 23 October). Inequality: Is tax the right tool?. *Financial Mail*. Retrieved from <http://www.financialmail.co.za/features>
- Kahn academy. (2015). *About*. Retrieved from <https://www.khanacademy.org/>
- Kahn, T. (2013, 28 February). Social grants increase but "no substitute for jobs". *Business Day live*. Retrieved from <http://www.bdlive.co.za/national>
- Kozulin, A., & Presseisen, B. (1995). Mediated learning experience and psychological tools: Vygotsky's and Feuerstein's perspectives in a study of student learning. *Educational Psychologist*, 30(2), 67-75. Retrieved from EBSCOHost database.
- Legatum Institute, (2015). The Legatum Prosperity Index. Retrieved from <https://www.prosperity.com>
- Le Roux, K. (2014, 20 October). South Africa's two richest people have wealth equal to the poorest 26.5-million. *702*. Retrieved from <http://702.co.za/articles>
- Lidz, C.s., & Elliott, J.G. (2000). Introduction. In C.S. Lids & J.G. Elliott. (Eds.), *Dynamic Assessment: Prevailing Models and Applications, Volume 6 (Advances in Cognition and Educational Practice) (Advances in Cognition & Educational Practice)* (pp. 3-13). United Kingdom: Emerald.
- Lincoln, A. (2011, 6 October). The 39 most unequal countries in the world. *Business Insider*. Retrieved from <http://www.businessinsider.com>
- Macozoma, S. (2007). Black economic empowerment: De-racialising the economy. In X. Mangeu, G. Marcus, K Shubane & A Hadland (Eds.), *Visions of Black Economic Empowerment*. (pp. 176 - 179). Pretoria, RSA: Jacana Media.
- Maimane, M. (2015, 16 March). An open opportunity society: It starts with education. Retrieved March 17, 2015 from <http://www.dailymaverick.co.za>
- Mahembe, B. (2013). *The development and empirical evaluation of an extended learning potential structural model*. Unpublished doctoral thesis, University of Stellenbosch, Cape Town.

- Malala, J. (2014, 21 October). The big read: Inequality will devour us. *Times Live*. Retrieved from <http://www.timeslive.co.za>
- Marus, L. (2014, 6 February). How has the BBBEE Amendment Act changed the BEE codes. *HR Pulse*. Retrieved from <http://www.hrpulse.co.za>
- Masote, M. (2014, 19 October). 71% of SA wealth in hands of richest 10%. *City Press*. Retrieved from <http://m.news24.com/fin24>
- Mbeki, M. (2011, 12 February). South Africa: Only a matter of time before the bomb explodes. *Leader*. Retrieved from <http://www.leader.co.za>
- McLeod, M. (2014). *Lev Vygotsky*. Retrieved from <http://www.simplypsychology.org/vygotsky.html>
- Miadza, T. (2012, 10 October). BEE, an economic controversy. *Afropolitan*. Retrieved from <http://www.afropolitan.co.za/articles>
- Mistra. (2014) *Accelerating inclusive youth employment in support of the NDP: Conference concept note*. Retrieved from <http://www.mistra.org.za/events/documents>
- Mlambo, S., & Mngoma, N. (2015, 6 January). Shock at matric drop. *IOL*. Retrieved from <http://mobi.iol.co.za>
- Murphy, R., & Maree, D. F. (2006). A review of South African research in the field of dynamic assessment. *South African Journal of Psychology*, 36(1), 168-191. Retrieved from EBSCOHost database.
- MyBroadBand. (2016a, 6 January). Here's how much you will earn with only a Matric certificate. *MyBroadBand*. Retrieved from <http://mybroadband.co.za/news>
- MyBroadBand. (2016b, 10 January). New schooling system planned for South Africa: report. *MyBroadBand*. Retrieved from <http://mybroadband.co.za/news>
- Ndzamela, P. (2014, 7 August). Tito Mboweni and empowerment: Rude awakening. *Financial Mail*. Retrieved from <http://www.financialmail.co.za>
- Nelson, S. (2017, 16 January). What Oxfam won't tell you about capitalism and poverty. *The Spectator*. Retrieved from <https://blogs.spectator.co.uk/2017/01/oxfam-wont-tell-capitalism-poverty/>
- Nhlabathi, H. (2013). *Training youths for jobs*. Retrieved from <https://www.sowetanlive.co.za/news>
- Nolutshungu, T. A. (2011). *Jobs jobs jobs*. Johannesburg, RSA: Free Market Foundation.
- Oxfam. (2014a). *Even it up*. Retrieved from <http://www.oxfamamerica.org/static/media/files/even-it-up-inequality-oxfam.pdf>
- Oxfam. (2014b). *Working for the few*. Retrieved from <http://www.oxfam.org/sites/www.oxfam.org/files/bp-working-for-few-political-capture-economic-inequality-200114-summ-en.pdf>
- Oxfam. (2016). *South Africa*. Retrieved August 3, 2016 from <https://www.oxfam.org/en/countries/south-africa>

- Paton, C. (2014, 4 April). Stats SA reports big drop in grinding poverty. *Business Day Live*. Retrieved from <http://www.bdlive.co.za>
- Paton, C. (2015, 26 August). Study on how to lift workers out of poverty. *Business Day Live*. Retrieved from <http://www.bdlive.co.za>
- Pretorius, D. (2014). *Modification, elaboration and empirical evaluation of the De Goede learning potential structural model: rising above adversity*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- Pelser, M., Bergh, Z.C., Visser, D. (2005). The concurrent validity of learning potential and psychomotor ability measures for the selection of haul truck operators in an open-pit mine. *SA Journal of Industrial Psychology*, 31(2), 58-70. Retrieved from EBSCOHost database.
- Pike, R. Sharp, L. Black, T. (2010). *The New Divide: Will high wages and a lack of leadership create an unemployed majority*. Johannesburg, RSA: Terra Nova.
- Prinsloo, J. (2013). *Modification, elaboration and empirical evaluation of the Burger learning potential structural model*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- Prinsloo, M. (n.d.). *Assessment of learning potential*. Retrieved November 12, 2014 from <http://wehcs.com/A%20-%20Assessment%20of%20Learning.pdf>
- Prinsloo, M., Barrett, P. (n.d.). *Cognition: Theory, measurement, implications*. Retrieved November 12, 2014 from <http://integralleadershipreview.com/9270-cognition-theory-measurement-implications/>
- Pule, A. (2013). *Monyetla opens doors of opportunity for unemployed youth*. Retrieved from <https://www.vukuzenzele.gov.za>
- Quandl. (2014). *South Africa - Data from Quandl*. Retrieved from <http://www.quandl.com/demography/gini-index-by-country>
- Raven, J. (2000). The Raven's progressive matrices: Change and stability over culture and time. *Cognitive Psychology*, 41(1), 1-48. Retrieved from <http://eyeonsociety.co.uk/resources/RPMChangeAndStability.pdf>
- Republic of South Africa. (1998). *Employment equity act*. Government Gazette, No. 19370, 19 October 1998.
- Republic of South Africa. (2014). *Employment equity act 1998, as amended*. Government Gazette, No. 37873, 1 August 2014.
- Roets, E. (2015, 5 March). Seven ways in which our government abuses black people. *Mail & Guardian*. Retrieved from <http://mg.co.za>
- Rusznayak, L. (2014, 7 May). South African education still fails many 20 years after apartheid. *The Conversation*. Retrieved from <http://theconversation.com>
- Ryan, C. (2015, 19 August). White expat South Africans returning home in record numbers. *Moneyweb*. Retrieved from <https://www.moneyweb.co.za>
- SAPA (2014, 5 June). Youth unemployment soars: Stats SA. *SABC News*. Retrieved from <http://www.sabc.co.za/news>

- SARS. (2014). *Employment tax incentive (ETI)*. Retrieved from <http://www.sars.gov.za/TaxTypes/PAYE/Pages/Employment-Tax-Incentive.aspx>
- Schoeman, A., De Beer, M., & Visser, D. (2008). The relationship between learning potential, English language proficiency and work-related training test results. *South African Journal of Labour Relations*. 32(1), 47-62. Retrieved from <http://uir.unisa.ac.za>
- SEESA. (2013). *Employment equity*. Unpublished course notes, SEESA Training Academy, Cape Town.
- Shayer, M., & Beasley, F. (1987). Does Instrumental Enrichment Work?. *British Educational Research Journal*, 13(2), 101-119. Retrieved from EBSCOHost database.
- South African History Online. (2016). *South Africa's Key economic policies changes since 1994-2013*. Retrieved from <http://www.sahistory.org.za>
- Sowell, T. (2004). *Affirmative action around the world: An empirical study*. London, UK: Yale University Press.
- Sparks, A. (2014, 19 November). SA is in crisis right now. *IOL News*. Retrieved from <http://www.iol.co.za/news>
- Stack Exchange. (2014). *Rules of thumb for minimum sample size for multiple regression*. Retrieved from <https://stats.stackexchange.com/questions>
- Statistics South Africa. (2014). *Poverty trends in South Africa*. Retrieved from <http://beta2.statssa.gov.za/publications/Report-03-10-06/Report-03-10-06March2014.pdf>
- Statistics South Africa. (2016). *Quarterly Labour Force Survey, Quarter 1, 2016*. Retrieved from <http://www.statssa.gov.za/publications/P0211/P02111stQuarter2016.pdf>
- Taylor, T. (1994). A Review of Three Approaches to Cognitive Assessment, and a Proposed Integrated Approach Based on a Unifying Theoretical Framework. *SA Journal of Psychology*. 24(4), 184-193. Retrieved from <http://sap.sagepub.com/content/24/4/184.short#cited-by>
- Taylor, T. (2013). APIL and TRAM learning potential assessment instruments. In S. Laher & K Cockroft (Eds.), *Psychological assessment in South Africa: Research and Applications* (pp. 137-157). Johannesburg, RSA,: Wits University Press.
- Taylor, T. (n.d.) *APIL and TRAM Learning Potential Assessment Instruments*. Unpublished manuscript, Aprolab, Johannesburg.
- The World Economic Forum (WEF). (2014a). *Outlook on the global agenda*. Retrieved from http://www3.weforum.org/docs/WEF_GAC_GlobalAgendaOutlook_2014.pdf
- The World Economic Forum (WEF). (2014b). *Global competitive index 2013-2014*. Retrieved from <http://www.weforum.org/reports/global-competitiveness-report-2013-2014>
- The World Economic Forum (WEF). (2015a). *Outlook on the global agenda*. Retrieved from http://www3.weforum.org/docs/WEF_GAC_GlobalAgendaOutlook_2014.pdf
- The World Economic Forum (WEF). (2015b). *Global competitive index 2014-2015*. Retrieved from <http://www.weforum.org/reports/global-competitiveness-report-2014-2015>
- Theron, C.C. (2007). Confessions, scapegoats and flying pigs: Psychometric testing and the law. *South African Journal of Industrial Psychology*, 33(1), 102-117.

- Theron, C.C. (2010a). *Learning Potential: Conceptualization and measurement*. Unpublished class notes (Psychometrics, measurement theory, test construction and decision-making 743), University of Stellenbosch, Cape Town.
- Theron, C.C. (2010b). *Psychological and performance assessment in personnel selection*. Unpublished class notes (Psychometrics, measurement theory, test construction and decision-making 743), University of Stellenbosch, Cape Town.
- Theron, C.C. (2010c). *Sampling*. Unpublished class notes (Research Methodology and Master's research Proposal, 712), University of Stellenbosch, Cape Town.
- Theron, C.C. (2010d). *Research designs in explanatory research*. Unpublished class notes (Research Methodology and Master's research Proposal, 712), University of Stellenbosch, Cape Town.
- Theron, C.C. (2010e). *General orientation to research methodology*. Unpublished class notes (Research Methodology and Master's research Proposal, 712), University of Stellenbosch, Cape Town.
- Transform SA. (2014, 3 October). Blacks in SA Top 100 richest sign of redistribution. *Transform SA*. Retrieved from <http://transformsa.co.za>
- United Nations Development Programme (UNDP). (2016). *Human Development Report 2015*. Retrieved from http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf
- United Nations. (2016). *News on Millennium Development Goals*. Retrieved from <http://www.un.org/millenniumgoals/>
- Van Der Merwe, D., De Beer, M. (2006). Challenges of student selection: Predicting academic performance. *South African Journal of Higher Education*. 20(4), 547-562. Retrieved from <http://www.ajol.info>
- Van der Westhuizen, L. (2015). *The development and empirical evaluation of a partial competency model of trainer-instructor performance*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- Van Eeden, R., De Beer, M., & Coetzee, C.H. (2001). Cognitive ability, learning potential, and personality traits as predictors of academic achievement by engineering and other science and technology students. *South African Journal of Higher Education*. 15(1), 171-179. Retrieved from <http://www.ajol.info/index.php/sajhe/article/view/25392>
- Van Heerden, S. (2013). *Elaboration and empirical evaluation of the De Goede learning potential structural model*. Unpublished master's thesis, University of Stellenbosch, Cape Town.
- Vermeulen, J. (2016, 9 January). Matric results from 1995 to 2015. *MyBroadBand*. Retrieved from <http://mybroadband.co.za/news>
- Werksman's Attorneys. (2014). *Amendments to the BBBEE act and the codes explained*. Retrieved from <http://www.werksmans.com/wp-content/uploads/2014/02/040002-WERKSMANS-bbbee-booklet.pdf>
- Wilkinson, K. (2015, 25 March). Checked: 80% of South African schools indeed 'dysfunctional'. *Mail & Guardian*. Retrieved from <https://mg.co.za>
- Woolley, R. (2005). *Everyone's guide to black economic empowerment and how to implement it*. Cape Town: Zebra Press.

- World Bank. (2016). *South Africa*. Retrieved from
<http://www.worldbank.org/en/country/southafrica/overview>
- Xulu, L. (2012, 15 November). Scrap BEE, says Richard Maponya. *Financial Mail*. Retrieved from
<http://www.financialmail.co.za>
- Youth Employment Accord (YEA). 2017. *The Youth Employment Accord*. Retrieved from
<http://yea.africanmanagers.org/>

ANNEXURE A: THE EXPANDED LEARNING POTENTIAL COMPETENCY MODEL

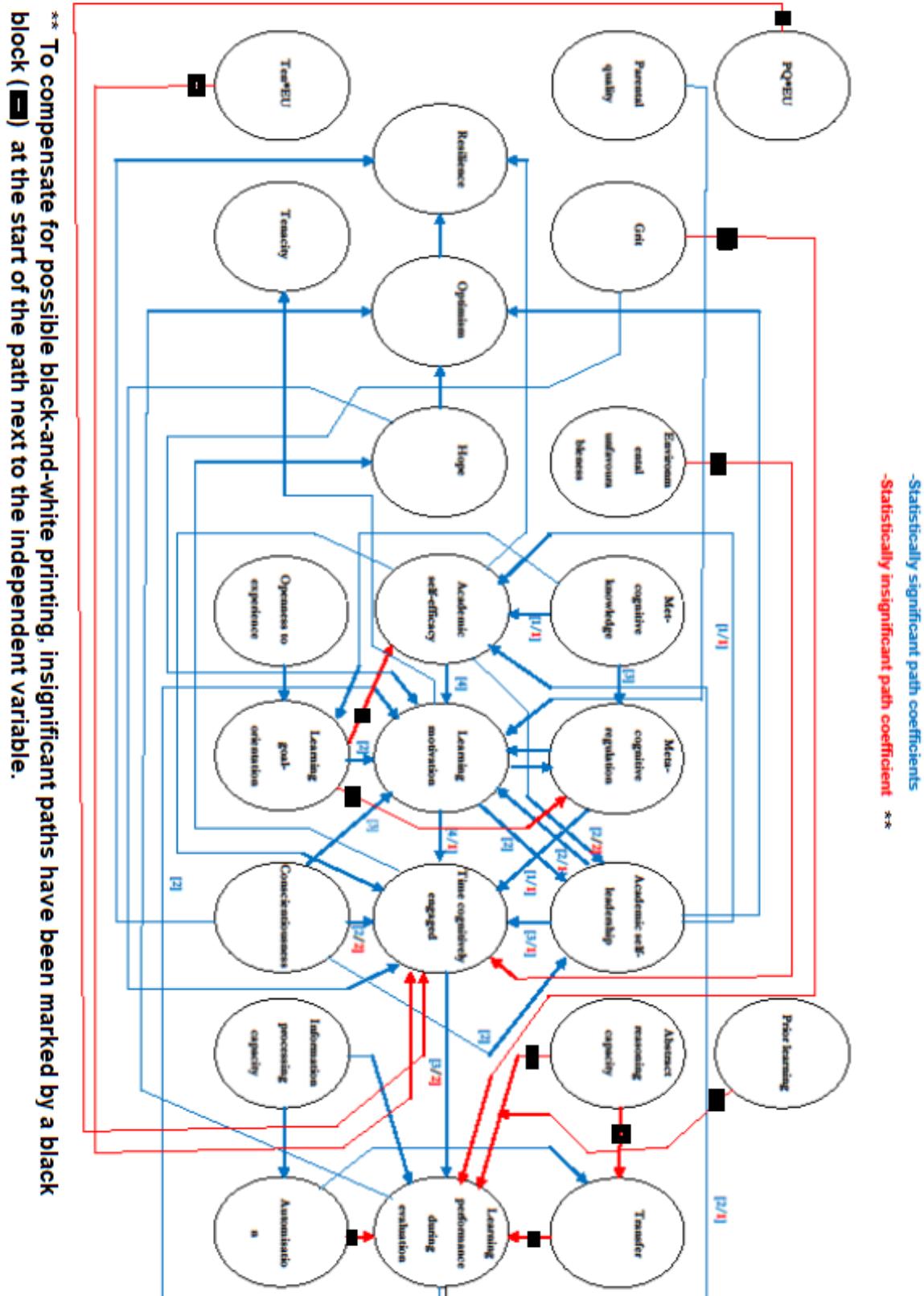


Image presented by Professor CC Theron at the 2015 Empowerment for Development seminar. Personal communication, Callie Theron, October 14, 2017.