EFFECTIVE HIV AND AIDS MANAGEMENT:
A SOUTH AFRICAN CONSTRUCTION SECTOR MODEL

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EFFECTIVE HIV AND AIDS MANAGEMENT: A SOUTH AFRICAN CONSTRUCTION SECTOR MODEL

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DOCTOR OF PHILOSOPHY IN CONSTRUCTION MANAGEMENT

By

Nishani Harinarain

Supervisor: **Professor T.C Haupt**

November 2013

DECLARATION OF ORIGINALITY

As the candidate's supervisor I agree/~~do not agree~~ to the submission of this thesis.

Signed:

Supervisor: ______________________ Date: 26 Nov 2013

I, Nishani Harinarain, hereby state that this dissertation represents the original work of myself the author, and is submitted for the degree of Doctor of Philosophy In Engineering at the University of KwaZulu-Natal, Durban. Where the works of other authors have been used, they have been duly acknowledged and referenced. This research has not been submitted before for any degree or examination to any other university.

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Details of contribution to publications that form part and/or include research presented in this thesis (include publications in preparation, submitted, *in press* and published and give details of the contributions of each author to the experimental work and writing of each publication)

Publication 1

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Signed:

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DEDICATION

This thesis is dedicated to my late father, Mr. Rabichand Gungapersad.

This thesis is in Honour of you, with all my love.

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ABSTRACT

HIV and AIDS is one of the greatest challenges facing the country. South Africa has for the past 31 years struggled with the effects of HIV and AIDS. Different industries have responded in various ways to the threats presented by the pandemic. However the construction industry has failed to take a lead in this crisis. If the construction industry wants to do well financially, it needs a healthy, productive workforce. This in itself should be reason enough to actively participate in this fight against HIV and AIDS. Construction is particularly vulnerable to the pandemic because of its large unskilled migrant labour force and aging workforce among other reasons. But the industry is not doing enough to combat HIV and AIDS.

The workplace is one of a number of locations where the impact of HIV and AIDS is being felt and where responses can be mounted. It provides important opportunities for the prevention of HIV and AIDS in the areas of occupational and personal risk reduction and prevention. Additionally it provides the opportunity to reach not only employees and their families and communities, but also other key stakeholders.

This research aimed to develop a model to effectively manage HIV and AIDS in the South African construction industry. This aim was achieved by an extensive literature review to identify the factors that drive corporate response and behaviour in the management of HIV and AIDS in the South African construction sector. Six drivers (legal requirement, social pressure, business costs, voluntary regulation, visibility of disease and individuals within the companies) with a total of 87 items were identified. An iterative Delphi technique with a panel of experts was used to validate the factors identified in the literature review and formed the second step of this research project. The experts reached consensus on 56 items categorised under the six drivers after three iterations.

Subsequently a comprehensive conceptual model was developed based on the Delphi study. The proposed theoretical HIV and AIDS management model was nationally tested using a self-administered questionnaire survey. Three hundred and eleven responses were received. The model was subjected to rigorous measurement analysis, including exploratory factor analysis, item analysis, confirmatory factor analysis and path modelling using SPSS version 21 and Mplus version 7.11. The analyses revealed statistical support for the proposed model. Ten (28.57%) hypotheses were statistically supported.

The findings highlight the serious threat of HIV and AIDS to the industry. HIV and AIDS cannot be ignored or overlooked by the sector. The implications of no action include among others threats to profitability, corporate social responsibility and increased mortality of the workforce. The implementation of workplace HIV and AIDS prevention and care programmes can improve the health and wellbeing of affected employees, as well as encourage them to access HIV related treatment.

Key words: HIV and AIDS, construction industry, path modelling, delphi study, South Africa.

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ACRONYMS

AET	-	Awareness, Education and Training
AIDS	-	Acquired immune deficiency syndrome
ART	-	Antiretroviral therapy
ASSA2000	-	Actuarial Society of South Africa 2000
BER	-	Bureau of Economic Research
BCC	-	Behaviour change communication
BRICS Nations	-	Brazil, India, The Russian Federation, China and South Africa
CADRE	-	Centre for AIDS Development, Research and Evaluation
CAPRISA	-	The Centre for the AIDS Programme of Research in South Africa
CFA	-	Confirmatory factor analysis
CIDB	-	Construction Industry Development Board
CIOB	-	Chartered Institute of Building
CSR	-	Corporate social responsibility
DPW	-	Department of Public Works
ELISA	-	Enzyme-Linked Immunosorbent Assay
EFA	-	Exploratory factor analysis
EPP	-	Estimation and Projection Package
GDP	-	Gross domestic product
GRI	-	Global Reporting Initiative
HAART	-	Highly Active Antiretroviral Therapy
HIV	-	Human Immunodeficiency Virus
ILO	-	International Labour Organization
IOM	-	International Organization for Migration
KAP	-	Knowledge, Attitude and Practice
KZN	-	KwaZulu-Natal
MDG	-	Millennium Development Goals
MTCT	-	Mother to child transmission
NSP	-	The National Strategic Plan
ODI	-	Overseas Development Institute
SA	-	South Africa
SABCOHA	-	South African Business Coalition on HIV and AIDS
SADC	-	Southern African Development Community
SANAC	-	South African National AIDS Council
SEM	-	Structural equation modelling
SME	-	Small and medium sized enterprises

STI	-	Sexually transmitted infections
TB	-	Tuberculosis
UN	-	United Nations, 2010
UNAIDS	-	Joint United Nations Programme on HIV/AIDS
UNICEF	-	United Nations International Children's Emergency Fund
VCT	-	Voluntary counselling and testing
WHO	-	World Health Organization

GLOSSARY

Acute infection (also, acute stage of infection): The initial stage of HIV disease, characterised by mild flu-like symptoms as well as an initial decrease in helper T cell levels in the bloodstream.

Acquired: Not inherited from the gene from one's parent but derived from the environment.

Acquired immune deficiency syndrome (AIDS): The late stage of HIV disease. The virus then attacks the body's immune system and makes it so weak and ineffectual that it is unable to protect the body from both serious and common infections and pathogens.

Affected employee: An employee who is affected in any way by HIV and AIDS e.g. if they have a partner or a family member who is HIV positive

Affected person: A person whose life is changed in any way by HIV and AIDS due to the broader impact of this epidemic.

AIDS-related disease or HIV-related disease: Symptoms caused by HIV infection that do not necessarily indicate full AIDS; e.g. swollen lymph glands, long-lasting diarrhea, fever, tiredness.

Antibodies: Special protein complexes produced by the immune system that attack and neutralise specific disease-causing organisms. The antibodies which the body creates in response to the HI virus are unfortunately powerless to protect the body against the long-term destructive effects of the HI virus.

Antiretroviral (ARV) drugs: The drugs that suppress a retrovirus, such as HIV. All of the anti-HIV drugs—AZT, protease inhibitors, etc.—are considered antiretroviral drugs.

Antiretroviral therapy (ART): drugs or biologic agents that act against a retrovirus that treat retroviral infection.

Asymptomatic (latent stage): The first clinical stage of HIV infection when an infected person displays no symptoms. Although the person shows no symptoms of mv infection, the virus remains active in the body and it continues to damage and undermine the person's immune system. The asymptomatic latent stage is usually associated with a CD4 cell count of between 500 and 800 cells/mm'

Delphi technique: Technique using a group of people who are either involved or interested in the research topic to generate and select a more specific research idea.

ELISA test: ELISA stands for 'enzyme-linked immunosorbent assay', a blood test that detects the presence of antibodies to HIV, used to determine whether the patient is infected with HIV.

Epidemic: A rate of disease that reaches unexpectedly high levels, affecting a large number of people in a relatively short time.

Highly Active Antiretroviral Therapy (HAART): A combination of three or more antiretroviral medications—each of which affects the virus in a different way—to treat people infected with HIV.

HIV testing: Any form of testing designed to identify the HIV status of a person, including blood tests, saliva tests or medical questionnaires

HIV: The human immunodeficiency virus - the virus that causes AIDS.

HIV Incidence: The number of new infections over a given period of time

Immune Deficiency: A breakdown or inability of certain parts of the immune system to function; increases susceptibility to certain diseases.

Monitoring and evaluation (M&E) system: Fundamentally, an M&E system is a data system that tracks what is being done and whether programmes are making a difference. It enables programme managers to calculate how to allocate resources in order to achieve the best overall result.

Opportunistic infections: infections that would not normally cause disease in a healthy body but which exploit the *opportunity* presented by an infected person's weakened immune system to attack the body, such as those with HIV infections

Prevalence of HIV: The number of people with HIV at a point in time, often expressed as a percentage of the total population

Retrovirus: A family of RNA viruses that includes HIV; retroviruses use a backward. ("retro") process, called reverse transcription (RNA into DNA), to make proteins necessary for the virus to replicate itself.

Voluntary counselling and testing (VCT): A confidential dialogue between a client and a care provider aimed at enabling the client to cope with stress and take personal decisions related to HIV and AIDS, including testing for HIV.

Wellness programme: A programme designed to promote the physical and mental health as well as the well-being of employees, including components such as counselling, support groups, nutritional supplements, provision of treatment for opportunistic infections, provision of anti-retroviral therapy

Western Blot test: A blood test that detects the antibodies to HIV infection.

Window period: The time between infection with HIV and the development of detectable HIV antibodies. Any HIV test done during this time will render false negative results.

Workplace: Refers to occupational settings, stations and places where workers spend time for employment.

Workplace programme: An intervention to address a specific issue within the workplace (for example, providing staff access to a voluntary HIV counselling and testing programme).

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter introduces the research topic of HIV and AIDS in South Africa and the construction industry in particular and discusses why businesses should respond to the impact of HIV and AIDS. It states the research question and presents the study aims and objectives. The research methodology, research originality and importance as well as limitions are outlined. An outline of the structure of the study is also provided.

1.2 Background and Rationale to the Research

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) are among the greatest challenges facing the world (International Labour Organization (ILO), 2010; Nicolay, 2008) in terms of its workforce and its skills as well as economic and social development (Barnett & Whiteside 2006; Bloom, Bloom, Steven & Weston, 2006; Dickinson, 2005; Whiteside & Sunter 2000). AIDS claimed its first two known South African victims in 1982 (Fourie, 2006) and 31 years later scientists have reportedly still not found a cure. Statistics in South Africa (SA) with regard to HIV and AIDS paints a bleak picture (Dickinson & Innes, 2004) because South Africa is currently at the epicenter of the AIDS pandemic with approximately 5.7 million (11.4%) HIV positive people out of a total of nearly 49.9 million people (South African Institute of Race Relations 2010; United Nations Programme on HIV/AIDS (UNAIDS)/World Health Organisation (WHO), 2009; WHO, 2010).

With reportedly the largest antiretroviral therapy programme in the world, South Africa is experiencing substantial public health benefits associated with improved treatment access (UNAIDS/WHO, 2009 and UNAIDS, 2010a). Unfortunately for every two people who start antiretroviral therapy, five individuals are newly infected with HIV (UNAIDS, 2009). South Africa had a declining population growth rate between 2001 and 2008 suggesting a possible link to the HIV and AIDS pandemic. In 2001 the HIV and AIDS infection rate for the South African population was 8.8%. This had increased to 11.6% in 2008 (South African Institute of Race Relations, 2008).

Mann (1999) forecast that HIV and AIDS would bring about major advances in human history, and would become the yardstick by which the moral capacity and leadership of all nations would be judged. The four reasons given were:

- HIV was the first truly global virus,
- there was no cure for HIV and AIDS despite the availability of a variety of HIV and AIDS prevention and treatment options;
- the disease affects those in the prime of their lives mainly between the ages of 15 and 49; and
- HIV and AIDS has fuelled deep-seated stigma and discrimination against those infected and affected.

HIV and AIDS is a pandemic with serious implications for South Africa in general, and the South African construction industry in particular (Meintjes, Bowen & Root, 2007). According to the Department of Public Works (2004) the construction industry has the third highest incidence rate of HIV and AIDS per sector in South Africa.

The sustainability of companies is at risk due to the threats posed by HIV and AIDS (Dickinson, 2004). The concentration of the pandemic on the economically active population has grave implications for the workforce (Dickinson & Innes, 2004) in a country that is already suffering from acute skills shortages (Fourie, 2006; Whiteside & Sunter, 2000). The death of this working population (Bloom, Bloom, Steven & Weston, 2006; Stevens, Apostolellis, Napier, Scott, Gresakm 2006) leaves a huge gap in businesses by destabilising the quantity and quality of the labour force in the South African economy (Bloom, Rosenfield & River Path Associates, 2000; Dickinson, 2005; Dickinson & Stevens, 2005).

The construction industry is particularly vulnerable to the epidemic because of its fragmented nature and a constantly changing and itinerant labour force that works on short-term contractual appointments. Consequently employees move between projects across the country and into other countries (Chartered Institute of Building (CIOB), 2004; Dickinson & Versteeg, 2004). The migrant labour force which is predominantly unskilled or semi-skilled usually have more than one sexual partner when away from home for long periods of time (Bureau for Economic Research (BER), 2000).

A study by the Bureau for Economic Research (BER)/South African Business Coalition on HIV/AIDS (2005) suggested that HIV prevalence was higher among semi- and unskilled workers than among skilled and highly skilled workers. The itinerant nature of employment in the industry together with low levels of education contribute to the spread of HIV and AIDS due to high risk sexual behaviours that increase the probability of workers becoming infected (BER/SABCOHA, 2005; Dickinson & Versteeg, 2004; Haupt, Deacon & Smallwood, 2005). Given these serious factors, HIV and AIDS poses a grave threat to the South African construction industry and the construction industry in South Africa can, and must, do more.

1.2.1 Why should business respond to the impact of HIV and AIDS?

Over the past decade the private sector in particular has become progressively more concerned about the impact of the epidemic on the sustainability of their businesses (Bloom, Bloom, Steven & Weston, 2006; Dickinson, 2005; Overseas Development Institute (ODI), 2007). HIV and AIDS threatens the economically active population, namely young and middle-aged adults aged between 15 and 49, during their most productive years (Cohen, 2002; Colvin, Connolly & Madurai, 2007 and Whiteside & Sunter, 2000). South Africa reported losses of up to R12 billion a year due to absenteeism of which an average of R2 billion was attributed to HIV and AIDS (Moodley, 2006). The threat to this economically active population will potentially severely impact businesses by destabilising the quantity and quality of the existing SA labour force (Dickinson, 2005; ILO, 2010). The average loss of experience per AIDS death is 15 years (Bureau for Economic Research, 2000). Due to this impact, it is predicted that the future workforce will consist of a greater proportion of less experienced younger workers (Poku, Whiteside, & Sandkjaer, 2007). Due to the enormous impact of HIV and AIDS, companies are faced with an increasing number of sick and dying employees and this is therefore likely to be the primary driver of action by business (Business Action for Africa (BAA), 2007; Bloom, Bloom, Steven & Weston, 2006; George, Gow & Whiteside, 2009).

Failure by the construction industry to address HIV and AIDS in the workplace will potentially result in increased absenteeism, high staff turnover, decreased productivity, loss of skills and experience, accidents, prolonged staff illness, declining profits, increased health care and medical aids costs, occupational health and safety problems and lagging workplace morale (Department of Labour, 2000; Department of Public Works, 2004; ILO, 2010; ODI, 2007; Whiteside & Sunter, 2000). The loss of employees due to full blown AIDS will result in increased costs due to having to replace the lost skills base, recruitment costs and the costs of training new employees. The declining worker pool will result in a smaller skills base from which to recruit their employees. Labour costs will potentially increase as contributions for medical aid and life and/or disability coverage increase (Dickinson & Innes, 2004; ILO, 2001, 2010; Karim & Karim, 2010; Nattrass, 2004; Rosen, Simon, Vincent, MacLeod, Fox & Thea 2003; Van Dyk, 2008; Whiteside and Sunter, 2000).

The working environment is a place where most people spend a large amount of their time. Therefore the workplace is an ideal setting in which to address HIV and AIDS (BER/ SABCOHA, 2005; ILO, 2010; Nattrass, Neilson, Bery, Mistry, Sievers, 2004). Unfortunately, the corporate sector is not using this platform effectively and the response of the construction industry has been slow (BER/SABCOHA, 2005; Dickinson & Innes, 2004; ILO, 2010). The only cost-effective way for companies to respond according to Rosen and Simon (2003) is to fight the epidemic. Companies can do this by effective HIV and AIDS management which is the rationale for this study. In order to effectively manage HIV and AIDS an understanding of what driver companies to fight the disease is needed.

1.3 Research Questions

The key research question can be stated as:

What are the drivers that will assist the South African construction industry to effectively manage HIV and AIDS?

The research sub-questions to be addressed may be stated as:

1. To what extent is HIV and AIDS affecting the construction industry and the workplace response to HIV and AIDS given the contestations and considerations involved in the development of HIV and AIDS policies and programmes?

2. What are the factors that drive corporate response to effectively manage HIV and AIDS?

3. How can these drivers be used in a theoretical model to effectively manage HIV and AIDS in the construction industry?

4. Does the proposed structural model display perfect fit?

5. Are the hypothesized path between the drivers and the dependent variables in the proposed structural model practically and statistically significant?

1.4 Research Aim and Objectives

The research aim is to establish empirically the factors (such as legal requirements, social pressure, business costs, voluntary regulation, visibility of disease and individuals within the companies) that drives the construction industry to manage HIV and AIDS as part of a model to effectively manage HIV and AIDS in the South African construction industry.

The research objectives to be achieved can be sub-divided into theoretical and empirical objectives, namely:

1.4.1 Theoretical objectives

A. Describe the current body of knowledge with regard to HIV and AIDS
- in general;
- its effect on the construction industry;
- as well as the workplace response to HIV and AIDS; and
- the business case for addressing HIV and AIDS in the workplace.

B. Determine which factors drive corporate response to effective management of HIV and AIDS.

C. To develop a theoretical model to effectively manage HIV and AIDS in the construction industry.

1.4.2 Empirical objectives

D. Test and validate the structural model in terms of perfect fit;

E. Evaluate the practical and statistical significance of the hypothesized paths in the proposed theoretical model.

1.5 An Overview of the Research Methodology

The objectives of the study were achieved by the following research approach, namely:

1. An extensive literature review to identify the factors that drive corporate response in the management of HIV and AIDS in the South African construction sector;
2. An iterative Delphi approach with a panel of experts to validate the factors identified in the literature review;
3. The development of a comprehensive conceptual model from the findings of the Delphi study and the literature review;

4. The validation of the model using a self-administered questionnaire survey; and
5. Path modelling to identify a best-fit HIV and AIDS management model.

This study was conducted in two phases as depicted in Figure 1.1. Phase 1 involves establishing the need for the study, conducting a review of literature and conducting a Delphi Study. Phase 2 involved the development of a conceptual model, conducting a national survey questionnaire, analysing and modelling the results, determining the best fit model.

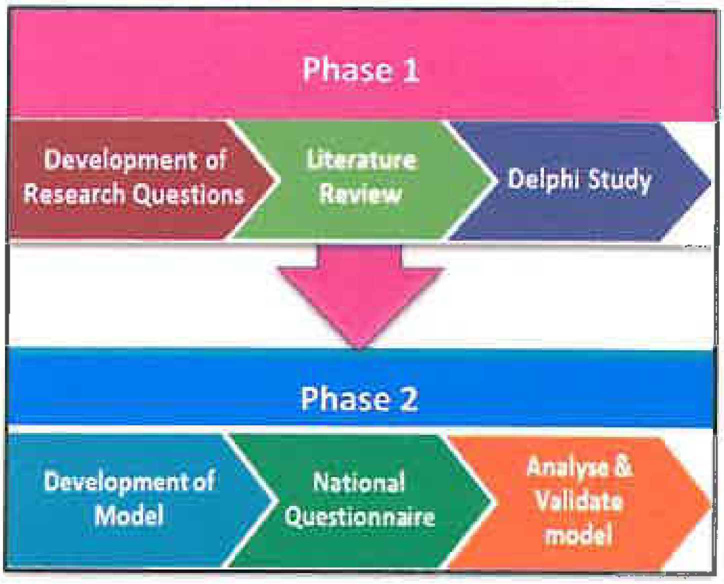


Figure 1.1: Research outline

The research methods to be applied will include (in the order of their application):

1.5.1 Literature review

An extensive literature review of HIV and AIDS was conducted in order to describe and understand the current state of HIV and AIDS national, internationally and its effect on the SA construction industry. The business case for addressing HIV and AIDS in the workplace as well as the workplace response to HIV and AIDS was also reviewed. The literature review was used to identify the factors that drive corporate response to effective management of HIV and AIDS. The literature review formed the basis of the Delphi study.

1.5.2 Delphi Study

The Delphi method is an anonymous, systematic and structured technique to encourage debate among a panel of experts who are immersed and imbedded in the topic and can provide real-time and real-world knowledge. Delphi, in contrast to other data gathering and analysis techniques, employs multiple iterations designed to develop a consensus of opinion concerning the topic (Baldwin & Trinkle, 2011; Holey, Feeley, Dixon & Whittaker, 2007; Hsu & Sandford, 2007; Lilja, Laakso & Palomäki, 2011; Powell, 2003; Procter & Hunt, 1994; Rowe & Wright, 1999; Skulmoski, Hartman & Krahn, 2007; Stitt-Gohdes & Crews, 2004; Zami & Lee, 2009). A panel of thirty three experts were selected to take part in the Delphi process. Twelve of whom completed the first round and ten in the following two rounds. Consensus was achieved after round three. The Delphi technique was utilised in this study because it provides anonymity of the participants, the freedom to express one's opinions without confrontation and group pressures, the opportunity for feedback, the high standard of Delphi participants and the ability to engage with participants from all over the world. Microsoft Excel was used to analyse the data from the Delphi study.

1.5.3 Conceptual model

The Delphi study and literature was used to develop a theorised conceptual model to effectively manage HIV and AIDS in the construction industry via path modelling through the development of a path diagram. The conceptual model included the six drivers or leading variables namely: legal requirements, social pressure, business costs, voluntary regulation, visibility of disease and individuals within the companies and seven observed dependent variables are, namely: profitability; productivity; image and/or reputation; sustained strategic focus; employee morale; medical aid/health insurance and conducive environment, openness, disclosure and acceptance of HIV and AIDS among all staff. The conceptual model was tested and validated via a national questionnaire survey.

1.5.4 Questionnaire

The Delphi phase informed the development of a robust questionnaire that was sent out to construction firms in South Africa. All the contractors (1,046) listed on the Master Builders Association database in the nine provinces/juristic areas were contacted of which there was 934 valid email addresses. A total of 311 completed questionnaires were received, representing a response rate of 33%.

1.5.5 Path Modelling

In quantitative research, the researcher analyses the data in order to test one or more formulated hypotheses. The aim of which is to find out if the relationships between the observed variables in one or more groups are statistically significant (Gelo, Braakmann & Benetka, 2008). Path modelling, a special case of structural equation modelling

(SEM) was used to do this in this study to obtain both the path values for the model and test the overall model fit. The aim of path analysis was to see how well the proposed model accounts for the observed relationships among these variables (Kline, 2011; Raykov & Marcoulides, 2006). Path modelling was selected as it involves the study of observed variables for which this study had seven. The hypothesized causal relationships were tested among the theoretical constructs using the Mplus (version 7.11) software programme.

Table 1.1 indicates the research methods assigned to achieve the research objectives as well as the outcome.

Table 1.1. The Research Methods Assigned to Achieve the Research Objectives

Research Phase	Objective	Data Collection Method	Data Analysis Method	Outcome
Phase one – Literature Review	Describe the current body of knowledge with regard to HIV and AIDS - in general; - its effect on the construction industry; - as well as the workplace response to HIV and AIDS; and - the business case for addressing HIV and AIDS in the workplace.	Literature review	Literature Synthesis	The HIV and AIDS status in South Africa Its effect on the construction industry; The status of HIV and AIDS workplace response The business case for addressing HIV and AIDS in the workplace.
Phase one – Delphi Method	Determine which factors drive corporate response to effective management of HIV and AIDS	Delphi study	Descriptive Statistics	Consensus on the drivers to effective management of HIV and AIDS
Phase two – Model development	To develop a theoretical model to effectively manage HIV and AIDS in the construction industry.	Desk study	Theory	HIV and AIDS management model
Phase two – Survey Questionnaire	Test and validate the model for HIV and AIDS management for perfect fit Evaluate the practical and statistical significance of the hypothesized paths in the proposed theoretical model	Survey Questionnaire	Exploratory factor analysis. Confirmatory factor analysis. Path Modelling	Validated model Goodness-of-fit test results

Having discussed the research approach used in this study the next section looks at reliability and validity.

1.5.6 Reliability and Validity

The central aim of any data gathering methodology is to improve both the reliability and validity of the information obtained (Bauer & Gaskell, 2000).

A) Reliability

Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions. For reliability to be calculated it is incumbent on the scientific investigators to document their procedure and to demonstrate that categories have been used consistently as a measure is only reliable to the degree that it supplies consistent results. If a method of collecting evidence is reliable, it means that anybody else, using this method, or the same person using it at another time, would come up with the same results (Bryman, 2004; Cooper and Schindler, 1995; Creswell, 2005; Crowther & Lancaster, 2009; Dane, 2011; Fellows & Liu, 1997; Fink, 2003; Leedy & Ormrod, 2010; Niels, 2008; Pallant, 2010; Tashakkori & Teddlie, 2003; White, 2000, 2002). The coding of all closed questions, cronbach's alpha, correlations and corrected-item-correlation was used to measure reliability in this study.

B) Validity

Validity is often referred to as another word for truth. It refers to the correctness or credibility of a description, conclusion, explanation, interpretation or other sort of account. Validity means the extent to which a test, questionnaire or other method is really measuring what it is intended to measure and is a true picture of what is being studied (Blanche, Durrheim, Painter, 2006; Creswell, 2005; Crowther & Lancaster, 2009; Dane, 2011; Fellows & Liu, 1997; Fink, 2003; Gaur & Gaur, 2006; Leedy & Ormrod, 2010; Lucko & Rojas, 2010; White, 2000, 2002).

Face validity was ensured in this study by a rigorous examination of literature, adequacy of samples, representatives of samples, adequacy of data processing and analysis, appropriate interpretation and justifiable conclusions. Content validity for this study was achieved by the extensive literature review carried out in order to identify the drivers and the various items the make up the subscales as well as the Delphi study which allowed experts in the field to provide to add to or eliminate items in the subscale. The piloting of the Delphi study and the questionnaire also helped to improve its content validity. Construct validity was analysed in the form of convergent validity and discriminant validity. Convergent validity was tested using correlation coefficients; standardised factor loadings; exploratory factor analysis and confirmatory factor analysis. Discriminant validity was analysed using correlations; exploratory factor analysis and confirmatory factor analysis.

1.5.7 Ethics

According to Churchill (1995) cited in White (2002) ethics is defined as moral principles and values governing the way an individual or group conducts its activities. Ethics or moral principles must guide research and requires the following informed consent, not withholding information from the research participants, the privacy of research subjects should be safeguarded and confidentiality should be maintained (White, 2002).

In order to ensure ethical standards were maintained, the researcher obtained an ethical clearance certificate from the University of KwaZulu-Natal. The researcher ensured informed consent, confidentiality and the privacy of the research subjects.

1.6 The Research Originality and importance

The most important reason why business involvement in HIV and AIDS is necessary is to protect its most valuable asset, its workers. Improving the quality of life of their workers will positively impact on productivity.

Business can make a tremendous contribution in the fight against HIV and AIDS (Ala, 2004). Most of the millions of people who are infected with HIV work. The workplace is an ideal platform to launch HIV and AIDS prevention and care programmes. Despite the fact that workers have different cultural and social backgrounds and different first languages, at the workplace all employees share the same organisational culture, with the same goals, vision and rules (Page, Louw, Pakkiri & Jacobs, 2006; United Nations Programme on HIV/AIDS (UNAIDS) and The International Organisation of Employers (IOE), 2002; Van Dyk, 2008).

The consequences of ignoring the threat that HIV and AIDS poses to the construction industry can be catastrophic if the industry continues to ignore the warning signs. The need for a comprehensive response by the construction industry to HIV and AIDS is significant given the contribution it makes to gross domestic product and the large number of employees in the industry. However the construction sector has not done enough in order to limit or prevent the impact of HIV and AIDS on its employees. If the construction industry wants to do well financially, they need a healthy, productive workforce. One way to accomplish this is by effective HIV and AIDS management which this research proposes through the development of a model to effectively manage HIV and AIDS in the South African construction industry.

This research is important as it contributes to the existing knowledge by identifying factors that drive corporate response to HIV and AIDS management in the South African construction industry. This study uses a combination of a Delphi study and path modelling to analyse the proposed theoretical model thereby adding to the body of knowledge on HIV and AIDS.

1.7 Limitation of the study

The limitation(s) of this research project were:

- This research was limited to contractors in the South African construction industry.
- Respondents were hesitant to answer a questionnaire regarding HIV and AIDS, even though no confidential information was required of them;
- Use of a structured questionnaire in the first round of the Delphi study method could have created potential bias in the composition of the core drivers and items therein.

1.8 A Guide to the Thesis

This research is broken down into 13 chapters as depicted in Figure 1.2.

Chapter 1 - Introduction

- This chapter presented a summary of the dissertation by discussing the background and rationale to the research, the aims and objectives as well as the research methodology. In addition the research originality, achievement and limitations were explained. The guide to the dissertation was also provided.

Chapter 2 - HIV and AIDS, The Global and National Perspective

- This chapter explores the concept of HIV and AIDS in general. It describes the HIV and AIDS epidemic globally as well as in South Africa.

Chapter 3 - The vulnerability of the construction industry to the disease

- This chapter explores the concept of HIV and AIDS in the South African Construction Industry.

Chapter 4 - The Business case for addressing HIV and AIDS in the workplace

- Chapter 4 discusses the rationale for business involvement in assisting to combat the epidemic, the impact of HIV and AIDS on the macro and micro economy, the implications of no action and why should companies get involved?

Chapter 5 - The workplace response to HIV and AIDS and the challenges faced

- The workplace provides an ideal gateway to HIV and AIDS prevention and care. This chapter discusses HIV and AIDS in the workplace and explains the challenges experienced by firms and actions that can be taken.

Chapter 6 - The 6 drivers that influence corporate behaviour

- Discusses the 6 drivers of HIV and AIDS in the industry.

Chapter 7 - Research Methodology

- This chapter discusses the research methodology designed to achieve the research aims and objectives. The research process and approach is explained. The design of the research methodology is also discussed. The chapter concludes by discussing reliability, validity and research ethics.

Chapter 8 - The Delphi Approach

- This chapter discusses the Delphi process.

Chapter 9 - Results of the Delphi study and discussion

- This chapter analyses the results of the Delphi study.

Chapter 10 - Conceptual model for effective HIV and AIDS management

- The proposed HIV and AIDS model will be introduced.

Chapter 11 - Results from the questionnaire survey

- Chapter 11 discusses the analysis of the results obtained from the survey. This includes descriptive statistics using frequencies, means, standard deviation and fit indices obtained using exploratory factor analysis and confirmatory factor analysis. Path modelling was performed to establish the interrelationship of the constructs.

Chapter 12 - Analysis of Results

- Discussion, analysis and interpretation of findings from both the Delphi study and the questionnaire are covered in this chapter.

Chapter 13 - Conclusion & Recommendations

- This chapter draws conclusions and provides appropriate recommendations for further research. It concludes the research carried out to develop a model to assist construction firms to effectively manage HIV and AIDS. It also provides a positive contribution to the existing body of knowledge.

Figure 1.2. The Research Structure

1.9 Summary

The construction sector has not done enough in order to limit or prevent the impact of HIV and AIDS on its employees. Having a healthy, productive workforce should be reason enough to take part in this fight against HIV and AIDS. This chapter discussed the background and rationale to the research as well as the research question and aims and objectives. The research approach adopted or this study was briefly discussed and the outline of the study was provided. Chapter 2 goes on to discuss HIV and AIDS from a global and national perspective.

CHAPTER TWO

HIV AND AIDS, THE GLOBAL AND NATIONAL PERSPECTIVE

2.1 Introduction

In order for business to understand how HIV and AIDS affects employees, an understanding of the relevant terminology, nature and context of HIV and AIDS is necessary. This chapter provides an overview of the HIV and AIDS epidemic globally and in South Africa in particular.

2.2 What is HIV and AIDS?

"*HIV is not something to fear-it is something to fight*" (Miller, 1987:x).

Acquired Immunodeficiency Syndrome (AIDS) was first identified in 1981 in America among homosexual men (Barnett & Whiteside, 2006; Beck, Mays, Whiteside & Zuniga, 2008; Bureau of Economic Research (BER)/South African Business Coalition on HIV and AIDS (SABCOHA), 2004; Essex, Mboup, Kanki, Marlink & Tlou, 2002; Karim, Karim, Gouws & Baxter, 2007; Karim & Karim, 2010; Ndinga-Muvumba & Pharoah, 2008; Rohleder, Swartz, Kalichman, Simbayi, 2009; United Nations Programme on HIV/AIDS (UNAIDS)/World Health Organisation (WHO), 2005; Van Dyk, 2008; Whiteside, 2008). Two years later in 1983, scientists discovered that the Human Immunodeficiency Virus (HIV) causes AIDS (Page, Louw, Pakkiri & Jacobs, 2006). This strain is known as the HIV-1 virus. The second strain was discovered in 1985, known as the HIV-2. The HIV-2 strain is slower acting and weaker than the HIV-1 (Barnett and Whiteside, 2006; Van Dyk, 2008; Whiteside & Sunter, 2000). The strains of the HIV-1 are classified into four groups M, N, O, P of which group M has 9 genetically distinct subtypes (Avert, 2012). The HIV-1 strain is predominate in Southern Africa (Whiteside & Sunter, 2000).

The 'A' in AIDS stands for Acquired as the disease is not spread through casual contact. It is caused by the HIV virus that enters the body from outside. 'I' and 'D' stand for Immunodeficiency as the immune system is weakened. 'S' is for Syndrome because AIDS results in a number of diseases when the immune system fails and is therefore a syndrome

(Barnett & Whiteside, 2006; Daly, 2000; KwaZulu-Natal Department of Health, 2001; Taylor, 1998; Van Dyk, 1999; 2008; Whiteside & Sunter, 2000).

The main modes of HIV transmission are:

- unprotected sexual intercourse;
- transmission from infected mother to child (MTCT) either prenatally or postnatally through breastfeeding. However MTCT transmission can be reduced with anti-retroviral drugs (ART) using simple treatment regimes;
- intravenous drug use with contaminated needles;
- use of infected blood or blood products. The risk of transmission through this route is minimal as all blood donations are usually tested and screened. However, the risk is not entirely eliminated because of the window period (3-6 weeks after exposure[1]) when people are infected but the antibodies are not yet detectable;
- other modes of transmission include anything involving infected blood, for example, bleeding wounds, use of contaminated medical or other instruments (e.g. dental equipment, tattoo needles) (Barnett & Blaikie, 1992; Barnett & Whiteside, 2006; BER/SABCOHA, 2003; Bowser; Mishra; Reback; Lemp, 2004; Daly, 2000; Dickinson, 2002; Essex *et al.*, 2002; Haupt, Munshi & Smallwood, 2005a; International Labour Organization (ILO), 2001, 2002; Kohl & Miller, 1994; KwaZulu-Natal Department of Health, 2001; Lim & Loo, 2000; Page *et al.*, 2006; Poku, 2008; Rau, 2004; Taylor, 1998; United Nations Programme on HIV/AIDS (UNAIDS) and The International Organisation of Employers (IOE), 2002; Van Dyk, 2008; Whiteside & Sunter, 2000).

HIV is not transmitted by casual physical contact, touching, coughing, sneezing and kissing or by sharing toilet and washing facilities, by using eating utensils or consuming food and beverages handled by someone who has HIV (Daly, 2000; ILO, 2001, 2002; KwaZulu-Natal Department of Health, 2001; Rau, 2004; UNAIDS/IOE, 2002; Van Dyk, 2008).

Persons are said to be HIV positive when HIV antibodies are detected in their blood. HIV weakens the body's immune system, making it increasingly difficult to fight infection. It survives by replicating inside CD4 blood cells (Poku, 2008). A '*window period*' occurs when it is difficult to detect the antibodies (Whiteside & Sunter, 2000:8). This window is followed by a long incubation stage (of between 6 and 8 years) (George, Gow & Whiteside, 2009; Whiteside & Sunter, 2000). An infected individual can survive for ten years or more without illness or symptoms, while still transmitting the infection to others (Arndt & Lewis, 2000; Barnett &

[1] The window period varies from person to person as people respond differently to HIV infection.

Whiteside, 2006; Booysen, Geldenhuys, & Marinkov, 2003; Dickinson, 2006a; Karim & Karim, 2010; KwaZulu-Natal Department of Health, 2001; ILO, 2002; The International Bank for Reconstruction and Development/The World Bank, 2008; Miller, 1987; Nattrass, 2004; UNAIDS/IOE, 2002; Van Dyk, 1999, 2008; Van Niekerk, 2005; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside, 2008). Individuals can also get 'super-infections' when an HIV-infected person gets re-infected with new strains of the virus (Whiteside, 2008:25). Eventually the CD4 cell count drops as immune cells are being destroyed faster than they can be replaced. In a healthy person the CD4 cell count is normally over 1,000 cells per mm^3 of blood. Prior to 2010 a person was said to have AIDS when the CD4 counts falls to 200 or less and opportunistic infections start (Barnett & Whiteside, 2006; Miller, 1987; Van Dyk, 1999; 2008; Whiteside & Sunter, 2000; Whiteside, 2008). The World Health Organization 2010 guidelines recommends starting treatment for all patients with CD4 counts of below 350 cells/mm^3 and for all patients with TB regardless of their CD4 cell count (UNAIDS, 2010a; Whiteside, 2008; WHO, UNAIDS, UNICEF, 2011).

Early symptoms of AIDS include chronic fatigue, diarrhoea, fever, mental changes such as memory loss, weight loss, persistent cough, severe recurrent skin rashes, herpes and mouth infections, and swelling of the lymph nodes (ILO, 2002; Van Dyk, 2008).

Due to the long incubation period, this epidemic is referred to as a 'long wave event' (Barnett & Whiteside, 1999; Barnett & Whiteside, 2006:19; Nattrass, 2004; Ndinga-Muvumba & Pharoah, 2008; Whiteside, Barnett, George & Van Niekerk, 2003). Because HIV does not spread through casual contact, it is not a notifiable disease. Van Dyk (1999) however believes that notifiability will assist infected individuals to gain treatment for opportunistic infections and behavioural change education sooner. The problem of stigma and discrimination will however still prevail. Even if a cure was found today, because of the large number of infected individuals, the long term consequences and impacts will be felt for decades to come (Bowser, *et al.*, 2004; Poku, Whiteside, & Sandkjaer, 2007).

Opportunistic infection associated with HIV includes cancers, meningitis, pneumonia and tuberculosis (TB). The biggest burden of which is TB (Barnett & Blaikie, 1992; Barnett & Whiteside, 2006; Bradhan-Quallen, 2005; Daly, 2000; Essex *et al.*, 2002; UNAIDS/IOE, 2002; Karim, Karim, Gouws & Baxter, 2007; Karim & Karim, 2010; Lake, 2006; Ostrow & Kalichman, 1999; Poku, 2008; Rau, 2004; UNAIDS, 2010a; UNAIDS, 2011a, b, c; Van Dyk, 1999; 2008; Whiteside & Sunter, 2000; WHO, 2010; WHO/UNAIDS/UNICEF, 2008). South Africa has the 3rd highest rate of TB infection in the world with a 400% increase in incidence over the past 15 years (South African Government, 2012; South African National AIDS Council

(SANAC), 2011). TB can be cured and prevented but it is still a major public health threat. In sub-Saharan Africa it is estimated that 70% of individuals are co-infected with HIV and TB (Karim & Karim, 2005; SANAC, 2011). The survival rate of people infected with HIV shortens when they are also infected with TB. In order to achieve effective treatment HIV and TB programmes have to work together (UNAIDS, 2010b; Whiteside, 2008). In order to combat these barriers, the South African government has dramatically increased its funding for HIV and AIDS (South African Institute of Race Relations, 2010).

2.2.1 Stages of Infection

There are four stages of HIV infection. The first clinical stage of HIV infection is the asymptomatic latent (or silent) stage. Infected individuals display no symptoms and are usually unaware that they are infected (WHO/UNAIDS/UNICEF, 2008). A positive HIV antibody test is often the only indication of HIV infection during this latent stage. The two tests that are performed via blood tests are the ELISA (enzyme-linked immunosorbent assay) and the Western Blot tests. A non-invasive saliva test was developed but it is not accurate enough to provide diagnosis. It is used to measure HIV prevalence in populations who do not want to give blood. Because of the window period, a second test is usually performed 6 months later (Van Dyk, 1999; 2008; Whiteside & Sunter, 2000). The second stage is regarded as the minor symptomatic stage in which minor and early symptoms appear. The third stage is regarded as the major symptomatic stage. The immune system starts to weaken and this is when major symptoms and opportunistic diseases occur. The final stage is the severe symptomatic stage when a person is regarded as having AIDS. At this stage the opportunistic infections become untreatable and the immune system deteriorates to an extent where the CD4 cells drop to 200 CD4 cells per mm^3 of blood. This stage is usually when drug therapy begins (Barnett & Whiteside, 1999; BER/SABCOHA, 2004; Dorrington, Johnson, Bradshaw & Daniel, 2006; Essex, *et al.*, 2002; Page, *et al.*, 2006; Van Dyk, 1999; 2008; Whiteside & Sunter, 2000; Whiteside, 2008). Figure 2.1 depicts the 4 stages of infection.

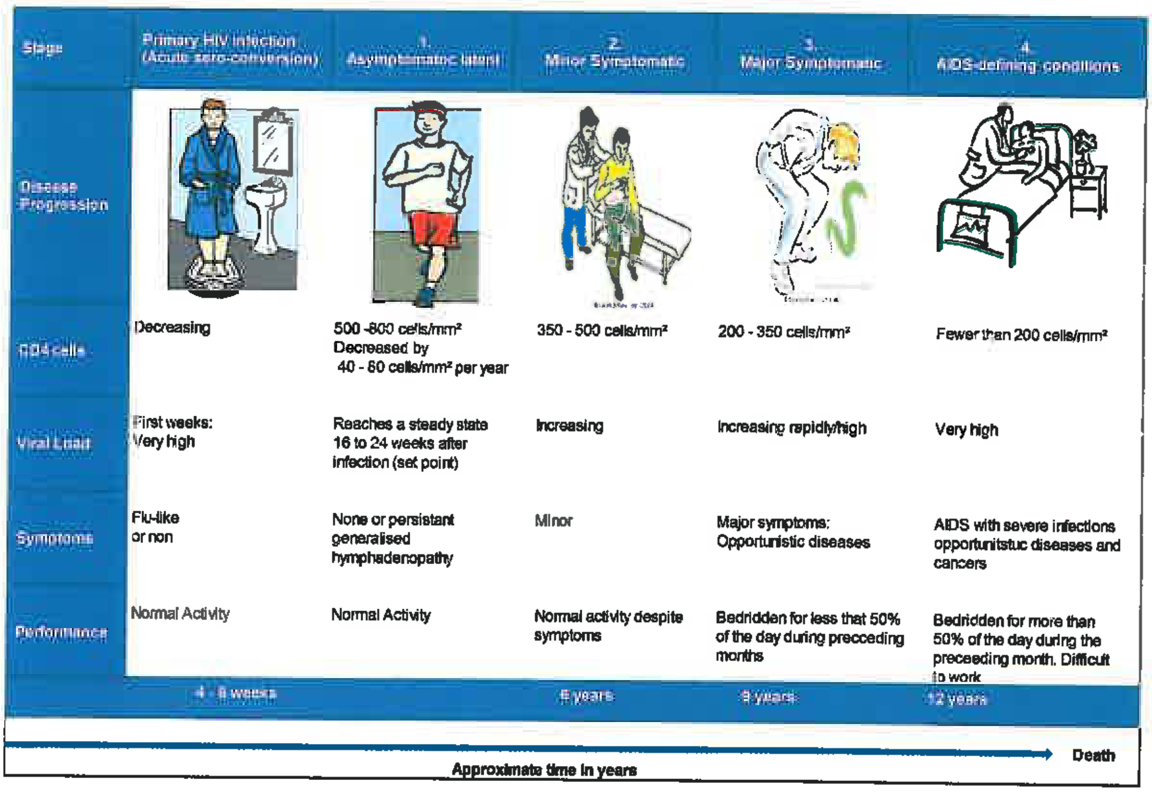


Figure 2.1 The stages of HIV and AIDS infection (Adapted from Van Dyk, 2008:56).

2.2.2 AIDS Timeline

The detailed AIDS timeline from 1980 to 2013 is attached in Appendix A. The timeline actually begins in 1959 when a man was killed in Kinshasa (Belgian Congo) and years after his stored blood sample showed that he had died of AIDS. In 1981 the first documented case of AIDS occurred in June in the USA at the Centre for Disease Control (CDC). In 1985 the South African Government set up the first AIDS Advisory Group. In 1988 the World Health Organization's (WHO) Global Programme on AIDS instituted World AIDS Day as an annual event on December 1 each year. The total number of South Africans living with HIV was estimated to be between 72,000 and 120,000 people in 1990. The use of highly active antiretroviral therapy (HAART) was introduced in 1995. In 1999 the total number of people in South Africa living with HIV was estimated to be 4.2 million and the total number of AIDS orphans in South Africa was estimated to be 420,000. The International AIDS conference was held in Durban, South Africa in 2000. In 2004 the government formally starts a national roll-out of anti-retroviral treatment. In 2013, 7.1 million people have access to ART across Africa.

2.3 The HIV and AIDS Epidemic Globally

Data about the global HIV and AIDS epidemic are usually derived from three major organisations, namely the Joint United Nations Programme on HIV/AIDS (UNAIDS), World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF). However all documents produced by these organisations carry the following disclaimer: "*All reasonable precautions have been taken to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the organisation be liable for damages arising from its use*". In other words there is no guarantee that information they received from the various countries and published in their documents was complete or even correct. Taking this into consideration the researcher merely used the information published by these organisations to highlight illustratively the severity and magnitude of the epidemic globally as shown in Table 2.1.

Table 2.1. Key indicators for the HIV epidemic, 2002-2010 (WHO, UNAIDS, UNICEF, 2011:1).

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of people living with HIV (in millions)	29.5 [27.7-31.7]	30.2 [28.1-32.1]	31.0 [28.8-32.5]	31.0 [29.2-32.7]	31.4 [29.6-33.0]	31.8 [29.9-33.3]	32.3 [30.4-33.8]	32.9 [31.0-34.4]	34.0 [31.6-35.2]
Number of people newly infected with HIV (in millions)	3.1 [3.0-3.3]	3.0 [2.8-3.1]	2.9 [2.7-3.0]	2.8 [2.6-3.0]	2.8 [2.6-2.9]	2.7 [2.5-2.9]	2.7 [2.5-2.9]	2.7 [2.5-2.9]	2.7 [2.4-2.9]
Number of people dying from AIDS-related causes (in millions)	2.0 [1.8-2.3]	2.1 [1.9-2.4]	2.2 [2.0-2.5]	2.2 [2.3-2.5]	2.2 [2.1-2.4]	2.1 [2.0-2.3]	2.0 [1.9-2.2]	1.9 [1.7-2.1]	1.8 [1.6-1.9]
% of pregnant women tested for HIV				8%	13%	15%	21%	26%	35%
Number of facilities providing antiretroviral therapy						2,700	12,400	18,600	22,400
Number of children receiving antiretroviral therapy	300,000	400,000	700,000	1,330,000	2,034,000	2,970,000	4,063,000	5,255,000	6,650,000
Coverage of antiretroviral medicines for preventing mother-to-child transmission			9%	14%	23%	33%	43%	48%	48%

Figure 2.2 depicts the global view of HIV infection (WHO, 2013)

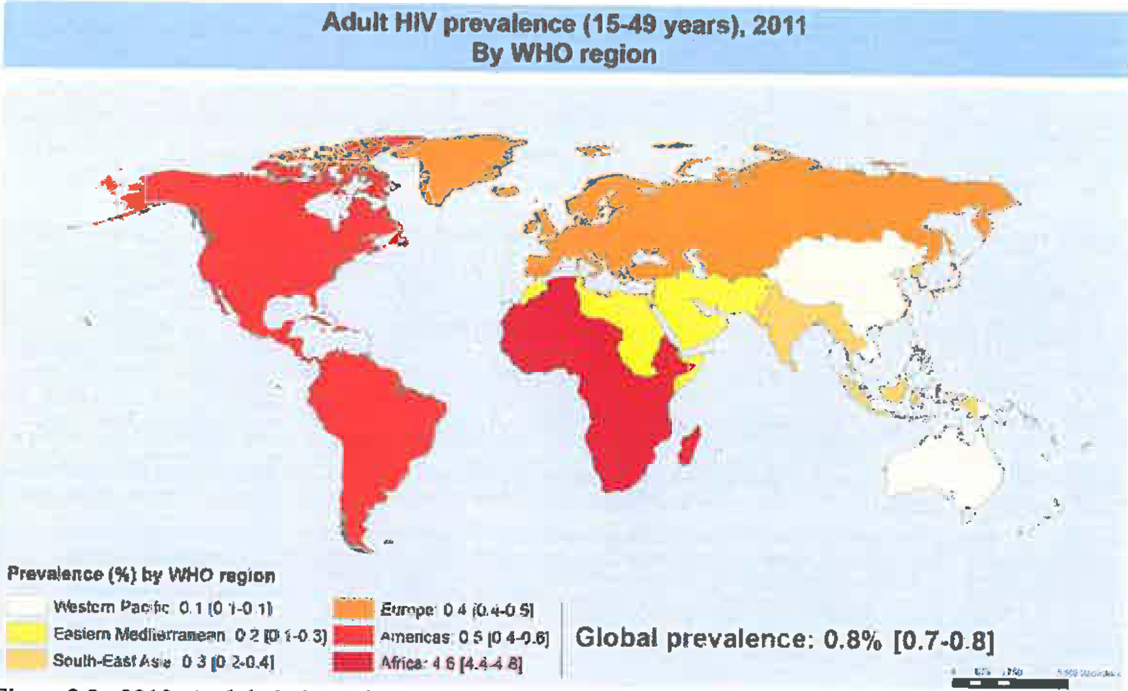


Figure 2.2. 2010: A global view of HIV infection (WHO, 2013).

Thirty one years since the first diagnosis of AIDS, HIV is still being spread and consequently presents an enormous challenge. An estimated 65 million people worldwide have been infected since its discovery, and an estimated 25 million people have died of AIDS (Karim & Karim, 2010; Rohleder, *et al.*, 2009; UNAIDS, 2006; UNAIDS, 2011a). Thirty four million people (31,600,000–35,200,000) were living with HIV globally in 2011. There has been an increase in the number of people living with HIV globally between 1990 and 2011 (UNAIDS & WHO, 2012). There were 2.5 million [2,200,000–2,800,000] new HIV infections in 2011 alone and 1.7 million [1,500,000–1,700,000] people died from AIDS-related diseases worldwide in 2011 (*ibid*).

Globally, the annual number of people newly infected with HIV continues to decline (UNAIDS, 2010a; WHO, UNAIDS, UNICEF, 2011). The rate of new infections decreased by 15% in 2010 (2.7 million [2,400,000– 2,900,000]) compared to 3.1 million [3,000,000–3,300,000] people newly infected in 2001. The region with the highest rate of newly infected people remains sub-Saharan Africa where an estimated 1.9 million people became infected in 2010 (WHO, UNAIDS, UNICEF, 2011).

There was also a decrease in the annual number of people dying from AIDS-related causes worldwide to an estimated 1.7 million in 2011 (from an estimated 2.2 million people in 2005) (UNAIDS, 2010a; UNAIDS, 2011c; UNAIDS & WHO, 2012).

The decline in infection rates and deaths can be attributed to care and support of people living with HIV, the natural course of the epidemic, behavioural changes, safer sex among young people and intensified prevention efforts. The development of the new microbicide gel in 2010 that can assist women in reducing the spread of HIV as well as male circumcision for HIV prevention in sub-Saharan Africa has assisted in reducing infection rates (UNAIDS, 2010a; WHO, UNAIDS, UNICEF, 2011). The increased availability of antiretroviral therapy has also contributed to the declining infection rates. Antiretroviral therapy has averted 2.5 million deaths globally since 1995, 1.8 million of which are in sub-Saharan Africa (WHO, UNAIDS, UNICEF, 2011). With the increased knowledge on prevention and treatment options, nations envision a future of zero new infections, zero discrimination, and zero AIDS-related deaths (UNAIDS, 2010b; UNAIDS, 2011c).

The global distribution of HIV is broken down into 10 regions as portrayed in Figure 2.3 and Table 2.2.

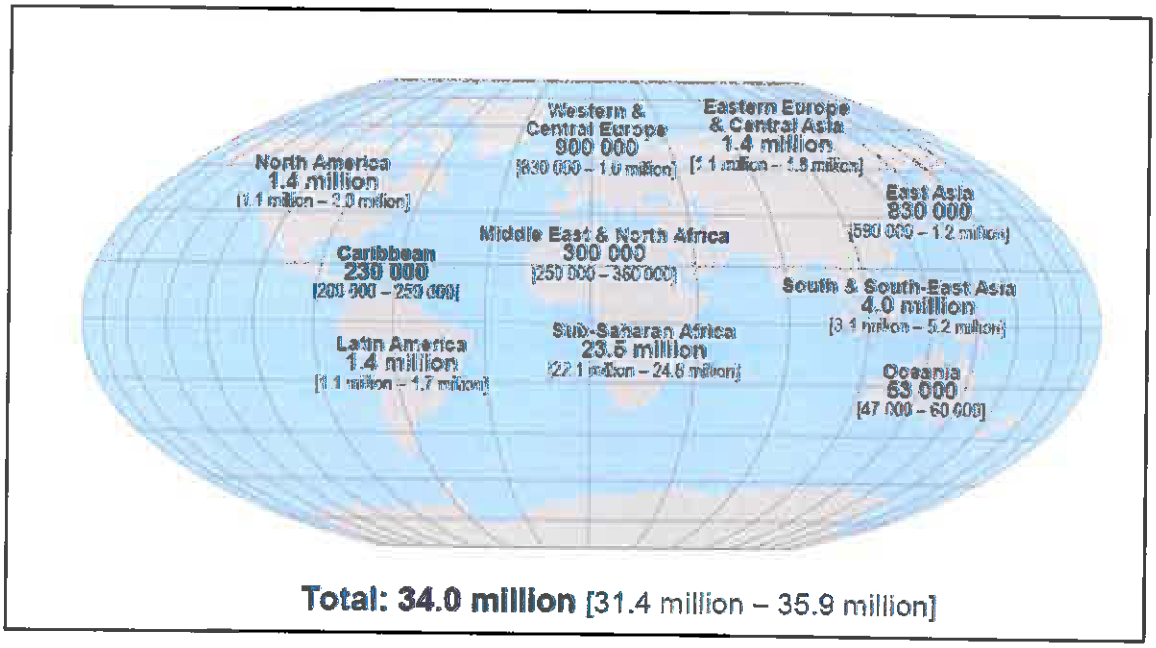


Figure 2.3 Global distribution of adults and children living with HIV in 2011 (UNAIDS & WHO, 2012).

Table 2.2. Regional HIV and AIDS statistics for 2011 (UNAIDS & WHO, 2012).

Regional HIV and AIDS statistics and features, 2011

	Adults & children living with HIV	Adults & children newly infected with HIV	Adult prevalence (15–49) [%]	Adult & child deaths due to AIDS
Sub-Saharan Africa	23.5 million [22.1 – 24.8 million]	1.8 million [1.6 – 2.0 million]	4.9 [4.6 – 5.1]	1.2 million [1.1 – 1.3 million]
Middle East & North Africa	300 000 [250 000 – 360 000]	37 000 [29 000 – 46 000]	0.2 [0.1 – 0.2]	23 000 [18 000 – 29 000]
South and South-East Asia	4.0 million [3.1 – 5.2 million]	280 000 [170 000 – 460 000]	0.3 [0.2 – 0.4]	250 000 [190 000 – 340 000]
East Asia	830 000 [590 000 – 1.2 million]	89 000 [44 000 – 170 000]	0.1 [<0.1-0.1]	59 000 [41 000 – 82 000]
Latin America	1.4 million [1.1 – 1.7 million]	83 000 [51 000 – 140 000]	0.4 [0.3 – 0.5]	54 000 [32 000 – 81 000]
Caribbean	230 000 [200 000 – 250 000]	13 000 [9 600 – 16 000]	1.0 [0.9 – 1.1]	10 000 [8200 – 12 000]
Eastern Europe & Central Asia	1.4 million [1.1 – 1.8 million]	140 000 [91 000 – 210 000]	0.8 [0.6 – 1.0]	92 000 [63 000 – 120 000]
Western & Central Europe	900 000 [830 000 – 1.0 million]	30 000 [21 000 – 40 000]	0.2 [0.2 – 0.3]	7 000 [6100 – 7500]
North America	1.4 million [1.1 – 2.0 million]	51 000 [19 000 – 120 000]	0.6 [0.5 – 1.0]	21 000 [17 000 – 28 000]
Oceania	53 000 [47 000 – 60 000]	2 900 [2900 – 5100]	0.3 [<0.2 – 0.3]	1 300 [1000 – 1800]
TOTAL	34.0 million [31.4 – 35.9 million]	2.5 million [2.2 – 2.8 million]	0.8% [<0.7 – 0.8]	1.7 million [1.5 – 1.9 million]

The ranges around the estimates in this table define the boundaries within which the actual numbers lie, based on the best available information.

2.3.1 Sub-Saharan Africa

It is generally regarded as the region that has been hardest hit by the epidemic (Piot, Bartos, Ghys, Walker & Schwartländer, 2001; UNAIDS, 2011c) with southern Africa been the most affected (Lisk, 2002; UNAIDS, 2010a; WHO, UNAIDS, UNICEF, 2011). In 2012 an estimated 23.5 million people living with HIV lived in sub-Saharan Africa which equates to 69% of the global HIV burden (UNAIDS, 2010a; UNAIDS, 2013). There were 1.9 million [1 700 000–2 100 000] people who were infected in 2012 making sub-Saharan Africa the place with the highest number of new infections (UNAIDS, 2010a; UNAIDS, 2011c; UNAIDS, 2013; WHO, UNAIDS, UNICEF, 2011). Greater access to antiretroviral therapy resulted in a 12% (from 2001) increase in the total number of people living with HIV in sub-Saharan Africa to 23.5 million people in 2012 (UNAIDS, 2013; WHO, UNAIDS, UNICEF, 2011).

2.3.2 Asia

In Asia, an estimated 4.9 million [4.5 million–5.5 million] people were living with HIV in 2012, about the same in previous years, showing that the Asian epidemic has stabilised. In 2009 the adult HIV prevalence was 1.3%, and the HIV incidence was 0.1%. There were an estimated 310 300 [260 000–340 000] AIDS-related deaths in 2012 (UNAIDS, 2013). The International Labour Organization (2002) believes that the low prevalence rates in this region are deceptive due to the high numbers involved. India's adult prevalence rate is only 0.8% (end of 2001) but the absolute numbers involved are large (*ibid*).

2.3.3 Caribbean

The Caribbean is experiencing a declining AIDS related mortality rate. An estimated 10 000 [8200–12 000] people lost their lives due to AIDS in 2011 compared with 19 000 [16 000–23 000] deaths in 2001. The number of people living with HIV has not varied much since the 1990s and is currently at 230 000 [200 000-250 000] in 2011 (UNAIDS, 2010a; UNAIDS, 2013).

2.3.4 Eastern Europe and Central Asia

Eastern Europe and Central Asia had the largest regional increase in HIV prevalence with an estimated 1.4 million [1.3 million–1.6 million] people were living with HIV in 2011 compared with 970 000 [670 000–890 000] in 2001. This is attributable to the rise in HIV infections among injecting drug users (UNAIDS, 2010a). The number of AIDS-related deaths increased from 7800 [6000–11 000] in 2001 to 92 000 [63 000–120 000] in 2011 (WHO, UNAIDS, UNICEF, 2011; UNAIDS, 2013).

2.3.5 North America and Western and Central Europe

There are 2.3 million [2.0 million–2.7 million] people living with HIV in North America and Western and Central Europe in 2011 which is 30% more than in 2001 (UNAIDS, 2010a; UNAIDS, 2013). The rate of new infection in this region has remained relatively stable.

2.3.6 Middle East and North Africa

There was an increase in the number of people living with HIV in the Middle East and North Africa (increase from 210 000 in 2001 to 300 000 in 2011). There was also an increase in the number new infections from 27 000 [22 000–34 000] in 2001 to 37 000 [29 000–46 000] in 2011. The number of people dying from AIDS-related causes increased by 17% in the Middle East and North Africa between 2005 and 2011 (from 20 000 to 23 000) (UNAIDS, 2013; WHO, UNAIDS, UNICEF, 2011). The UNAIDS (2010a) however warns that it has been difficult to track the recent trend of the epidemic in the Middle East and North Africa as reliable data is hard to acquire.

2.3.7 Oceania

The Oceania has shown an increase in the number of people living with HIV from 28 000 [23 000–35 000] in 2001 to 53 000 [47 000–60 000] in 2011 and a decrease in the number of new infections from 3700 in 2001 to 2900 in 2009 (UNAIDS, 2013).

2.3.8 The BRICS nations

Given these regional statistics there are five countries that have been predicted by UNAIDS (2010b) as being able to change the course of the global AIDS epidemic namely, Brazil, India, The Russian Federation, China and South Africa (BRICS).

Brazil – has a 0.6% prevalence rate that has remained stable since 2000 mainly due to the fact that the government focused on HIV treatment and free treatment and care to every person living with HIV. Brazil provided free antiretroviral therapy since 1996. Stigma and discrimination is still however a key barrier (UNAIDS, 2010b).

The HIV epidemic in the Russian Federation continues to grow and is primarily (78%) concentrated among injecting drug users. There were 160 new infections a day in 2009. The government needs to provide support in terms of needle and syringe exchange programmes, condom distribution, provision of substitution therapy, and HIV treatment and rehabilitation programmes in order to assist the 1.5 million injecting drug users in the Russian Federation (UNAIDS, 2010b).

India has strengthened its AIDS response by expanding prevention, treatment and care programmes. India has committed 67% of its national AIDS budget for prevention efforts. There was a 13% increase in access to antiretroviral therapy in 2009 (up from 32% in 2008 to 45% in 2009) when 245 million condoms were distributed (UNAIDS, 2010b).

China is expanding its HIV testing by setting up free HIV voluntary counselling and testing clinics throughout the country. There was also an increase in number of HIV-positive adults receiving treatment. The ban on travel for people living with HIV was finally lifted in April 2010 (UNAIDS, 2010b).

South Africa has the largest epidemic in the world with an estimated 5.6 million [5.4 million–5.8 million] people living with HIV in 2009 (UNAIDS, 2010a). In order to reduce this high prevalence rate, the HIV and AIDS and STI Strategic Plan for South Africa 2007-2011 aimed to reduce the number of new infections by 50% and increase access to treatment and support and care by 80% to all people diagnosed with HIV (SANAC, 2007). In order to meet these targets, the National HIV Counselling and Testing (HCT) Campaign was launched on 25 April 2010 with the aim of mobilising 15 million South Africans to know their status (UNAIDS, 2010b). By the end of 2010, 9.7 million South Africans had responded to the Presidents call, by testing for HIV (Department of Health, 2011; Motsoaledi, 2011) and by June 2011 thirteen million people had undergone counselling (South African Government, 2012).

2.3.9 Millennium Development Goals

Eight international development targets or Millennium Development Goals (MDGs) were set by world leaders in 2000 to create targets for advancing development, reducing poverty and improving health by 2015.

- Goal one is to eradicate extreme poverty and hunger;
- Goal 2 to achieve universal primary education;
- Goal 3 to promote gender equality and empower women;
- Goal 4 is to reduce child mortality;
- Goal 5 is to improve maternal health;
- Goal 6 to combat HIV and AIDS, malaria and other diseases;
- Goal 7 is to ensure environmental sustainability; and
- Goal 8 is to develop a partnership for development.

These goals were considered achievable and realistic; however the 2005 progress report for South Africa was not encouraging (Gow, 2008; Ndinga-Muvumba & Pharoah, 2008; Whiteside, 2008). The report in 2010 however showed improvements in interventions for malaria and HIV and measles immunisation with an additional 3.6 million people receiving ART in 2008 from 400,000 in 2003 (a growth of 900% in 5 years) (United Nations, 2010).

2.4 Overview of HIV epidemic in South Africa (SA)

South Africa is regarded as a middle income country (Karim & Karim, 2010) with a democratic political system. The population is divided into 4 racial categories (inherited from apartheid and continues to be used only for official purposes) Africans (79.4%), Whites (9.2%), Coloureds (8.8%) and Asians (2.6%). There are 11 official languages including English, namely: Afrikaans, isiNdebele, Tshivenda, isiXhosa, isiZulu, Sesotho sa Leboa, Setswana, Sesotho, siSwati and Xitsonga (Dickinson, 2005; Nattrass, 2004; Statistics South African, 2010).

In terms of the global competitiveness report 2010–2011, South Africa is at stage 2 of development[2] and ranked 54 out of 139 countries. SA fairs well in terms of institutions, intellectual property protection, property rights, and the financial markets. However the health of the workforce ranked 127th out of 139 countries (Schwab, 2010).

[2] There are 3 stages of development and 2 transitional stages.

South Africa with a population of 50 million people (0.7% of the global population) has an estimated 5.7 million (11.4%) people living with HIV and AIDS, the largest in the world (Bloom, Mahal & River Path Associates, 2001; Bradhan-Quallen, 2005; Brink & Pienaar, 2007; Fourie, 2006; Gilbert & Walker, 2002; Haacker, 2004; Lamptey, Ruckstuhl & Cates, 2003; McDonald & Roberts, 2004; Nattrass, 2004; Ndinga-Muvumba & Pharoah, 2008; Page, *et al.*, 2006; Quattek, 2000; Rehle, Thomas & Shisana, 2003; Rohleder, *et al.*, 2009; South African Government, 2010; UNAIDS, 2010a; Van Dyk, 1999; 2008; Whiteside & Sunter, 2000; WHO, UNAIDS, UNICEF, 2011). In SA the epidemic has impacted the economy and the health sectors through a decreasing life expectancy, increasing infant and child and maternal mortality and a negative impact on social development (Department of Health, 2011).

The epidemic in SA is characterised as been a 'generalised hyper-epidemic' where most South Africans are potentially at risk of HIV infection (Essex, *et al.*, 2002; South African Government, 2010, 2012; SANAC, 2011; Whiteside & Sunter, 2000). The primary means of HIV transmission is unprotected heterosexual sex (Bowser, *et al.*, 2004; Dickinson & Innes, 2004; Dickinson, 2005; Gilbert & Walker, 2002; Karim, 2000; Karim & Karim, 2005; 2010; South African Government, 2010, 2012; UNAIDS, 2004).

The South African National Department of Health has been monitoring the HIV prevalence trends by conducting the Antenatal Sentinel HIV and Syphilis Prevalence Survey annually since 1990. Mathematical modelling (UNAIDS Spectrum, Estimation and Projection Package (EPP) and Actuarial Society of South Africa 2000 (ASSA2000) mathematical models) are used to project new HIV infections (incidence), HIV associated morbidity and mortality and number of people eligible for antiretroviral treatment (ART) (Barnett and Whiteside, 2006; Department of Health, 2010a, 2011; Dickinson, 2003a; Karim & Karim, 2010; Page *et al.*, 2006; Piot, *et al.*, 2001; Rehle & Shisana, 2003; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside & Sunter, 2000). The antenatal survey[3] is based on an anonymous survey of pregnant women attending antenatal clinics in the public health sector throughout South Africa (Barnett & Whiteside, 2006; BER/SABCOHA, 2004; Department of Health, 2010a; Evian, Fox, MacLeod, Slotow & Rosen, 2004; Essex, *et al.*, 2002; Karim & Karim, 2010; South African Government, 2010; Whiteside & Sunter, 2000). Despite the biases inherent in antenatal HIV surveys as a result of convenience sampling, differentials in risk behaviours and contraceptive use, age distribution, education levels and migration patterns, this data provides information on the trend of HIV infection in the general population, HIV prevalence according to age and geographical location (Karim & Karim, 2010; Page, *et al.*, 2006; Rehle & Shisana, 2003; Van Niekerk,

[3] Used as an indicator to monitor the spread of HIV in the heterosexual population

2005; Whiteside, Barnett, George & Van Niekerk, 2003). According to Rehle & Shisana (2003) data from pregnant women may differ significantly from the general female population data and therefore extrapolations from antenatal clinic data should be made with caution. There has been a rise in HIV prevalence among pregnant women from 0.7% in 1990 to 28% in 2007 (Department of Health 2008) and 30.2% in 2010 (Department of Health, 2011) and the prevalence rate has stabilised over the past 4 years (South African Government, 2012).

There were 497 000 people newly infected with HIV and 360 000 AIDS related deaths in 2009 (Statistics South African, 2010). It is difficult to gauge the full extent of AIDS-related mortality because of the misclassification of AIDS deaths (Actuarial Society of South Africa, 2011; Harrison, 2009; Southern African Development Community (SADC), 2006; Van Niekerk, 2005; Whiteside, Barnett, George & Van Niekerk, 2003).

SA has a mature epidemic for two reasons. Firstly, there are a large number of people living with HIV and AIDS. Secondly, new HIV infections and AIDS deaths are converging to a level of between 400 000 and 500 000 per annum as depicted in Figure 2.4. The epidemic in SA is stabilising after experiencing the worst of the epidemic in the nineties (Nicolay, 2008; Poku, Whiteside, & Sandkjaer, 2007).

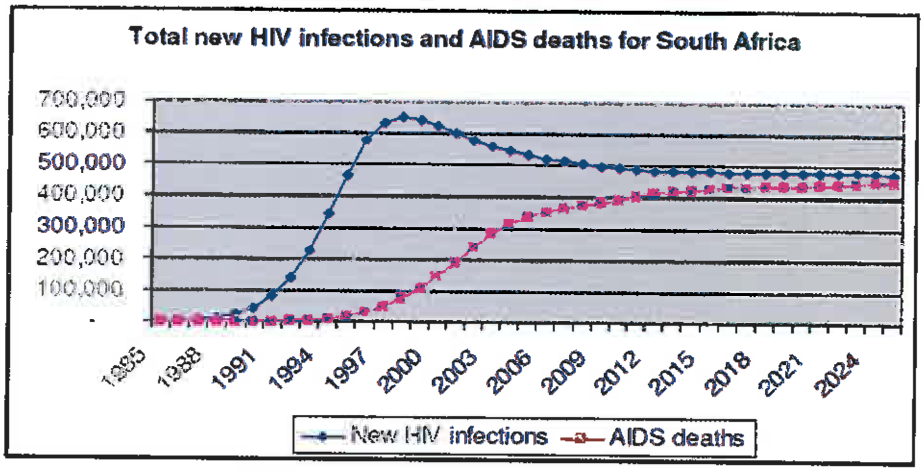


Figure 2.4. Total new HIV infections and AIDS deaths for SA projected till 2024 (Nicolay, 2008:2).

Life expectancy in SA is declining (Bowser, *et al.*, 2004; Haacker, n.d; Kauffman & Lindauer, 2004; Poku, 2008; Sunter, 1996) with an estimated 1,000 people dying each day due to AIDS related causes (UNAIDS, 2010b). South Africa had a declining population growth rate between 2001 and 2008 suggesting a possible link to the HIV and AIDS pandemic. In 2001 the HIV and AIDS infection rate for the South African population was 8.8%. This had increased to 11.6% in 2008 (South African Institute of Race Relations, 2008).

With the largest antiretroviral therapy programme in the world, South Africa is experiencing substantial public health benefits associated with improved treatment access (UNAIDS/WHO, 2009; UNAIDS, 2010a,b) but for every two people who start antiretroviral therapy, five individuals are newly infected with HIV (UNAIDS, 2009).

The Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment for South Africa in 2003 included the provision for antiretroviral therapy (ART) for free at public health facilities. In 2004 ART was provided in public hospitals and clinics and was added in 2005 to the 'prescribed minimum benefits' that medical aid schemes are now required to provide. Of the 1.5 million people who required these drugs in 2008, only 570,000 were receiving them (Connelly & Rosen, 2006; Charalambous, Grant, Day, Pemba, Chaisson, Kruger, Martin, Wood, Brink, and Churchyard, 2007; Department of Health, 2010a; Karim & Karim, 2005, 2010; Marais, 2007; Nattrass, 2004; Ndinga-Muvumba & Pharoah, 2008; Rosen, Ketlhapile, Sanne & DeSilva, 2008; Sember, 2008; UNAIDS, 2010b; Van Niekerk, 2005). By December 2010, almost 1.4 million people were receiving ART, which was only 55% of the people who were eligible to receive treatment (WHO, UNAIDS, UNICEF, 2011). In order to increase coverage the SA government introduced a new tender procedure for purchasing antiretroviral drugs in December 2010 which resulted in 53% decline in the cost of the antiretroviral drug, generating estimated savings of about R4.7 billion (*ibid*). The Department of Health has also committed additional financing (8.7% of gross domestic product (GDP) is spent on health) at national level R692 million was allocated for the 2012/13 financial year and R2, 276 billion for the 2013/14 financial year (Department of Health, 2010a; Motsoaledi, 2011). The Department of Health intends increasing the number of health centres providing ART from 2,205 to 4,000 in addition to announcing the revised guidelines for initiating HIV treatment to ensure more people are able to access treatment (Department of Health, 2010a; Motsoaledi, 2011). But this is not in line with the World Health Organization 2010 guidelines which recommends starting treatment for all patients with CD4 counts of below 350 cells/mm^3 and for all patients with TB regardless of their CD4 cell count (UNAIDS, 2010a; Whiteside, 2008; WHO, UNAIDS, UNICEF, 2011). South Africa's revised guidelines recommends that revised CD4 thresholds of 350 will apply only to infants younger than one year, HIV-positive pregnant women, and people co-infected with TB/HIV, and will not be universally extended (Department of Health, 2010b; Gerritsen, 2011). Therefore the remainder of the population will only be eligible for ARV treatment when their CD4 count was less than per 200 mm^3 or they were in the stage of HIV infection where almost any opportunistic infection could occur, including cancers such as Kaposi's sarcoma (Page, *et al.*, 2006; Whiteside, 2008).

In understanding the nature of the epidemic in SA, it is important to recognise that South Africans are both susceptible to the spread of HIV and vulnerable to its impact (Whiteside & Sunter, 2000). Figure 2.5 illustrates that HIV prevalence in SA differs according to gender, age groups and geographic area (Karim & Karim, 2005). For example; HIV prevalence is 21% among women aged 20-24 but only 5% among men in the same age group (Shisana, Rehle, Simbayi, Zuma, Jooste, Pillay, *et al.*, 2009).

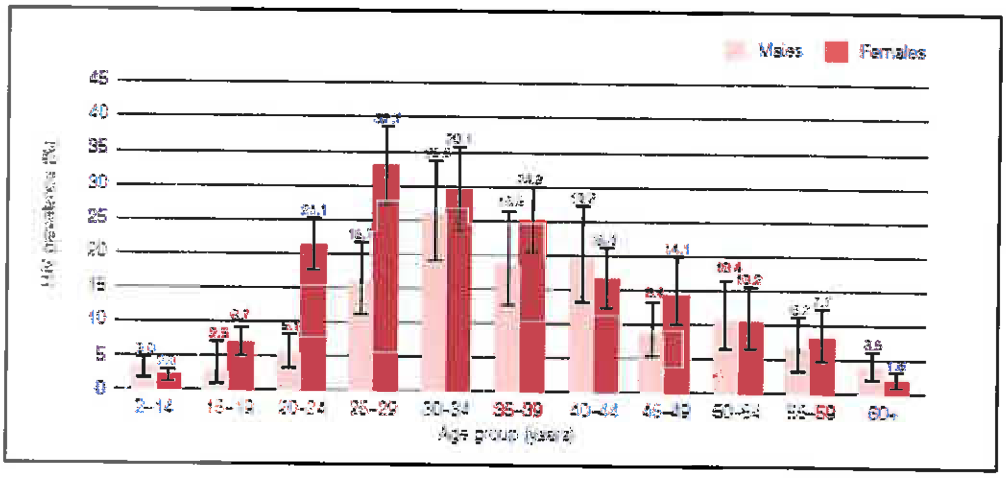
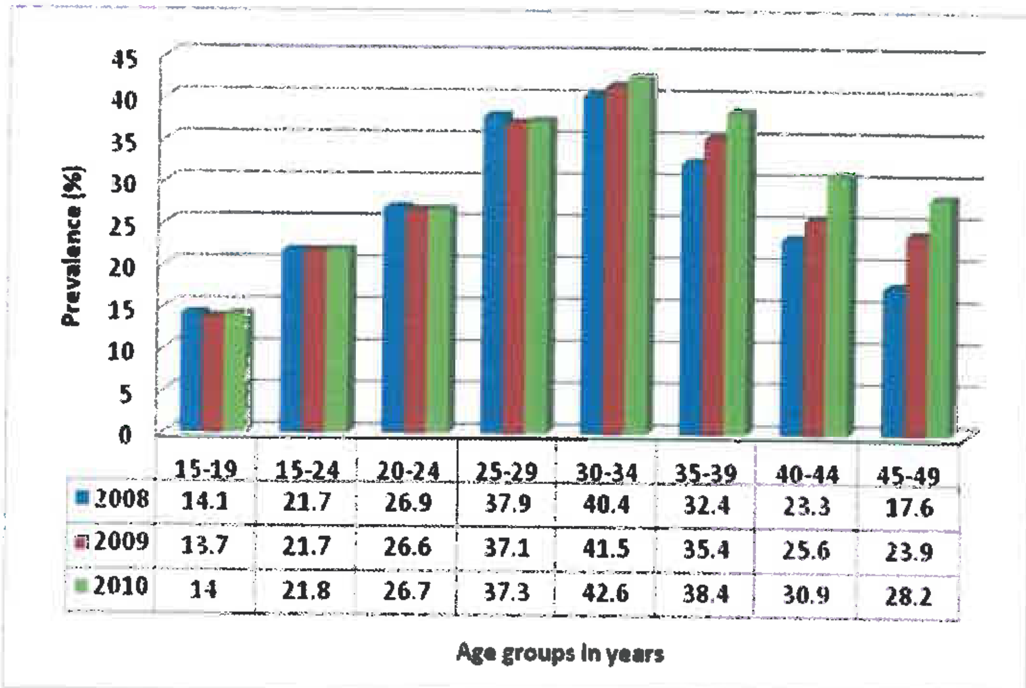


Figure 2.5. HIV prevalence in South Africa by age and sex, 2008. (Shisana , *et al.*, 2009:31).

The highest rates of infection are among the economically active population aged between 20 and 44 years old as illustrated in Figure 2.6 (Barnett & Whiteside, 2006; Bowser, *et al.*, 2004; Cohen, 2002; Department of Social Development, 2002; Dickinson, 2005; Fourie, 2006; Karim & Karim, 2005; 2010; McGreevey, Alkenbrack, Stover, 2003; Ndinga-Muvumba & Pharoah, 2008; Quattek, 2000; Poku, *et al.*, 2007; South African Government, 2012; Stevens, Apostolellis, Napier, Scott, Gresakm 2006; Sunter, 1996; Thurlow, Gow & George, 2009; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside & Sunter, 2000). This rate of infection has a devastating effect on social, economic and human development in SA as this section of the population comprises 39% of South Africa's total population (Karim & Karim, 2005; Statistics SA, 2010).



	15-19	15-24	20-24	25-29	30-34	35-39	40-44	45-49
2008	14.1	21.7	26.9	37.9	40.4	32.4	23.3	17.6
2009	13.7	21.7	26.6	37.1	41.5	35.4	25.6	23.9
2010	14	21.8	26.7	37.3	42.6	38.4	30.9	28.2

Figure 2.6. HIV prevalence in South Africa from 2008 to 2010. (South African Government, 2012:32).

2.4.1 Why does SA have such a high infection rate

Key drivers of the epidemic in southern Africa as identified by the Southern African Development Community (SADC) (2006) and depicted in Figure 2.7 include multiple concurrent partnerships and low levels of male circumcision. Male attitudes and behaviours, intergenerational sex, gender and sexual violence, stigma, lack of openness, untreated sexually transmitted infections (STIs) and lack of consistent condom usage were identified as significant contributing drivers of the epidemic. Social and structural factors such as population mobility, inequalities of wealth, cultural factors and gender inequality underline these drivers.

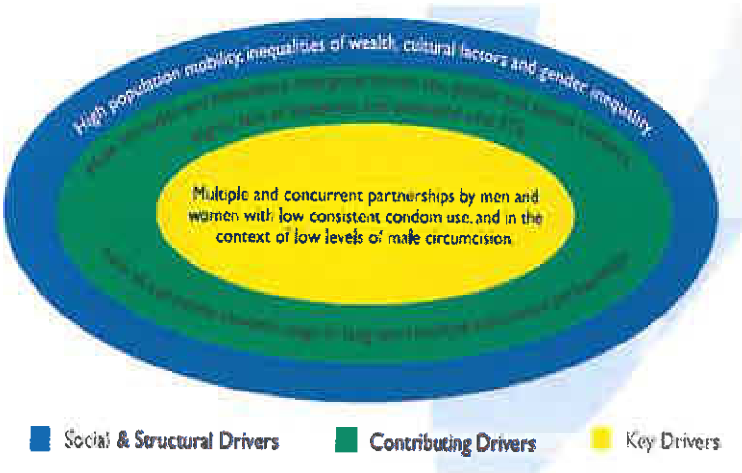


Figure 2.7. Drivers of the HIV Epidemic in SADC (SADC, 2006:3).

The SA government has been slow to respond to the AIDS epidemic. Karim & Karim (2005; 2010: 1) describe "*South Africa's response to the epidemic as a unique form of denialism in the highest echelons of political power*". From the time AIDS was discovered in SA in 1982 to 1994, little was done by the then apartheid government to control the spread of the HIV virus (Chigwedere, Seage, Gruskin, Lee & Essex, 2008; Fourie, 2006; Gilbert &Walker, 2002; Karim & Karim, 2010; Meintjes, Bowen & Root, 2007; Nattrass, 2004; Rohleder, *et al.*, 2009). The government since 1994 has not done much, but the matter was further complicated when President Thabo Mbeki together with the then Minister of Health questioned the science of AIDS and regarded antiretroviral (ARV) drugs as poisonous because they regarded poverty as the cause of AIDS and not HIV (Gow, 2009; Sember, 2008).

Without effective treatment an increasing number of people develop AIDS and die, resulting in increasing mortality (Whiteside & Sunter, 2000). However the SA government only started providing antiretroviral drugs in 2003 and only 140 000 persons with HIV and AIDS were treated by 2006, amounting to less than 25% of the number estimated to require treatment (Sember, 2008). The current government however has taken a strong stance in terms of HIV prevention and treatment by ensuring greater access to ARVs which is resulting in a decline in AIDS related mortality (Karim & Karim, 2010). The advances in treatment have provided hope to persons infected with HIV as the progression to AIDS and ultimately death can be delayed (Whiteside & Sunter, 2000).

HIV and AIDS threaten economic activity and social progress (Karim & Karim, 2005; 2010). HIV and AIDS affects the economically active population (Kauffman & Lindauer, 2004) and causes the death of skilled people, who are not easily replaceable. SA is highly dependent on skilled labour, but is currently experiencing a shortage and further loss of skilled staff as a result of the AIDS epidemic could seriously affect business and government operations (Fourie, 2006; Poku, *et al.*, 2007; Whiteside & Sunter, 2000). According to Cohen (2002) practitioners no longer believe that unskilled labour can be easily replaced because the replacement from the large pool of unemployed or under-employed labour is not a simple and costless process.

Mobility and labour migration are recognised as being catalysts for the high infection rate in SA. Its effects on the construction industry are discussed in chapter 3 (Bowser, *et al.*, 2004; Essex, *et al.*, 2002; ILO, 2001, 2008; Johnson & Budlender, 2002; Karim & Karim, 2005; Ndinga-Muvumba & Pharoah, 2008; Piot, *et al.*, 2001; UNAIDS, 2004).

Stigma and discrimination have also hampered prevention, treatment and testing efforts and remains a major barrier to effective action in this fight against HIV and AIDS (Bowser, *et al.*, 2004; Dickinson, 2005; Karim & Karim, 2005; Piot, *et al.*, 2001).

The other vectors for HIV transmission and the high prevalence rates in SA include poverty, underdevelopment, gender inequalities and the unpredictable drug supply. The health system is heavily taxed with the challenges that the virus presents and consequently many infected individuals are unable to access antiretrovirals (Bowser, *et al.*, 2004, Karim & Karim, 2005; Ndinga-Muvumba and Pharoah, 2008). Socio-economic factors such as income, education and employment status also affect HIV transmission (Development Works, 2002; Johnson & Budlender, 2002).

2.4.2 HIV prevalence by province

SA consists of 9 provinces (as depicted in Figure 2.8) each with differing prevalence rates (BER/SABCOHA, 2004; Department of Health, 2010a:31). Although prevalence rates have begun to stabilise the epidemic has already had a profound impact on the economic, education, and health sectors of the country (Kates, & Leggoe, 2005).

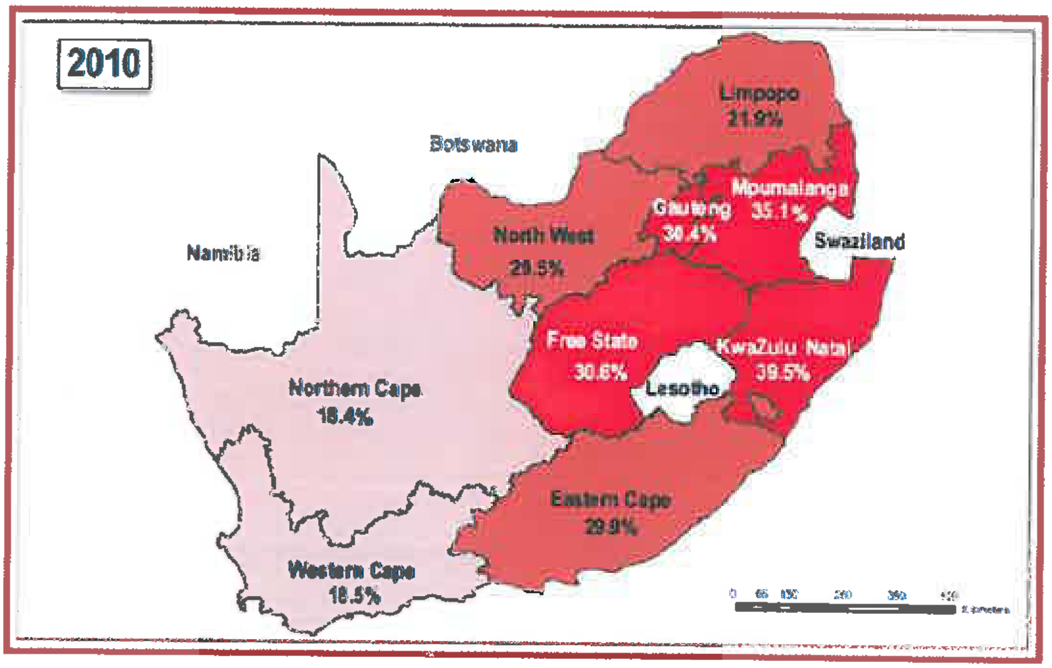


Figure 2.8. HIV prevalence trends among antenatal women by province, South Africa, 2010 (Department of Health, 2011:34).

The HIV infection is highest in the east coast and lowest in the west coast of South Africa (Karim & Karim, 2005; 2010). KwaZulu-Natal (KZN) is the "worst afflicted province" (Actuarial Society of South Africa, 2011; BER/SABCOHA, 2003; 2004; 2005; Bowen, *et al.*, 2008, Department of Health, 2010a; Dorrington, Bradshaw, Johnson & Daniel, 2006; George, 2006; Gilbert & Walker, 2002; Johnson & Budlender, 2002; Nattrass, Neilson, Bery, Mistry, Sievers, 2004; Nicolay, 2008; South African Government, 2010; Stevens, Apostolellis, Napier, Scott, Gresakm 2006; Thurlow, Gow & George, 2009:1; UNAIDS, 2010b; UNAIDS/WHO, 2008; Whiteside & Sunter, 2000), with studies indicating that 29% of KZN's working age population is HIV positive, compared to 5.9% in the Western Cape (Bowen, *et al.*, 2008). By 2025, two-fifths of the KZN adult population would have died from HIV and AIDS (Thurlow, Gow & George, 2009). Although rising, adult HIV prevalence is considerably lower in the Western Cape (16.9%), Northern Cape (17.2%), Eastern Cape (28.1%), Gauteng (29.8%), North West (30%), Mpumalanga (34.7%), Free State (30.1%) and Limpopo (21.4%) provinces (Department of Health, 2010a). The explanation for the wide variation in the geographical distribution of HIV infection used by Karim & Karim (2005; 2010) is the uneven population distribution.

KwaZulu-Natal has the highest prevalence rate (39.5%). The KwaZulu-Natal AIDS Action Unit was established by the South African government in 2000 to drive the province-wide response to HIV and AIDS by developing the HIV and AIDS Strategy for the Province of KwaZulu-Natal. The vision of this unit is an "AIDS-free KwaZulu-Natal by 2020" (Office of the Premier, 2006). Fourteen percent of the population and one in five adults are estimated to be HIV positive in Gauteng. The Free State and Mpumalanga has just less than half a million HIV positive people. The epidemic has grown rapidly in the Eastern Cape (6^{th} highest). The epidemic had a slow growth rate in Limpopo, the Northern Cape and the Western Cape. The Western Cape has just less than 300,000 HIV positive people and the lowest HIV prevalence rate in any single province, with one in 10 adults estimated to be HIV positive. (Nicolay, 2008; South African Institute of Race Relations, 2010).

2.5 Summary

This chapter explained the facts of HIV and AIDS and discussed HIV and AIDS in the global and national context. With the study objectives in mind it is important for business managers to understand the nature and context of HIV and AIDS, so that they can understand how HIV and AIDS affect's employees both in their personal and professional life. Chapter 3 goes on to discuss the South African construction industry and how it has been affected by HIV and AIDS.

CHAPTER 3

THE VULNERABILITY OF THE CONSTRUCTION INDUSTRY TO HIV AND AIDS

3.1 Introduction

This chapter discusses the nature of the construction industry with particular emphasis on the South African construction industry. The chapter further explores the vulnerability of the industry to HIV and AIDS.

3.2 The Construction Industry

The construction industry is essential to a nation's growth and a key sector in the nation's economy and its development in terms of wealth creation and quality of life for its people (Ibrahim, Roy, Ahmed & Imtiaz, 2010; Rwelamila, 2002). It is usually one of the top five employers in any economy (Simon-Meyer, 2005). The SA construction industry accounts for up to 70% (R1.2 trillion) of the nation's capital (Lanor, 2008).

The construction industry provides the physical infrastructure necessary for the country's development (Rwelamila, 2002) as it is primarily involved in the construction of buildings and other structures, heavy construction, additions, alterations, reconstruction, installation, maintenance and repairs. (Ibrahim, *et al.*, 2010; Merrifield, 1994; Simon-Meyer, 2005). The industry transforms the needs and aspirations of people into reality by physically implementing various construction development projects (Ibrahim, *et al.*, 2010).

The SA construction industry contributes 3% to the gross domestic product and employed over 1.1 million people in 2009 which is almost twice the number of people employed in the industry since the early 2000s (International Organization for Migration (IOM), 2010; Statistics South Africa, 2010). After two decades of decline, activity in the building industry increased rapidly from 2004 mainly due to spending for the preparation for the FIFA 2010 World Cup (ILO, 2010).

HIV and AIDS is a pandemic with serious implications for South Africa in general, and the South African construction industry in particular (Meintjes, Bowen & Root, 2007). According to the Department of Public Works (2004) the construction industry has the third highest incidence rate of HIV and AIDS per sector in South Africa. The epidemic threatens to reduce the overall construction labour force, increase labour turnover, shift the age structure and change the skill composition of the construction labour supply (Haupt, *et al.*, 2005a; Haupt & Smallwood, 2004). In addition to increasing costs and dwindling profits (Ahwireng-Obeng & Akussah, 2003), construction enterprises can expect declining output, diminishing quality and quantity of labour supplied (Barnett & Whiteside, 2006).

The workplace is generally not associated with the transmission of HIV and AIDS (Haupt *et al.*, 2005a), but it provides an ideal platform to reach workers through the development and implementation of workplace policies and programmes on HIV and AIDS (ILO, 2010). However the important role that companies play in addressing the pandemic has not been optimally utilised. In fact the response of corporate South Africa to HIV and AIDS has being slow, partial and erratic (Bendell, 2003; Bloom, Mahal & River Path Associates, 2001; Dickinson, 2004a; Haupt, Smallwood & Chileshe, 2005c; Oppenheimer, 2007). Over 30 years since the first discovery of HIV and AIDS, the majority of companies still feel AIDS is not their problem (Lim and Loo, 2000; Nattrass, *et al.*, 2004). A survey conducted by BER/SABCOHA showed that the construction industry was one of the least responsive industries (BER/SABCOHA, 2004). In a study conducted by Harinarain & Haupt (2010) it was found that only 10% of 123 building contractors in the KwaZulu-Natal province of South Africa had a HIV and AIDS policy in place despite the province having the highest prevalence rate. A survey by Bowen, *et al.* (2010a) of construction firms in the Western Cape found that most organisations had awareness policies in place but prevention and treatment policies were less common.

The construction industry needs to understand that it makes good business sense to address HIV and AIDS in the workplace because failure to do so results in decreased productivity due to increased absenteeism and also because sick workers are less productive. Fatigue results in frequent accidents in the workplace. The loss of employees to the disease results in increased costs to the company in terms of replacing those skills lost and/or training new employees. Ultimately the declining population growth rate will result in companies having a smaller skills base from which to choose their replacement employees. Labour costs will also increase as companies have to increase their contributions for medical aid and life and/or disability coverage (Ahwireng-Obeng & Akussah, 2003; De Villiers, 2003; Dickinson & Innes, 2004; Ellis, Smit & Laubscher, 2003; ILO, 2010; Meintjes, *et al.*, 2007; Rosen, Simon, Thea, & Vincent, 2003; Whiteside & Sunter, 2000).

The construction industry is vulnerable to the disease because of its fragmented nature (Chartered Institute of Building (CIOB), 2004). The industry encompasses numerous companies of various sizes and discourages permanent employment by encouraging subcontracting and labour only subcontracting (Construction Industry Development Board (CIDB), 2003; IOM, 2010; Haupt, *et al.*, 2005a). Other factors include the lack of leadership and the slow response in acknowledging and addressing the disease (Bowen, *et al.*, 2008; Bowen, *et al.*, 2010a, b; Meintjes, *et al.*, 2007). The construction industry was also particularly vulnerable to the pandemic for the following reasons:

- It employed a constantly changing labour force that worked on short-term contracts (Dickinson & Versteeg, 2004).
- It also employed permanent employees who moved between projects across the country and in other countries (*ibid*).
- The construction industry had a predominant migratory labour force, making it the prime contributor to the spread of HIV and AIDS as workers were prone to visit prostitutes or have multiple sexual partners when they are separated from their families for long periods of time (BER, 2000; Bowen, *et al.*, 2008; Bowen, *et al.*, 2010a,b; Bowser, *et al.*, 2004; Deacon & Smallwood, 2003; Dickinson & Versteeg, 2004; Essex, *et al.*, 2002; Haupt *et al.*, 2005a; ICAD, 2004; ILO, 2001, 2008; IOM, 2010; Johnson & Budlender, 2002; Karim & Karim, 2005; McGreevey, Alkenbrack & Stover, 2003; Meintjes, *et al.*, 2007; Ndinga-Muvumba & Pharoah, 2008; Piot, *et al.*, 2001; UNAIDS, 2004; Weston, Churchyard, Mametja, McIntyre & Randera, 2007; Whiteside & Sunter, 2000).
- Due to the high percentage (approximately 60%) of informal labour engaged in construction (Haupt, *et al.*, 2005a), they were less likely to protect themselves against HIV transmission (Barnett & Whiteside, 2006; Fourie & Schonteich, 2002; Meintjes, *et al.*, 2007) as a result of their lack of knowledge of their risky sexual behaviour and various misconceptions about the disease (IOM, 2010). Workers avoided personal responsibility by believing that the spread of the disease was attributable to external factors (Haupt & Smallwood, 2004), placing themselves and their families at risk (Meintjes, *et al.*, 2007).
- The informal nature of the industry which was largely unregulated was also a contributing factor (Barnett & Whiteside, 2006; Bowen, *et al.*, 2010a, b).
- The industry consisted of an aging workforce (older workers were those construction workers aged 40 years and older) (Dickinson & Versteeg, 2004; Haupt, *et al.*, 2005a; Haupt, Deacon & Smallwood, 2005b).

- The harsh environment that these older workers toil in also exposed them to numerous health threats (Deacon & Smallwood, 2003; Haupt, *et al.*, 2005b)
- The industry did not attract enough new young people as there was a decline in interest in careers in the construction industry (a worldwide phenomenon) (Haupt, *et al.*, 2005a, b).
- The construction industry focused on occupational safety rather than health (Deacon & Smallwood, 2003; Haupt, *et al.*, 2005b) so that health-related interventions were not undertaken nor supported (*ibid*).
- The construction sector had a large number of semi-skilled and unskilled workers (IOM, 2010) and are dependent on highly skilled people to direct these workers (CIDB, 2003) which further increased the industry's vulnerability to HIV and AIDS (Ahwireng-Obeng & Akussah, 2003; Meintjes, *et al.*, 2007). The predominantly semi/unskilled workers in a survey conducted by BER/SABCOHA (2005) suggested that HIV prevalence was higher among semi- and unskilled workers than among skilled and highly skilled workers. The survey found that the sector employment practices were usually the prime contributor to the spread of HIV and AIDS as it increased the risk of workers becoming infected (BER/SABCOHA, 2005; Dickinson & Versteeg, 2004; Haupt, *et al.*, 2005b). These patterns were similar to those found in studies by Evian, Fox, MacLeod, Slotow, Rosen (2004) and Colvin, Connolly & Madurai (2007) and Evian (2008) which showed that management had the lowest HIV prevalence and unskilled labour the highest.

Given these serious factors, HIV and AIDS posed a grave threat to the South African construction industry and according to Bowen, *et al.* (2010a, b) the construction industry in South Africa could, and must, do more.

Companies in SA are concerned about the high levels of HIV infections (Bloom, Bloom, Steven & Weston, 2006; ILO, 2010; Overseas Development Institute, 2007; Whelan, Dickinson & Murray, 2008) because absenteeism losses amount to R12 billion a year of which an average of R2 billion is attributed to HIV and AIDS (Moodley, 2006).

The largest study undertaken in South Africa among construction workers was by Bowen, Dorrington, Distiller, Lake and Besesar in 2008 where 10,243 construction employees from 55 companies nationwide participated in order to understand the degree of association between risk factors and the prevalence of HIV and AIDS. Other studies conducted in the construction industry included the study of older construction workers and their awareness of HIV and AIDS

(Haupt & Smallwood, 2003a), the awareness of HIV and AIDS among construction workers in general (Haupt & Smallwood, 2003b) and the relationship between age and worker perceptions, knowledge, beliefs, attitudes and behaviour (Haupt, *et al.*, 2005a) and the aspects of HIV and AIDS intervention strategies within the South African construction industry (Haupt, *et al.*, 2005c).

Bowen, *et al.* (2008) believe that in order to get the construction sector to act, a compulsory, industry-wide initiative funded via levies which include education, testing and treatment programmes and supported via formal certification as part of the completion of work certification process was needed. Meintjes, *et al.* (2007) also believed that the CIDB should be pressured to take on a leadership role in order to provide unifying action.

3.3 Summary

The consequences of ignoring the threat that HIV and AIDS poses to the construction industry can be catastrophic if the industry continues to ignore the warning signs. However the construction sector has not done enough in order to limit or prevent the impact of HIV and AIDS on its employees. If the construction industry wants to do well financially, they need a healthy, productive workforce. This in itself should be reason enough to take part in this fight against HIV and AIDS. By actively participating in this fight against HIV and AIDS, the construction industry can protect itself, improve the quality of life its employees and also assist the community. Chapter 4 goes to discuss the business case for addressing HIV and AIDS.

CHAPTER 4

THE BUSINESS CASE FOR ADDRESSING HIV AND AIDS IN THE WORKPLACE

4.1 Introduction

HIV and AIDS have a significant impact on South African business in terms of profits, the workforce and markets. An increased prevalence of employees with AIDS may result in increased costs. The costs of HIV and AIDS to businesses depends on the organisation, the skills levels of infected employees and how replaceable they are, the benefits it provides and the sector the organisation operates in. All these costs lead towards a loss in profit with a vicious spiral effect on businesses throughout the supply chain.

4.2 The business case for addressing HIV and AIDS in the workplace

"*Nine out of every ten people living with HIV will get up today and go to work.*" Juan Somavia, Director-General of the International Labour Organization (ILO, 2012). The workplace should be viewed as a gateway to HIV and AIDS prevention and treatment (Rosen, *et al.*, 2003; Van Dyk, 2008) and a place that bound employees through a shared sense of identity and community (UNAIDS/IOE, 2002).

Clem Sunter (1987) identified AIDS as a "wild card" in global business scenario's which was considered a significant threat in 1992. By 1996 the threat that AIDS posed to productivity was addressed (Sunter 1987, 1992, 1996; Whiteside & Sunter 2000).

HIV and AIDS had to be recognised and treated as any other illness in the workplace (ILO, 2002) because HIV and AIDS has a negative effect on business in terms of loss of employees, productivity and profits (UNAIDS/IOE, 2002; Thurlow, Gow & George, 2009; Whiteside, 2008)

The implications of no action included among others threats to profitability, corporate social responsibility and increased mortality of the workforce. The construction sector within South

Africa has been criticised for its lack of activities aimed at mitigating the impact of HIV and AIDS on its employees (George, *et al.*, 2009). The fragmented nature of the industry and lack of leadership has resulted in the sluggish response from the construction industry (Meintjes, *et al.*, 2007).

The workplace provides an ideal platform to reach workers (Ala, 2004; Bendell, 2003) through the development and implementation of workplace policies and programmes on HIV and AIDS (ILO, 2010). The workplace can be regarded as a community where people come together (ILO, 2002). However the important role that companies play in addressing the pandemic has not been optimally utilised because 31 years since the first discovery of HIV and AIDS, the majority of companies still feel AIDS is not their problem (Lim and Loo, 2000; Nattrass, *et al.*, 2004).

4.3 HIV and AIDS and the economy

In addition to HIV and AIDS being a social and health issue, it is also a threat to the economy. Both the macro and micro economy are affected by HIV and AIDS and that impact has to be considered by businesses (Ala, 2004; Lisk, 2002; Daly, 2000; Karim & Karim, 2005, 2010; Quattek, 2000).

4.3.1 Impact on the macro-economy

Macroeconomic impacts are difficult to measure due to the uncertainty in forecasting and analysis of economic performance. Several authors have tried to project the macroeconomic impact (Barnett & Whiteside, 2006; BER, 2006; BER/SABCOHA, 2004; Booysen, Geldenhuys, & Marinkov, 2003; Haacker, n.d) but these studies had different projections for the future, as they employed different methodological approaches when developing their models. The key question they were trying to answer was whether HIV and AIDS would affect and/or slow economic growth? Beck, *et al.* (2008); Karim & Karim (2005), Nattrass, (2004) and Quinlan & Whiteside (2006) found that the earlier models treated the disease as an exogenous influence that was added onto models derived on the presumption that there was no infection in the workforce. McPherson, Hoover & Snodgrass (2000:3) believed that HIV was currently an endogenous influence on most African countries that had adversely affected their potential for growth and development. The consensus therefore was that HIV and AIDS caused economies to grow more slowly (Barnett & Whiteside, 2006; Karim & Karim, 2005, 2010; Van Niekerk, 2005; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside, 2008)

The impact of HIV and AIDS on the macro economy includes the impact on the size and profile of the population, human capital, household impact, savings and investment, gross domestic product (GDP), poverty and income distribution, market size and characteristics; labour skills, direct foreign investment and fiscal pressures.

4.3.1.1 The impact on the size and profile of the population.

South Africa's population is expected to grow at a much lower rate due to the effects of HIV and AIDS. It is estimated to reach about 0.2% by 2025 (Dorrington, Johnson, Bradshaw & Daniel, 2006; Essex, *et al.*, 2002; Lisk, 2002; Page, *et al.*, 2006; Quattek, 2000; Smit, *et al.*, 2001; UNAIDS/IOE, 2002; Whiteside, 2008).

4.3.1.2 Human capital

HIV and AIDS results in human capital being lost which also results in the loss of workplace skills and knowledge. From an economic perspective HIV and AIDS threatens employment objectives and labour market efficiency due to declining productivity and loss of earnings (Bendell, 2003; Bollinger & Stover, 1999; Bowser; Mishra; Reback; Lemp, 2004; Haacker, 2004; Lisk, 2002; Poku, 2008; Simon, Rosen, Whiteside, Vincent & Thea, 2000). Lisk (2002) predicts that the male workforce will be 12% smaller and the female workforce will be 10% smaller by 2020. The quality of the future workforce was also a matter of concern. The loss of workers is resulting in a generation of orphans who will grow up without support and prematurely enter the labour force without the required skills. The ILO estimates that the workforce will be between 10-34% smaller in 10 to 15 years' time, as a result of AIDS (Barnett & Whiteside, 2006; Bollinger & Stover, 1999; Bowser; Mishra; Reback; Lemp, 2004; Casale & Whiteside, 2006; Daly, 2000; Department of Labour, 2000b; Essex, *et al.*, 2002; Haacker, n.d; Laubscher, 2000; ILO, 2003; The International Bank for Reconstruction and Development/The World Bank, 2008; Karim & Karim, 2005, 2010; Lisk, 2002; Nattrass, 2004; Page, *et al.*, 2006; Quattek, 2000; Smit, Visagie, & Laubscher, 2001; UNAIDS, 2003; UNAIDS/IOE, 2002; Van Niekerk, 2005; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside, 2008).

4.3.1.3 Household impact.

When a wage earner, who supports numerous members of his/her family, becomes sick, it results in a loss of income and an increase in medical expenses. The infected individuals death means a permanent loss of income and employee benefits as well as funeral expenses and the removal of children from school in order to save on educational expenses. Expenditure relating to HIV and AIDS amounts to 25% of urban household income and 50% of rural household income (Ala, 2004; Barnett & Whiteside, 2006; Bendell, 2003; Bollinger & Stover, 1999; Booysen, Geldenhuys, & Marinkov, 2003; Bowser, *et al.*, 2004; Centre for AIDS

Development, Research and Evaluation (Cadre), 2002; Department of Labour, 2000b; Essex, *et al.*, 2002; The International Bank for Reconstruction and Development/The World Bank, 2008; Karim & Karim, 2010; Lisk, 2002; Nattrass, 2004; Quattek, 2000; Rau, 2004; Rosen & Simon, 2002; Stevens, Weiner and Mapolisa & Dickinson, 2005; Van Niekerk, 2005; Whiteside, Barnett, George & Van Niekerk, 2003; Whiteside, 2008).

4.3.1.4 Decrease in savings and investment

Lower government revenues and reduced private savings could cause a significant decrease in savings and investment (Bendell, 2003; Bowser, *et al.*, 2004; Daly, 2000; Essex, *et al.*, 2002; Karim & Karim, 2005; Rau, 2004; UNAIDS/IOE, 2002) which resulted in slower formal sector employment (Bollinger & Stover, 1999; ILO, 2003).

4.3.1.5 Gross domestic product (GDP)

HIV and AIDS affected GDP (Ala, 2004; Bowser, *et al.*, 2004; Essex, *et al.*, 2002; ILO, 2003; Karim & Karim, 2005, 2010; Lisk, 2002; Overseas Development Institute (ODI), 2007; Smit, *et al.*, 2001; Rohleder, *et al.*, 2009; UNAIDS/IOE, 2002). The rate of decline varied per author. Stover & Bollinger (1999) predicted a 0.3% per annum decline in GDP, whereas Arndt & Lewis (2000) predicted a 1.6% per annum decline. Thurlow, Gow & George (2009) predicted that HIV and AIDS lowered GDP growth rate by 1.42% per year in South Africa which would result in the SA economy being 37% smaller in 2025 than it would be in the absence of HIV and AIDS. In certain scenarios, there can be an increase in GDP due to increased productivity and the decreasing population, with the result that the size of the economy shrinks but average income per capita, income inequality, and poverty barely changes (Casale & Whiteside, 2006).

4.3.1.6 Poverty and income distribution

Poverty and income distribution will be affected by HIV and AIDS. AIDS undermines countries' efforts to reduce poverty and improve living standards (Department of Labour, 2000b; ILO, 2001). Poorer households face a higher risk and are more vulnerable to the consequences of HIV and AIDS. Poor households are likely to be worse off and other households could find themselves driven into poverty (Bendell, 2003; Dickinson & Innes, 2004; Essex, *et al.*, 2002; Haacker, 2004; Lisk, 2002; SANAC, 2007). Income distribution will change due to the loss of the income earner or as other members of the household takes time off work to care for the sick. At the same time, the household's needs increase because of higher medical expenses (Haacker, 2004).

4.3.1.7 Market size and characteristics

Market size and characteristics are also threatened by HIV and AIDS due to changes in the size and profile of target populations, levels of disposable income, and diversion of spending to AIDS-related priorities (Ala, 2004; Daly, 2000). The epidemic will not greatly affect the export industries, but the domestic market will be hardest hit due the high prevalence rates in communities and their limited resources (Dickinson, 2004a).

4.3.1.8 Infection rates differ by skill class.

Semi-skilled[4] and unskilled[5] workers have a higher infection rate than highly skilled[6] workers (Ala, 2004; Arndt & Lewis, 2000; Barac & Otter, 2001; Bendell, 2003; BER/SABCOHA, 2004, 2005; Karim & Karim, 2010; Kyereh & Hoffman, 2008; Smit, *et al.*, 2001). But the problem is exacerbated by the skills shortage that SA in facing (Page, *et al.*, 2006; Whiteside & Sunter, 2000). The morbidity and mortality of skilled workers impose higher costs on firms (Rosen, Feeley, Connelly & Simon, 2006, 2007) as the skills shortage allows skilled employees to benefit from greater employment opportunities and higher wages (Marais, 2007; Nattrass, 2004; Quattek, 2000).

The skilled categories been affected by HIV and AIDS is depicted in Table 4.1. Prevalence increases from 7.2% to 18.3% in 2015 for highly skilled workers, i.e. one in five highly skilled workers could become infected. HIV prevalence increases from 12,1% and 14,3% respectively in 2000 to 25,4% and 27,6% in 2015 for skilled and unskilled workers (Smit, *et al.*, 2001).

Table .4.1. The impact of HIV and AIDS on the SA's labour Force: 2000 to 2015 (Smit, Visagie, & Laubscher, 2001:12).

Year	Labour Force (millions)		HIV prevalence (%)			AIDS prevalence (%)		
	no-Aids	incl. AIDS	Highly skilled	Skilled	Semi & unskilled	Highly skilled	Skilled	Semi & unskilled
2000	14.5	14.4	7.2%	12.1%	14.3%	0.3%	0.5%	0.6%
2005	15.8	15.1	13.3%	20.2%	22.8%	1.4%	1.9%	2.2%
2010	17.2	15.1	16.7%	23.8%	26.3%	2.7%	3.5%	3.9%
2015	18.7	14.8	18.3%	25.4%	27.6%	27.6%	4.2%	4.7%

The epidemic also affects the ability of a country to attract foreign direct investment and increases fiscal pressures because governments have to spend more on health and welfare needs which results in budget deficits (Ala, 2004; Lisk, 2002).

4.3.2 Impact on the micro-economy

The epidemic has the following micro economic effects or impacts on the workplace which are

[4]semi-skilled - (of work or worker) needing or having some training (The South African Pocket Oxford Dictionary of current English, 2001:879)
[5] unskilled - (of work or worker) lacking or not needing, special skill or training (The South African Pocket Oxford Dictionary of current English, 2001:1069)
[6] skilled - (of work or worker) requiring or having skill or special training (The South African Pocket Oxford Dictionary of current English, 2001:907)

also depicted in Figure 4.1:

- high morbidity (sick employees who have to take sick leave) and mortality (death) rates;
- increased absenteeism as employees take time off to care for sick family members or to attend funerals of friends, colleagues or family members who have died of AIDS;
- increased labour turnover through death or early retirement, resulting in increased training costs;
- low staff morale with employees resenting taking on, or refusing to take on, additional responsibilities for colleagues who are sick;
- a culture of stigma and fear of infection, further lowering staff morale as employees refuse to work with colleagues infected with HIV;
- loss of productivity due to high morbidity, absenteeism and mortality in the workplace;
- decrease in work performance due to the loss of experienced skilled workers who are difficult and expensive to replace;
- increased cost of employee benefits (such as health and medical aid);
- higher production costs stemming from higher health-related expenses;
- increased number of accidents due to fatigue and illness; and
- declining profits (Barnett & Whiteside, 2006; ILO, 2002; Fourie, 2006; Page, *et al.*, 2006; Sunter, 1992; 1996; Van Dyk, 2008; Whiteside, 2008; Whiteside & Sunter, 2000).

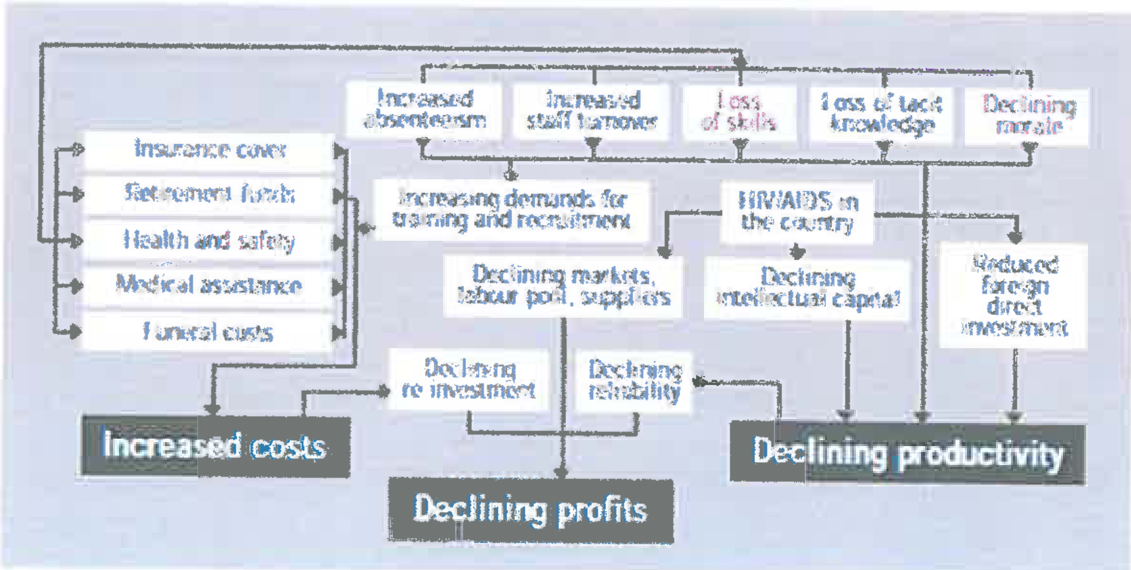


Figure 4.1. The impact of HIV and AIDS on enterprises (Daly, 2000:15, adopted ILO, 2002: module 1:10)

4.4 Why should companies get involved?

"*... because HIV/AIDS is undermining tomorrow's world—today*" (Bloom, Rosenfield & River Path Associates, 2000:517).

Business needs to get involved because business is first and foremost a profit-oriented venture and needs to protect its bottom line. Business needs a thriving economy, and it needs healthy workers (Ala, 2004; Barnett & Whiteside, 2006; Bloom, Bloom, Steven & Weston, 2006; Bloom & Buve, 2007; Bloom, Rosenfield & River Path Associates, 2000; Kyereh & Hoffman, 2008; Nattrass, *et al.*, 2004; Whiteside & Sunter, 2000).

4.4.1 Human capital is lost

Human capital is lost, HIV and AIDS affects the economically active population (the workers aged between 20 and 49 years) hardest (Barnett & Whiteside, 1999; Bloom, *et al.*, 2000; Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000; Bowser, *et al.*, 2004; Business Action for Africa (BAA), 2007; Cohen, 2002; Daly, 2000; Dickinson, 2003a,b; Dickinson, 2005; Dickinson, 2006a; Evian, 2008; George, *et al.*, 2009; ILO, 2001, 2002, 2008; Lamptey, *et al.*, 2003; Lim & Loo, 2000; Miller, 2000; Nattrass, 2004; Oppenheimer, 2007; Poku, 2008; Rau, 2004; Rosen, *et al.*, 2003; Santis, Whitman, Venkatapuram, Rosenblum, Rosati & Palakurthi, 2003; UNAIDS, 2004; UNAIDS/IOE, 2002; Whiteside & Sunter, 2000). The ILO estimates that 28 million employees globally have been lost to date due to HIV and AIDS and projects that 74 million would be by 2015 (ILO, 2005). Due to the enormous impact of HIV and AIDS, companies are faced with an increasing number of sick and dying employees and this is therefore likely to be the primary driver of action by business (BAA, 2007; Bloom, Bloom, Steven & Weston, 2006; George, *et al.*, 2009). The high infection rate among the economically active population has serious implications for South Africa's workforce (Thurlow, Gow & George, 2009) in terms of the reduction in labour supply loss of and earnings and valuable skills and experience (Cohen, 2002). Figure 4.2 depicts the HIV prevalence in the SA workforce by age and sex (Colvin, Connolly & Madurai, 2007).

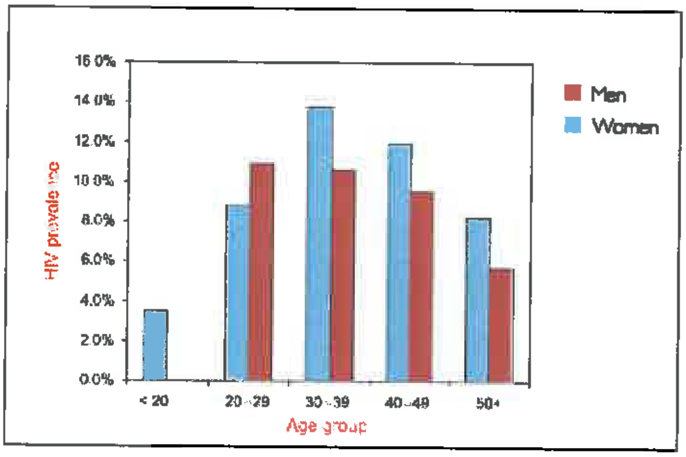


Figure 4.2. HIV prevalence in South African workplaces by sex and age-group (Colvin, Connolly & Madurai, 2007:15).

According to Miller (1987) people infected with HIV should remain working wherever possible because work allowed them to earn a regular income and also provided a daily routine. Due to the long incubation period, work provided a distraction away from the illness, a better quality of life, psychological and social benefits (Walch, Lezama & Giddie, 2005). Rosen, *et al.* (2000b) conducted a study and found that the present value of a new HIV infection would fall by 9% if employees' average life expectancy could be extended for one year, by 25% for a three year extension, and by 38% if five more years of productive life could be achieved. The benefits of retaining skilled and experienced employees included reduction in management time spent coping with employee deaths and high turnover rates; reduction in the adverse impact on the morale of the workforce and increased time to implement strategies to manage HIV, such as training replacement employees (Nattrass, 2004; Rosen, *et al.*, 2000b).

4.4.2 Working environment

The working environment is a place where most people spend a large amount of their time. Therefore the workplace is an ideal setting in which to address HIV and AIDS (BER/ SABCOHA, 2005; ILO, 2010; Nattrass, *et al.*, 2004). Unfortunately, the corporate sector is not using this platform effectively and the response of the construction industry has been slow (BER/SABCOHA, 2005; Dickinson & Innes, 2004; ILO, 2010).

4.4.3 Business resources

Business has the skills, imagination, innovation, creativity, mass communication skills, information, marketing and the drive to enhance their image and to assist with increasing employee morale (Ala, 2004; Bendell, 2003; BER/SABCOHA, 2004; Bloom, Mahal & River Path Associates, 2001, Bloom, Rosenfield & River Path Associates, 2000; Nattrass, *et al.*, 2004; Weston, Churchyard, Mametja, McIntyre & Randera, 2007) Business must grasp the opportunity to make a difference (Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000).

4.4.4 The business case

There is a strong business case for the corporate response against AIDS (Lutalo, 2006) as the pandemic is having an extensive financial impact on business (BER/SABCOHA, 2004; Evian, 2008; George, 2006). Firms experience increased costs and decreasing profits as a result of falling productivity, increased labour costs, increased absenteeism from work due to morbidity and attendance at funerals, increase recruitment and training costs, decreasing staff morale and the loss of skills and experience. Fatigue results in frequent accidents in the workplace. The loss of employees to the disease results in increased costs to the company in terms of replacing those skills lost and /or training new employees. In addition, stigma and discrimination have resulted in the violation of fundamental rights at work (Ala, 2004; BAA, 2007; BER, 2000; BER/SABCOHA, 2004, 2005; Bendell, 2003; Bloom, Mahal & River Path Associates, 2001; Bloom, Rosenfield & River Path Associates, 2000; Colvin, Connolly & Madurai, 2007; Daly, 2000; Dickinson, 2004a,b; Dickinson, 2006a; ILO, 2010; Kyereh & Hoffman, 2008; Lutalo, 2006; Nattrass, *et al.*, 2004; Oppenheimer, 2007; ODI, 2007; Rosen, Feeley, Connelly & Simon, 2007; Rosen, Vincent, MacLeod, Fox, Thea & Simon, 2004; Rothberg & Van Huyssteen, 2008; Whiteside & Sunter, 2000). It therefore makes good business sense to address HIV and AIDS in the workplace.

4.4.5 Declining population growth rate

Ultimately the declining population growth rate will result in companies having a smaller skills base from which to choose their employees. Labour costs will also increase as companies have to increase their contributions for medical aid and life and/or disability coverage (Dickinson, 2004a, b; 2006a; ILO, 2010; Whiteside & Sunter, 2000).

4.4.6 Increased pressure from clients

Recent increased pressure from clients to implement a HIV and AIDS policy has resulted in companies getting involved (Harinarain & Haupt, 2011a). Unions and internal stakeholders (employees) have also driven companies to respond (Dickinson & Innes, 2004).

4.4.7 Pace of vaccine development

Although the pace of vaccine development has picked up there is still no cure for AIDS. But even following a major breakthrough, trials and distribution would take many years (Bloom, *et al.*, 2000; Miller, 2000). The best defence at the moment is information. Prevention campaigns have had a significant impact, with information moving faster than the disease. Antiretroviral therapy improves the quality of people's lives and allows them to keep working (Bloom, *et al.*, 2000; Lim and Loo, 2000; O'brien, & Koerkenmeier, 2001; Walch, Lezama & Giddie, 2005).

4.4.8 Corporate social responsibility (CSR)

Companies are being pressured to make a positive contribution to society in the fight against HIV and AIDS via CSR (Barnett & Whiteside, 2006; Bendell, 2003; Bloom, Mahal & River Path Associates, 2001; Dickinson, 2004b; George, *et al.*, 2009; Nattrass, *et al.*, 2004; ODI, 2007). CSR is the responsibility an organisation takes for the impact of its corporate activities on the various stakeholders with whom it interfaces and whom it affects (e.g. employees, customers, and communities) and on the environment (Murray & Dainty, 2009). Failure by firms to address AIDS may impact negatively on their reputation and, consequently, their bottom line. Conversely, high profile AIDS programmes involving local communities could have a positive impact on the brand of a company, enhance the company's image (Bloom, Bloom, Steven & Weston, 2006; Dickinson & Stevens, 2005) and also assist communities in which workers live (ODI, 2007; Oppenheimer, 2007). The risk to their reputation may be the key motivator for businesses in certain sectors to take action against HIV and AIDS (Lutalo, 2006).

4.4.9 Failure to respond can be more costly

Business can make a difference with the right interventions and can add value due to its diverse nature (Bloom, *et al.*, 2000). Companies have realised that failure to respond can be more costly than HIV and AIDS mitigation strategies (Bendell, 2003; Bloom, Bloom, Steven & Weston, 2006; George, 2006; Rosen, *et al.*, 2000b). According to Rosen, Feeley, Connelly & Simon (2006, 2007) HIV prevalence in the workforce ranged from 5%-37% and the average cost was 0.5-5.6 times the average annual compensation for every employee lost to AIDS. Labour cost increases as a result of AIDS was estimated between 0.6%-10.8% (*ibid*).

4.4.10 Cost of treating an HIV-infected person has dropped

The cost of treating an HIV-infected person has dropped considerably resulting in companies reassessing their situation with regard to the provision of treatment (George, *et al.*, 2009). This has given business the incentive to provide treatment for employees (ODI, 2007).

4.4.11 Skilled construction workers

The construction industry needs to respond to the epidemic because operators/drivers (semi-skilled workers) have the highest prevalence (21%) of HIV, followed by skilled construction workers and then labourers according to a study by Bowen, *et al.*, (2008). This is important because skilled workers cannot easily be replaced and are therefore usually more permanent than general labourers (Bloom, Mahal & River Path Associates, 2001; Bowen, *et al.*, 2008). Bloom, Mahal & River Path Associates (2001) found that it could take up to 24 weeks to replace a skilled worker. Foremen and site staff tend to have fairly high skill levels and, although less likely to have HIV and AIDS compared to operators/drivers, are also high risk groups (Bowen, *et al.*, 2008).

Although the annual number of people newly infected with HIV has dropped since their peak in the late 1990s, this is still occurring at an unacceptably high rate: between 2.5 and 3 million people annually for the past five years (WHO, UNAIDS, UNICEF, 2011). This is where business can play a crucial role in fighting the epidemic.

The most important reason why business involvement is necessary is to protect its most valuable asset, its workers. Improving the quality of life of their workers will positively impact on productivity.

4.5 Summary

In order to businesses to ensure long term sustainability they need a healthy productive workforce. In order ensure this business needs to manage the micro-economic impacts of HIV and AIDS. Chapter 5 goes on to discuss the manner in which business can manage the impact of HIV and AIDS.

CHAPTER 5

THE WORKPLACE RESPONSE TO HIV AND AIDS AND THE CHALLENGES FACED

5.1 Introduction

Business managers need to put their knowledge about the nature of the HIV and AIDS pandemic and their effect on the workforce into practice via HIV and AIDS policies and programmes. The six tasks that both new and existing firms could use to develop their own policies and programmes are discussed in this chapter as well as the potential challenges they would face in implementing these in their workplaces.

5.2 How can companies get involved?

Business can make a tremendous contribution in the fight against HIV and AIDS (Ala, 2004). The workplace is an ideal platform to launch HIV and AIDS prevention and care programmes. Despite the fact that workers have different cultural and social backgrounds and different first languages, at the workplace all employees share the same organisational culture, with the same goals, vision and rules (Page, *et al.*, 2006; UNAIDS/IOE, 2002; Van Dyk, 2008). To achieve this contribution workplace strategies are necessary.

HIV and AIDS workplace strategies aims primarily to manage the risk to affected employees by prevention or reducing the number of new infections, managing the current HIV infection and AIDS prevalence and providing treatment, care and support which ensures a healthy workforce, increases productivity and reduces absenteeism (Ala, 2004; Department of Labour, 2000b; Karim & Karim, 2005; Nattrass, *et al.*, 2004; Rosen, Simon, Thea & Vincent, 2000a; Simon, *et al.*, 2000).

5.3 HIV and AIDS programmes

Van Dyk (2008) developed a framework of six tasks illustrated in Figure 5.1 that both new and existing firms could use to develop their own policies and programmes. The type of services offered by firms could depend on its size (*ibid*).

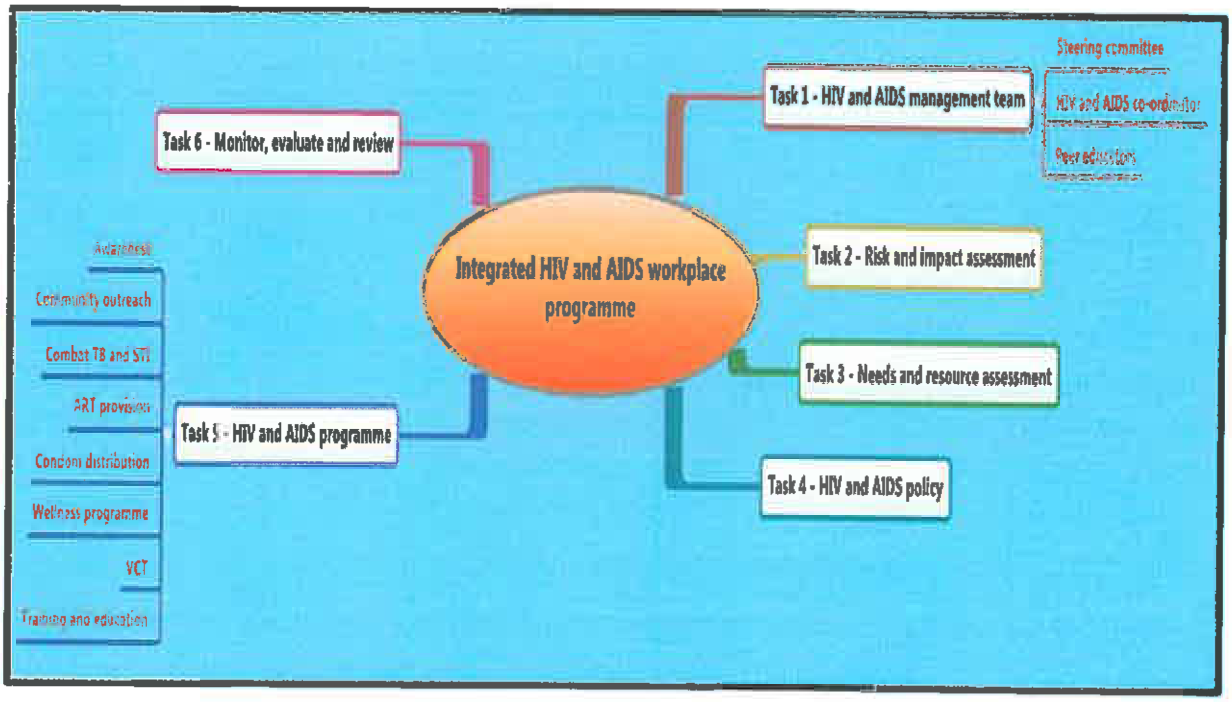


Figure 5.1. An integrated HIV and AIDS workplace programme (Van Dyk, 2008:463).

Each of the six tasks for developing an integrated HIV and AIDS strategy for the workplace are discussed in the following sections.

5.3.1 Task 1-Establish a representative HIV and AIDS management team

The first task would be to establish an HIV and AIDS management team. This process requires top management commitment, strong leadership and consultation and inclusion of all parties involved (Ala, 2004; Van Dyk, 2008).

Leadership at all levels and in all sectors is critical in addressing HIV and AIDS (Bendell, 2003; BER/SABCOHA, 2005; BAA, 2007; Dickinson, 2006a; ILO, 2002, 2003; 2008; Paul, 2003; Rau, 2004). Leadership in the context of HIV and AIDS can take many forms such as; for example:

- Championing the course for corporate citizenship on HIV and AIDS;
- Promoting cross-sector HIV and AIDS partnerships with for example subcontractors and suppliers;

- Acting as a catalyst to bring different organisations together to work on joint HIV and AIDS projects;
- Facilitating the transfer of innovative solutions;
- Demonstrating support for infected or affected employees and their families;
- Using platforms to educate customers and suppliers;
- Taking a principled stance on human rights issues;
- Community engagement
- Serving as role models to employees and to peers in other organisations (Department of Labour, 2000b; Rau, 2004).

A steering committee would need to be formed to draft and implement the workplace policy and programme by assessing the risks and needs of the workplace (Van Dyk, 2008). Peer educators would also be required as they were generally effective in raising awareness and communication among staff (Bendell, 2003; Haupt, *et al.*, 2005a; ILO, 2002; Page, *et al.*, 2006; Paul, 2003; Rau, 2002, 2004; Van Dyk, 2008; Van Wyk, 2007). According to Dickinson (2002:24) peer educators are regarded the '*foot soldiers*' in the 'war against AIDS'. They were volunteers from the workforce who received a basic level of training on HIV and AIDS so that they could communicate with their co-workers (Dickinson, 2002, 2005). The recommended ratio for peer educators in the workplace was one peer educator to every 50 workers, which translated into approximately 150,000 peer educators nationwide (Dickinson, 2006b).The advantages of peer education include, *inter alia*:

- Accessing people infected with HIV or vulnerable to infection;
- Assisting with company-wide initiatives, such as voluntary counselling and testing;
- Giving formal presentations to colleagues on HIV and AIDS;
- Having informal discussions;
- Providing a first line of confidential advice to co-workers;
- Referring where necessary to other sources of help such as occupational health practitioners; and
- Engaging in community projects, generally in the form of visits or talks to community groups (Dickinson, 2005; Dickinson, 2006b; Dickinson, 2007; ILO, 2002; Van Dyk, 2008).

5.3.2 Task 2-Assess the risk and impact of HIV and AIDS on the specific workplace

Strategies need to be developed to understand, assess and respond to HIV and AIDS in the workplace by assessing their current prevalence, risk profiles as well as assessments of the direct and indirect costs of HIV and AIDS (Van Dyk, 2008).

5.3.2.1 The cost of HIV and AIDS to business

HIV and AIDS is a growing concern to businesses as is it increases labour costs estimated to be (between 1% and 6%) and therefore undermines economic growth and threatens the competitiveness of industries (Feeley, Bukuluki, Collier, Fox, 2004; Karim & Karim, 2005; Kauffman & Lindauer, 2004; Laubscher, 2000; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Vincent, MacLeod, Fox, Thea, Simon, 2004; Stevens, *et al.*, 2005). Funds spent on HIV and AIDS mitigation strategies should be regarded as an investment in employees, because failure to respond could be more costly than limiting the impact of disease (du Bruyn & Venter, 2006; George, 2006; George, Gow & Whiteside, 2009). The evidence on the cost estimates of HIV to companies after three decades of intensive work is unavailable to the public as these studies were conducted by private companies (Dickinson, 2003a,b; Stevens, *et al.*, 2005). The reports that HIV and AIDS have profound financial impacts on businesses come from a few intensive case studies (George, Gow & Whiteside, 2009) which also do not allow for comparisons across companies because of the different ways the epidemic is reported such as, for example a percentage of the wage bill or a percentage of profits (Whiteside & Sunter, 2000). According to Whiteside & Sunter (2000) HIV and AIDS should be viewed as a tax that could add between 7% and 8% to the cost of doing business.

Rosen, Thea, Simon, Vincent, MacLeod (2000b) developed a simple formula by which companies could calculate the total cost to company of new HIV and AIDS infections, namely

$$\text{NoE} \times HIV_i - N_0N_i \times C_CN_i = TC$$

Where,
NoE - Number of employees in the workforce
HIV_i - HIV incidence
N_oN_i - Number of new HIV infections among employees
C_cN_i - Cost to the company per new HIV infection
TC - Total cost to the company of new HIV and AIDS infections among employees.

Given this formula, companies need to understand the costs that HIV and AIDS could impose on them. But it must be noted that these calculations can only be carried out if the organisation has a HIV and AIDS programme in place by which reliable data can be gathered. In order to further understand these costs, Figure 5.2 illustrates the three types of costs incurred by a company, namely direct costs such as increased financial outlays by the company, indirect costs in the form of reduced productivity and systemic costs that result from the cumulative impact of multiple HIV and AIDS cases (Dickinson & Innes, 2004; Lutalo, 2006; Rosen, Simon, Thea & Vincent, 2000a; Whiteside & Sunter, 2000).

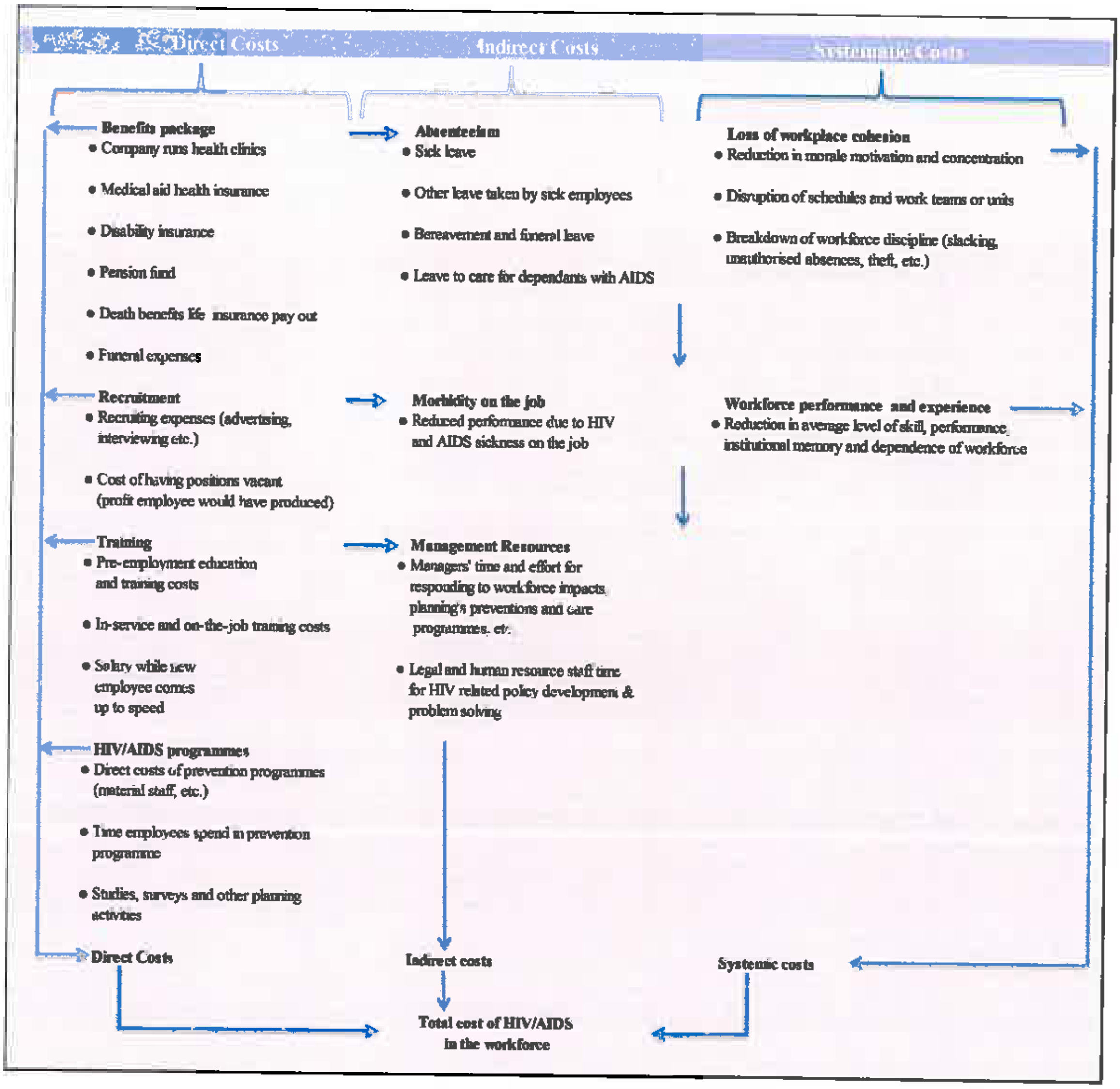


Figure 5.2. The costs incurred by companies (Whiteside & Sunter, 2000:112)

Direct costs are company expenses that usually appear on the income statement and are easy to quantify. Direct costs include:

- medical costs;
- pension and provident fund contributions;
- service gratuities;
- death or funeral benefits; and
- recruitment and training of replacement employees.

Indirect costs are more significant and substantive but are harder to quantify. These costs include

- reduced productivity;
- reduced efficiency of a workforce due to less experience and less skill;
- recruitment and training costs;

- production disruption;
- increasing staff turnover;
- ill-health retirements;
- increased leave;
- decreasing employee morale;
- increased supervisor's time in managing the ill employee;
- the costs to production until a replacement is hired and initially lower productivity of the new employee;
- disruption of work teams;
- increased absenteeism from work due to morbidity and attendance at funerals;
- loss of experience as individuals are forced to leave their jobs;
- costs of ensuring occupational health and safety standards are adequate;
- dealing with prejudice among staff when some are HIV-positive;
- ensuring that staff members' HIV status remains confidential; and
- diverted management attention from strategic and operational issues and an imposed burden on managers who must cope with high workforce morbidity and mortality.

Indirect costs also arise from absenteeism which could potential account for 52% of the costs as a result of illness, funerals, and family responsibility and from lower productivity when at work, commonly known as 'presenteeism'. An average of 35.4 more sick days were taken by employees who died of AIDS related causes and an average of between 7 and 25 days were spent by supervisors assisting each affected employee in their last year of service. Costs rose consistently with job level, that is the costs associated with someone in a managerial position was much more than unskilled worker. Most of these were hidden costs and in some cases they only became apparent when the disease was further advanced.

Finally, systemic costs arose from less tangible losses of social capital, reduction in morale, loss of experience and skills in the workforce and institutional memory (Ahwireng-Obeng & Akussah, 2003; Arndt & Lewis, 2000; BAA, 2007; Barac & Otter, 2001; Barnett & Whiteside, 2006; BER/SABCOHA, 2004, 2005; Bollinger & Stover, 1999; Booysen, Geldenhuys, & Marinkov, 2003; Daly, 2000; De Villiers, 2003; Department of Labour, 2000b; Dickinson, 2003a,b; Dickinson & Innes, 2004; Du Bruyn & Venter, 2006; Ellis, *et al.*, 2003; Essex, *et al.*, 2002; George, Gow & Whiteside, 2009; Haacker, n.d; Hoffman, 1997; ILO, 2002, 2008, 2010; Kauffman & Lindauer, 2004; Lake, 2006; Lamptey, *et al.*, 2003; Laubscher, 2000; Lisk, 2002; Lutalo, 2006; Marais, 2007; Meintjes, *et al.*, 2007; Nattrass, 2004; Nattrass, *et al.*, 2004; ODI, 2007; Piot, *et al.*, 2001; Quattek, 2000; Rau, 2004; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, Simon, Thea &

Vincent, 2000a; Rosen, *et al.*, 2003; Rosen, Thea, Simon, Vincent, MacLeod, 2000b; Rosen, Vincent, MacLeod, Fox, Thea, Simon, 2004; Simon, Rosen, Whiteside, Vincent and Thea, 2000; Smit, *et al.*, 2001; Stevens, *et al.*, 2005; UNAIDS, 2004; UNAIDS/IOE, 2002; U.S. Agency for International Development (USAID), 2001; Weston, Churchyard, Mametja, McIntyre & Randera, 2007; Whiteside and Sunter 2000).

According to Simon *et al.* (2000) three other critical pieces of information were required when estimating aggregate costs in all three categories. Firstly, HIV and AIDS prevalence, morbidity, and mortality had to be either measured or modelled. Secondly, a detailed demographic profile of the current and future workforce had to be conducted and finally critical positions and skills had to be identified. This information provides the employer with a clear picture of how HIV and AIDS was impacting the company. But it should be noted that this information is typically difficult and time consuming to collect.

Figure 5.3 illustrates the progression of the disease in a timeline. The 5 to 10 year incubation period after an employee is infected in the absence of antiretroviral therapy (ART) means that the infected employee will remain fully productive for most of their life. The employer acquires the liability of costs from the moment the employees is infected with HIV. For as long as the infected employee is employed and does not have access to treatment, these costs are unavoidable (Ala, 2004; George, Gow & Whiteside, 2009; ILO, 2005; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, Simon, Thea & Vincent, 2000a; Rosen, *et al.*, 2003; Rosen, Vincent, MacLeod, Fox, Thea, Simon, 2004). If the company is unable to reduce its costs, it will have to either raise prices or accept a reduction in profits. If the HIV and AIDS-related costs are large enough, the company could go out of business (Simon, Rosen, Whiteside, Vincent and Thea, 2000).

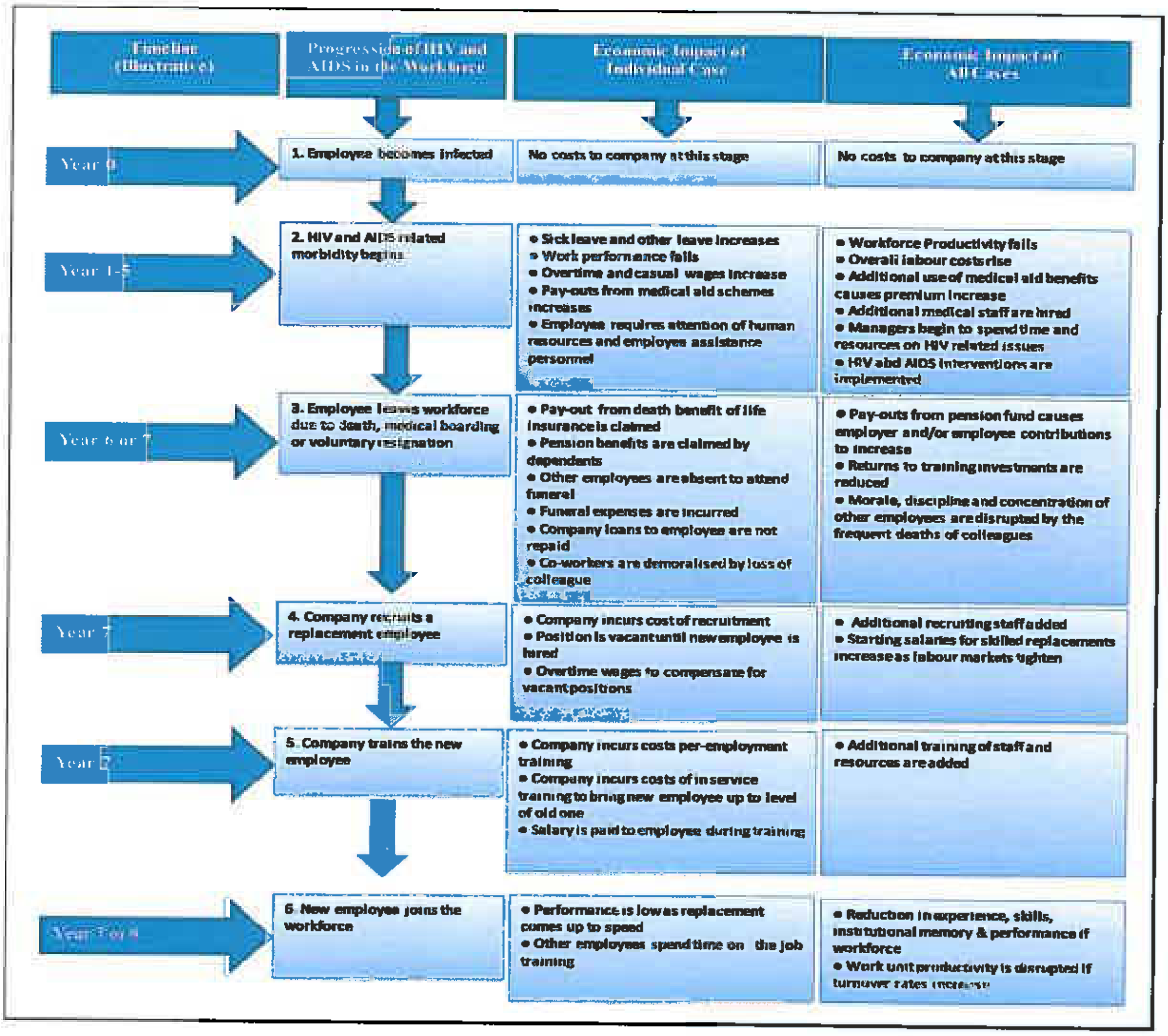


Figure 5.3 Timing of cases and costs in the absence of effective treatment (Adapted from Simon, Rosen, Whiteside, Vincent and Thea, 2000:4 and Whiteside & Sunter, 2000:110-111)

5.3.3 Task 3-Assess the current preparedness, needs and resources of the workplace

Workplace interventions can be expensive. It is therefore important to assess the preparedness, needs and available resources of the organisation (Van Dyk, 2008).

5.3.4 Task 4-Develop and implement an HIV and AIDS policy

Task 4 involves the development of an HIV and AIDS policy for the workplace (Van Dyk, 2008). "*The development of a workplace policy is the single most effective and important action an enterprise can take in the fight against HIV and AIDS*" (ILO, 2002:module 3:3). The integration of HIV and AIDS in the workplace via policies and programmes protects both infected and non-infected employees and the employer from any legal consequences (Alcamo, 2003; Page, *et al.*, 2006; Paul, 2003; Rau, 2004; Walch, Lezama & Giddie, 2005). It is a formal acknowledgement by firms that HIV and AIDS is a workplace issue (Department of Labour, 2000a, b; Dickinson & Innes, 2004; ILO, 2008; Van Dyk, 2008). An HIV and AIDS workplace policy provides guidelines on employer and employee rights and responsibilities in the context of HIV and AIDS (ILO, 2001, 2008; Rau, 2004; UNAIDS, 2003). South African companies have to comply with HIV and AIDS laws such as, the prohibition of discrimination on the grounds of HIV status regardless of whether they have an HIV and AIDS policy or not (Dickinson & Innes, 2004).

The response of the South African government to protect those infected and affected by HIV and AIDS was through the legal framework of various Acts of Parliament, namely:

- The Constitution of South Africa (No. 108 of 1996) which prohibits unfair discrimination, including an individual's right to privacy (South African Government, 1996);
- The Employment Equity Act (No. 55 of 1998) that provides that no person may unfairly discriminate against employees in any employment policy or practice, on the basis of their HIV status. (Department of Labour, 1998);
- The Labour Relations Act (No. 66 of 1995) states that employees may not be dismissed because of their HIV status or illness due to AIDS, unless their capacity to continue working was severely limited (South African Government, 1995);
- The Medical Schemes Act (No. 131 of 1998) that stipulates that a medical scheme may not unfairly discriminate, directly or indirectly, against any person on the basis of their HIV status (South African Government, 1998);
- According to the Occupational Health and Safety Act (No. 85 of 1993), an employer should ensure that the risk of occupational exposure to HIV is minimised (South African Government, 1993);
- In the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 (COIDA), section 22(1) provides for compensation for employees who are injured in the course and scope of their employment, provided that such an injury causes disablement or death (Whiteside & Sunter, 2000); and
- Section 22 of the Basic Conditions of Employment Act (No. 75 of 1997) that states that every employee is entitled to a minimum number of sick days leave. With the increasing number of employees taking sick leave due to HIV and AIDS, compliance with this Act is likely to have a major cost impact on companies (Department of Labour, 1997).

Companies are required to comply with numerous laws relevant to HIV and AIDS (Dickinson & Innes, 2004) regardless of whether or not they have a HIV and AIDS management system in place. An HIV positive employee has the same rights and duties as other employees (KwaZulu-Natal Department of Health, 2001). In terms of this legislative framework an infected employee has the right to fair labour practices (Constitution and Labour Relations Act), the right not to be unfairly dismissed because they have HIV (Labour Relations Act), the right not to be unfairly discriminated against on the basis of your HIV status (Employment Equity Act), the right not to be tested for HIV unless the employer has applied to the Labour Court for authorisation (Employment Equity Act), the right to a safe working environment (Occupational Health and Safety Act), the right to compensation if infected with HIV at work (Compensation for Occupational Injuries and Diseases Act), the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period (Basic Conditions of Employment Act), the right to no unfair discrimination in giving employee benefits (Medical Schemes Act) and the right to privacy about their HIV status at work (Common law right).

To guide the private sector in dealing with those infected and affected by HIV and AIDS, various government departments and organisations have written up polices and guidelines. However unlike the mandatory requirements of the legislative framework, these policies and codes are voluntary frameworks for action.

The *HIV/AIDS and STD Strategic Plan for South Africa 2000–2005* was designed as the response of South Africa to the HIV and AIDS pandemic from 2000 to 2005 (Department of Health, 2000). The plan however failed to meet its strategic objectives because prevalence increased by 5% during this period (Meintjes, *et al.*, 2007). In 2003, the Department of Health launched the *Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment* with the aim of providing comprehensive care and treatment for people living with HIV and AIDS (Department of Health, 2003). *The HIV and AIDS and STI Strategic Plan for South Africa, 2007-2011* (NSP) flows from the National Strategic Plan of 2000-2005 and the Operational Plan for Comprehensive HIV and AIDS Care, Management, and Treatment (SANAC, 2007).

The National Strategic Plan (NSP) on HIV, STIs and TB is the strategic guide for the national response to HIV, STIs and TB for the next five years (2012-2016). The plan addresses the drivers of the HIV and TB epidemics and builds on the achievements of the previous NSPs to achieve its goals (SANAC, 2011). The NSP has adapted, as a 20-year vision, the Three Zeros advocated by UNAIDS. The vision for South Africa therefore has four zero's, namely:

- Zero new HIV and TB infections;
- Zero new infections due to vertical transmission;
- Zero preventable deaths associated with HIV and TB; and
- Zero discrimination associated with HIV and TB.

The goals of the NSP, in line with this 20-year vision, are to reduce new HIV infections by at least 50% using combination prevention approaches; initiate at least 80% of eligible patients on antiretroviral treatment (ART), with 70% alive and on treatment five years after initiation; reduce the number of new TB infections as well as deaths from TB by 50%; ensure an enabling and accessible legal framework that protects and promotes human rights in order to support implementation of the NSP; and reduce self-reported stigma related to HIV and TB by at least 50% (SANAC, 2011).

The *South African Code of Good Practice on Key Aspects of HIV/AIDS and Employment and the HIV/AIDS Technical Assistance Guidelines* suggest that every workplace should develop an HIV and AIDS policy (Department of Labour, 2000b). This is to ensure promotion of equality and non-discrimination, the creation of a supportive environment, the protection of human rights and dignity of people living with HIV or AIDS (*ibid*). The 12 programme aspects include HIV and AIDS awareness programmes; promotion of condom distribution and use; provision of access to counselling for people affected by HIV and AIDS; education and training on HIV and AIDS; encourage treatment of sexually transmitted infections (STIs); infection control measures to ensure HIV is not acquired in the workplace; a 'wellness' programme for employees; monitoring, evaluation and review of HIV and AIDS workplace programmes; voluntary counselling and testing (VCT); encourage openness, disclosure and acceptance of HIV and AIDS among all staff; 'reasonable accommodation' and strategies to cope with the direct and indirect costs associated with HIV and AIDS in the workplace (Department of Labour, 2000b; Dickinson, 2003a,b)

The HIV and AIDS Strategy for the construction industry is covered by the *Department Of Public Works HIV/AIDS Awareness Programme Training Manual* (Department of Public Works (DPW), 2004). The Department of Public Works' HIV/AIDS Awareness Programme (2004) enforces the implementation of HIV and AIDS programs in the construction work it commissions. For contracts over R2 million and longer than 6 months there has to be an HIV and AIDS awareness programmes (including workshops, materials and condom distribution) and once contracts are granted, there are penalties for non-compliance (DPW, 2004). All workers should engage in the workshops for a minimum of 2.5 hours (*ibid*).

The Construction Industry Development Board (CIDB), a statutory body established by Parliament, Act 38 of 2000, drew up *The Generic Specification for HIV/AIDS Awareness* for public comment in 2003 (CIDB, 2003). Due to the fact that HIV and AIDS threatens the stability, productivity and growth of the construction industry, the CIDB should provide leadership and best practice protocols for managing the illness (Meintjes, *et al.*, 2007).

Congress of South African Trade Unions (COSATU) in 2002 drew up a model policy on HIV and AIDS in the workplace. The aim of this policy was to declare HIV and AIDS a workplace issue, to obtain consensus on how to deal with HIV and AIDS and to improve education on HIV and AIDS in the workplace (Cosatu, 2002).

The financial reporting of HIV and AIDS was founded on the belief that HIV and AIDS were a threat to the financial performance of companies, and that it made good business sense to manage them (Bendell, 2003; Simon *et al.*, 2000). The two reporting guidelines in SA include the King III report and the Global Reporting Initiative (GRI).

The King Committee on Corporate Governance was formed in 1992 to consider corporate governance in South Africa and issued its first report (King I) in 1994. The King II report was issued in 2002 and the latest King III report was issued in 2009. The King III report in contrast to the King I and II codes applies to all entities, public, private and non-profit sectors regardless of the manner and form of incorporation. This ensures that entities can achieve good governance and practice sustainability reporting (Institute of Directors in Southern Africa, 2009). Corporate sustainability reporting also known as 'triple bottom line reporting' takes into account social, environmental and economic factors (Dickinson & Fakier, 2004).

The Global Reporting Initiative (GRI) was established in 1997 to develop a global framework for reporting on companies' economic, environmental and social performance. The GRI has 16 indicators on HIV and AIDS reporting. GRI's mission is to make sustainability reporting as routine and credible as financial reporting, in terms of comparability, rigour and verifiability. (Dickinson & Fakier, 2004; du Bruyn & Venter, 2006; Global Reporting Initiative (GRI), 2003).

Positive publicity and good risk management were some of the advantages that companies derived from publicly reporting on their HIV and AIDS programmes. But they also faced peer pressure, investor pressure, social pressure (stigma and discrimination) and moral pressure (to do the 'right thing') when deciding to report (Fakier, 2004).

The international guidelines include the UNAIDS HIV/AIDS and Human Rights International Guidelines – Consolidated version, The International Labour Organisation (ILO) Code of Practice on HIV/AIDS and the World of Work, 2001 (ILO, 2002) and the Recommendation concerning HIV and AIDS and the World of Work (No. 200) on 2 June 2010 (ILO, 2010). The ILO Recommendations were the first international labour standard for the protection of human rights for infected and affected persons at work and guides organisations on how best to manage HIV and AIDS in the world of work (ILO, 2010) by focusing on 10 key areas, namely

- recognition of HIV and AIDS as a workplace issue;
- non-discrimination;
- gender equality;
- a safe and healthy work environment;
- social dialogue;
- prohibition of screening for purposes of exclusion from work;
- confidentiality;
- continuation of employment relationship;
- prevention programmes; and
- care and support, including treatment (ILO, 2002, 2010).

Using the ILO code of practice on HIV/AIDS and the world of work, the ILO in 2008 launched the Guidelines for the construction sector (ILO, 2008). Regionally, the Southern African Development Community (SADC) adopted the Code of Good Practice on HIV and AIDS and Employment (*'the SADC Code'*) in 1997 which aims to assist employers and employees to manage HIV and AIDS in the workplace (SADC, 2006).

The existence of these laws and guidelines protecting human rights do not however prevent or even seriously reduce the frequency of stigma and discrimination. Because they do not impose any obligations on firms and because HIV and AIDS is not a notifiable disease, the construction industry has to date not yet realised that this epidemic required urgent action (ILO, 2008; Meintjes, *et al.*, 2007; Whelan, Dickinson & Murray, 2008). Dickinson & Innes (2004:18) believes that some firms appear to have their 'heads in the sand' and articulate a ring fencing strategy, while others appear to be unsure as to which approach they should pursue. In a study conducted by Harinarain & Haupt (2010) it was found that only 10% of 123 building contractors in the KwaZulu-Natal province of South Africa had a HIV and AIDS policy in place. A further study conducted by Harinarain & Haupt in 2011 in KZN, saw that the numbers of firms with policies had decreased to 10 firms (8%) of 123 construction firms in KZN. Two firms declared that due to the downturn in the construction industry and the fact that they had to retrench staff, their policy was relegated to the '*back of their health and safety file*'. Most firms focus on HIV prevention in their policies with one-third providing voluntary HIV testing and condoms (Bloom, Bloom, Steven & Weston, 2006). This was confirmed in a survey by Bowen, Cattell, Edwards & Marks (2010) of construction firms in the Western Cape. They found that most organisations had awareness policies in place but prevention and treatment policies were less common. Most companies do not make their policies public and firms that have policies have not researched the extent of the problem in the company (Bloom, Bloom, Steven &

Weston, 2006; Dickinson & Innes, 2004). Larger firms (with more than 500 employees) were more likely to have a policy, but they were responding to the current impact of HIV and AIDS rather than the future impact (Dickinson & Innes, 2004; SABCOHA, 2002; Stevens, Weiner and Mapolisa & Dickinson, 2005; Weston, Churchyard, Mametja, McIntyre and Randera, 2007). Whelan, Dickinson & Murray (2008:384) found that even though there were Acts and guidelines in place, these were just '*defenceless documents that were easily circumvented.*'

Before a policy or programme can be designed and implemented, a firm needs to ensure that they carry out a baseline survey of the impact of HIV and AIDS and present it to board members as well as 'knowledge, attitude and practice (KAP)' analysis to determine general awareness of HIV and AIDS, attitudes and behaviour (UNAIDS/IOE, 2002).

Although there are different policies in different workplaces, all HIV and AIDS policies usually set out the company's aims and objectives towards managing HIV and AIDS. Policies usually include the following, namely

- compliance with the laws and culture of the country;
- prohibition of mandatory pre- and post-employment testing;
- prevention of discrimination against people with HIV or AIDS;
- behaviour expected of staff towards a HIV-positive co-worker;
- medical and educational services;
- confidentiality and privacy;
- benefits that can be expected by an employee (health benefits, sick leave etc.);
- accommodation of employees with HIV and acceptable work performance standards;
- first aid practices and 'universal precautions';
- conformity with other current policies and practices within the organisation;
- protection of HIV-related data (medical notes and also information relating to counselling, care, treatment)
- balance in the needs of the company, management, co-workers and the individual; and
- resources, both within and outside the company, for information and services and HIV prevention education in the workplace. (Dickinson, 2005; ILO, 2002, 2008; Page, *et al.*, 2006; UNAIDS/IOE, 2002).

For a policy to be effective it needs to be designed together will all staff members, distributed among all staff and led by senior management within the company. The HIV and AIDS policy needs to be reviewed on a regular basis. (Alcamo, 2003; Page, *et al.*, 2006; Stevens, *et al.*, 2005; Van Dyk, 2008).

5.3.5 Task 5- Develop and implement an integrated HIV and AIDS programme

Task 5 involves the development and implementation a workplace HIV and AIDS programme which includes the prevention of new infections, treatment, care and support for employees (Van Dyk, 2008).

HIV and AIDS programmes include prevention programmes which comprise of awareness, education and training, male and female condom promotion and distribution and behaviour change programmes, voluntary testing and counselling (VCT) and treatment, care and support programmes (preventing and treating sexually transmitted infections, ART provision and community outreach activities). Prevention programmes, which reduces the number of new infections among employees and treatment programmes that extend the working lives of employees are not mutually exclusive. These are 2 parts of a comprehensive HIV and AIDS strategy (Rosen, Simon, Vincent, MacLeod, Fox, and Thea, 2003). Every company can take action to implement programme components, according to its situation, resources and needs (Dickinson, 2006c; UNAIDS, 2004; Whelan, Dickinson & Murray, 2008) and avoid future costs through HIV prevention, treatment and care programs (Rosen, Thea, Simon, Vincent, MacLeod, 2000b).

5.3.5.1 Prevention Programmes

HIV infection can be prevented (Barnett & Whiteside, 2006; Bradhan-Quallen, 2005; ILO, 2002; Rau, 2004; Van Dyk, 2008; Whiteside & Sunter, 2000). Successful HIV and AIDS prevention programmes accounts for cultural differences, beliefs and customs (Van Dyk, 2008) and tries to reduce the number future new infections (Bollinger & Stover, 1999). The Department of Labour (2000b) recommends an HIV and AIDS programme in every workplace aimed at preventing new infections, providing care and support for employees and managing the impact of HIV in the organisation. Prevention programmes include awareness, education and training, male and female condom promotion and distribution and behaviour change programmes.

A. Awareness, Education and Training (AET)

Awareness, education and training are important because they help prevent employees from becoming infected and at the same time teach them how to understand and accept a co-workers infected status (Ala, 2004; Lake, 2006; Miller, 2000; Rau, 2004; UNAIDS/IOE, 2002; Whiteside & Sunter, 2000). HIV and AIDS education can be fundamental to the response of the epidemic (UNAIDS, 2004) as it reduces fear and ignorance, dispels myths, change people's attitudes and sexual behaviour and reduces anxiety and stigmatisation all of which assists in preventing the spread of HIV infection (ILO, 2002; Lisk, 2002; Page, *et al.*, 2006; Van Dyk, 1999, 2008; UNAIDS/IOE, 2002).

Educational materials such as posters, brochures and pamphlets as well as educational activities such as workshops, lectures, discussions and small-group activities that include talks by HIV-positive speakers can be used in a workplace prevention program (Page, *et al.*, 2006; Rau, 2004; Van Wyk, 2007).

Education and training should also focus on activities that encourage changes in behaviour that assists in the reducing the spread of HIV (Page, *et al.*, 2006; Rau, 2004; UNAIDS/IOE, 2002). In order for HIV and AIDS education to be effective, it needs to be communicated consistently, reiteratively, and repetitively using multiple methods, mediums, languages and vernacular (Haupt, *et al.*, 2005a,b).

a) Condoms

Consistent and correct use of condoms is important in prevention programmes (Barnett & Whiteside, 2006; Rau, 2004; UNAIDS, 2004; Whiteside & Sunter, 2000). Both male and female condom distribution (UNAIDS, 2004; UNAIDS, 2011b) and use (Dorrington, Johnson, Bradshaw & Daniel, 2006; UNAIDS, 2011c) have increased substantially in over the last few years. Public health sector distribution of male condoms rose from 8 million in 1994 to 267 million in 2001 (Karim & Karim, 2005). But consistent and correct use of condoms was difficult to achieve with married couples and people in stable partnerships (SADC, 2006).

B. Behaviour change communication (BCC)

"*If you know your HIV status and are willing to change your lifestyle and attitude you can live for many years! HIV and AIDS is not a death sentence!*" (Van Wyk, 2007:5). Behaviour change is regarded by Dickinson (2005), Haupt, Munshi & Smallwood (2005a); Karim & Karim (2010) and Van Dyk (1999, 2008) as an important weapon against HIV and AIDS but also one that is difficult to implement as people find it difficult to change their sexual behaviour (BAA, 2007; ILO, 2002; Piot & Seck, 2001; Van Dyk, 1999, 2008). Behaviour that poses a risk to individuals needs to be understood so that ways to change it can be identified (Dickinson, 2005; Essex, *et al.*, 2002; Whiteside, 2008). The main mode of transmission in Africa is heterosexual. Therefore focus has been on the reduction of unprotected sexual contact (Essex, *et al.*, 2002) via the "ABCs" (Abstinence, Being faithful, and Condom use) campaign (Bowser, Mishra, Reback, Lemp, 2004; Essex, *et al.*, 2002; Poku, 2008; Whiteside, 2008). But the problem encountered was that people might not have the power or incentive to change their behaviour even with the knowledge. It is therefore imperative that the socio-economic causes of the epidemic are also considered (Barnett & Whiteside, 2006; Whiteside & Sunter, 2000). It is important to select the appropriate messages for the audience it is to be delivered to using various communication techniques which is referred to as behaviour change communication (BCC) (Rau, 2004; ILO/FHI, 2008). BCC encourages and sustains positive and appropriate behaviours (ILO/FHI, 2008). Effective behaviour change communication can increase knowledge of HIV and AIDS; open social and community dialogue; promotes attitude change; improves skills and sense of self-effectiveness; reduces stigma and discrimination; creates a demand for information and services; advocates an effective response to the epidemic and promotes services for prevention, care and support (ILO/FHI, 2008; Rau, 2004). Behaviour change interventions do work provided they are maintained (Barnett & Whiteside, 2006; Haupt, *et al.*, 2005a; Karim & Karim, 2005; Rau, 20004; UNAIDS, 2011b; Whiteside, 2008).

Workplace prevention programmes need to be regularly updated so that employees are made aware of the latest information, such as male circumcision and microbicides.

A massive male circumcision campaign was launched in South Africa as clinical trials have demonstrated that adult male circumcision significantly (60%) reduced the likelihood of an uninfected male acquiring HIV from an HIV-infected female sex partner. Male circumcision needs to be part of comprehensive HIV prevention programme as it requires marked behavioural change (Barnett & Whiteside, 2006; Bradhan-Quallen, 2005; UNAIDS/WHO, 2009). There was however some evidence that men were likely to take more risks after circumcision. Models predicted that full coverage of male circumcision could over the next 20 years, avert about 5.7 million new HIV infections and 3 million deaths (SADC, 2006; UNAIDS, 2010a; UNAIDS, 2011b; UNAIDS & WHO, 2008, 2009; WHO, 2008; WHO, UNAIDS, UNICEF, 2011; Williams, Lloyd-Smith, Gouws, *et al.*, 2006). In the hardest-hit province, KwaZulu-Natal (KZN), 2.5 million men were circumcised (UNAIDS, 2010a, b).

The Centre for the AIDS Programme of Research in South Africa (CAPRISA) carried out a study in 2010 and announced results of a tenofovir-based microbicide gel that reduced HIV infection by 39% and herpes simplex virus-2 infection by 54% in women who used the vaginal gel for more than 80% of their sex acts. These findings have raised hopes that an additional female-initiated prevention option could be widely available by 2014 (Karim, 2011; Page, *et al.*, 2006; UNAIDS, 2010a; UNAIDS, 2011c).

C. Wellness programmes

According to the South African Department of Labour (2000b) workplaces needed to develop wellness programmes as part of their prevention efforts. A wellness programme could improve the quality of life of infected employees, keep them productive at work for a longer period and create a supportive and accepting environment (Department of Labour, 2000b; Van Dyk, 2008). The wellness programme should include medical management, access to counselling and support; referral systems and partnerships with other health care providers; family assistance programmes; and reasonable accommodation for infected persons (*ibid*). Reasonable accommodation is when the employer assists an ill employee by switching them to lighter duties or helped with work more flexibly, given additional sick leave, and allowed more time for breaks (ILO, 2002, 2003).

5.3.5.2 Voluntary Counselling and testing (VCT)

VCT is an integral part of any workplace programme (Kalichman & Simbayi, 2003) and can assist HIV-negative individuals maintain their status (Bhagwanjee, Petersen, Akintola, and George, 2008; Department of Labour, 2000b). In a VCT programme, individuals voluntarily and via informed consent chose to find out their status. Pre and post-test counselling is vitally important because of the consequences of being HIV positive. Confidentiality of results must be ensured. The workplace can be regarded as an ideal setting in which to provide VCT services because the tests can be provided at a convenient time and location with people trained in testing and in counselling and where there is privacy for the tests to be conducted (Bowen, *et al.*, 2010a,b; Bowser, *et al.*, 2004; Brink & Pienaar, 2007; Dickinson, 2003b; Essex, *et al.*, 2002; George & Quinlan, 2009; ILO, 2002, 2003, 2008; Mahajan, *et al.*, 2007; Mundy & Dickinson, 2004; Page, *et al.*, 2006; Rau, 2004; Santis, *et al.*, 2003; UNAIDS, 2004; van Dyk, 1999, 2008; Van Wyk, 2007; WHO, UNAIDS, UNICEF, 2011).

People will benefit from knowing their HIV status as they can then access care and treatment (Ala, 2004; Lake, 2006). One of the biggest challenges is that the majority of people do not know their HIV status (Barnett & Whiteside, 2006; Essex, *et al.*, 2002; George, 2006). According to George, Gow & Whiteside (2009) VCT is effective in promoting prevention for those who were HIV negative and behaviour change for those who were HIV positive. VCT could also be used by firms to find out the HIV prevalence in the workplace, which could then be used for planning purposes (Dickinson, 2003b).

5.3.5.3 Treatment, care and support

Treatment, care and support for people living with HIV and AIDS inspired confidence and hope both to the individual and the community. These include the treatment of opportunistic infections, the provision of antiretroviral therapies, nutritional services for infected individuals (Ala, 2004; George, Gow & Whiteside, 2009; Rau, 2004; UNAIDS/IOE, 2002). With treatment, care and support, employees could continue working for a number of years and their skills, training and 'institutional memory' would therefore be available for longer periods of time (ILO, 2008)

A. Antiretroviral Therapy (ART)

Even though there is currently no cure for AIDS, ART slowed down the progression of HIV and delayed the onset of AIDS (Barnett & Whiteside, 2006; Benatar 2004; Haupt, *et al.*, 2005a; Gow, 2009; ILO, 2002; Kane, 2008; Karim & Karim, 2005; Ostrow & Kalichman, 1999; Page, *et al.*, 2006; Poku, Whiteside, & Sandkjaer, 2007; Rosen, Feeley, Connelly & Simon, 2006; UNAIDS, 2011c; Van Dyk, 2008; Whiteside & Sunter, 2000). According to Brink & Pienaar (2007) not all of those who were HIV positive required ART immediately.

When WHO and UNAIDS launched the "3 by 5" Initiative on World AIDS Day in 2003, with a target of obtaining access to antiretroviral therapy for 3 million people by the end of 2005. In 2003 only 400 000 people in low- and middle-income countries had access to antiretroviral therapy. The "3 by 5" target was met in 2007, and by 2010 6.65 million people were receiving treatment in low- and middle-income countries (WHO, UNAIDS, UNICEF, 2011).

There are numerous factors that have contributed to businesses providing ART to their workforces, which include the maturing of the epidemic, the falling costs of treatment, pressure from society and the late provision of ART by government (George, 2006; George, Gow & Whiteside, 2009; George & Quinlan, 2009; Feeley, Bukuluki, Collier, Fox, 2004; Rosen, Feeley, Connelly & Simon, 2006; UNAIDS, 2004). Other factors include the fact that employees who had initiated ART showed fewer symptoms, less functional impairment, lead longer lives and were more productive than those who had not yet started treatment (Kane, 2008; Nattrass, 2004; Rosen, Ketlhapile, Sanne & DeSilva, 2008).

In June 2010, the UNAIDS and WHO launched Treatment 2.0, which is a 5 year strategy (2011–2015), aimed at building on the progress to date and establishing new targets for 2015: zero new infections, zero discrimination and zero AIDS-related deaths (UNAIDS, 2010c, 2011a; WHO, UNAIDS, UNICEF, 2011)

B. TB/STI

Treatment for opportunistic infections such as TB and STI's were important as they often required hospitalisation. In many cases they were the immediate cause of death of HIV-positive people (Rau, 2004). The benefits of treating opportunistic infections included increasing awareness and improving knowledge of key facts; reducing risk behaviour and ensuring a safe working environment (Department of Labour, 2000b).

C. Community outreach programmes

It is important for business to engage in community based interventions because these communities supply the labour that the firms employ. Both employers and employees should promote and encourage information and education programmes within the local community (Daly, 2000; Department of Social Development, 2002; ILO, 2003; Lamptey, *et al.*, 2003; Rau, 2004; Simon-Meyer, 2005; UNAIDS/IOE, 2002; Van Dyk, 1999; WHO, UNAIDS, UNICEF, 2011).

D. Alternative Therapies

Many HIV infected people use alternative therapies such as meditation mental imagery, positive mental reinforcement, and reflexology. Workplace programmes should consider these alternate therapies with an open mind as they could assist their employees in terms of their psychological and social well-being (Van Dyk, 1999). In South Africa many HIV infected individuals also consulted traditional healers. With over 200 000 traditional healers in the country, they were not involved in any workplace programmes. Workplace programmes need to incorporate traditional healing because traditional healers could assist in promoting condom use and safer sex practices (Dickinson, 2005; Kalipeni, and Mbugua, 2005; Van Dyk, 1999; Van Wyk, 2007).

5.3.6 Task 6-Monitor, evaluate and review workplace policies and programmes

All policies and programmes need to be monitored, evaluated and reviewed on a regular basis in order to determine the effectiveness of policies and quality of workplace programmes (Department of Labour, 2000b; Dickinson & Versteeg, 2004; Page, *et al.*, 2006; Stevens, Weiner and Mapolisa & Dickinson, 2005; Van Dyk, 2008). The techniques that could be used to monitor and evaluate HIV and AIDS workplace programmes include simple questionnaires, feedback in the form of a suggestion box, tracking changes in key indicators such as recording of absenteeism, medical retirements and production delays or disruptions or in-depth quantitative research (Rau, 2004; Van Dyk, 2008)

According to Rosen, Feeley, Connelly & Simon (2006) one of the reasons for lack of positive evidence of the outcomes to HIV prevention was the difficulty to measure HIV prevention outcomes in the workplace, due to for example workforce turnover and changes in policies. In order to assist in the fight against HIV and AIDS companies need employer and employee commitment and participation, effective HIV and AIDS policies and programmes which are continuously monitored and evaluated.

5.4 Other initiatives

Business could also contribute to reducing the spread of HIV and AIDS by:

- addressing stigma and discrimination;
- providing their problem-solving expertise;
- conduct prevalence testing;
- company leadership- business holds positions of authority in individuals' lives;
- mass communication skills;
- financial power;
- create a positive corporate image;
- improve staff morale;
- innovation, speed and efficiency;
- the involvement of people living with HIV and AIDS to help in reduce stigma and discrimination in organisations;
- using business relationships to encourage sub-contractors to adopt effective HIV and AIDS workplace programmes;
- incorporating best practice from inside and outside the company;
- have outcomes that are consistent, legal, and fair;
- keep the negatives negative;
- public-private partnerships among business, labour, governments, and non-profit organisations
- maintaining momentum;
- conducting an institutional HIV and AIDS audit which consists of personnel profiling, critical post analysis, assessment of organisational characteristics, estimate of organisational liabilities, productivity and consideration of the organisational context; and
- combining managerial capacity with bottom-up initiatives and enthusiasm, i.e. linking the top-down and bottom-up responses (Ala, 2004; Barac & Otter, 2001; Barnett & Whiteside, 2006; Bloom, *et al.*, 2001; BAA, 2007; Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000; Dickinson, 2002; George, 2006; Haupt, *et al.*, 2005a, b; IOM, 2010; Lake, 2006; McGreevey, Alkenbrack & Stover, 2003; Nattrass, *et al.*, 2004; O'brien, & Koerkenmeier, 2001; Oppenheimer, 2007; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, *et al.*, 2003; Rosen, Thea, Simon, Vincent, MacLeod, 2000b; Santis, *et al.*, 2003; UNAIDS, 2004; Walch, Lezama, and Giddie, 2005; Whiteside & Sunter, 2000).

The benefits that could be gained from companies by taking action include productivity gain, increased life expectancy and reduced morbidity, time for drug prices to fall, skills development, improved morale and workplace cohesion, healthier workforce and community, decreased absenteeism due to illness and caring for sick family members, de-stigmatises disease for employees, reduces the time managers and supervisors must spend coping with employee deaths and high turnover rates, improved sustainability of company operations and sustained operations which ensured continued growth (Nattrass, *et al.*, 2004; Rosen, Simon, Thea & Vincent, 2000a).

5.5 The challenges faced in implementing HIV and AIDS programmes

The challenges facing companies in responding to HIV and AIDS include stigma and discrimination, the high costs of workplace programmes, voluntary counselling and testing and antiretroviral therapy (ART), lack of prevalence testing, HIV and AIDS policies, low usage of codes, guidelines and best practice, slow response by the construction industry, lack of action by small and medium enterprises, migrant labour and the asymptomatic period of the disease (Harinarain & Haupt, 2012). These are discussed in further detail below.

5.5.1 Stigma and discrimination

HIV and AIDS is perhaps the most stigmatised medical condition in the world (Harinarain & Haupt, 2010). Together, stigma and discrimination constitute one of the greatest barriers to HIV testing, prevention and care (Bendell, 2003; Bowen, *et al.*, 2010; Bowser, *et al.*, 2004; Dickinson, 2005; Evian, 2008; Essex, *et al.*, 2002; Harinarain & Haupt, 2011a; Kalichman & Simbayi, Jooste, Toefy, Cain, Cherry & Kagee, 2005; Karim & Karim, 2005, 2010; Mahajan, Saylesc, Patela, Remiend, Sawiresa, Ortize, Szekeresa, & Coatesa, 2008; Muskat-Gorska, Zuzanna, 2008; Parker & Aggleton, 2003; Piot, *et al.*, 2001; UNAIDS, 2010a; Van Wyk, 2007) as well as acting as a deterrent to accessing antiretroviral therapy (Mahajan, *et al.*, 2008). The stigma attached to HIV and AIDS creates a feeling of loneliness and a sense of isolation (Haupt, *et al.*, 2005a). Employees fear disclosing their status as they do not want to be fired. Although stigma is considered a major barrier to effective responses to the HIV and AIDS epidemic, stigma reduction efforts are relegated to the bottom of AIDS programme priorities (Mahajan, *et al.*, 2008). Efforts to tackle HIV and AIDS related stigma and discrimination have been constrained by the complexity and deep-rooted nature of the problem (Parker & Aggleton, 2003).

HIV and AIDS-related stigma and discrimination arise because HIV and AIDS is a life-threatening illness that people are afraid of contracting and the early AIDS metaphors such as death, horror, punishment, guilt, shame and otherness have exacerbated these fears, reinforcing and legitimising stigmatisation and discrimination (Dickinson, 2004a; O'brien, & Koerkenmeier, 2001; Parker & Aggleton, 2003).

One of the consequences of the problem of stigma and discrimination of people living with HIV and AIDS is that they force infected people to hide their condition and to continue engaging in high-risk behaviours. Another consequence is denial. Both silence and denial about HIV and AIDS are lethal because they prevent people from accurately assessing their own personal infection risk (Bowen, *et al.*, 2010a, b; SANAC, 2007). A climate of discrimination and lack of respect for human rights leaves workers more vulnerable to infection and less able to cope with AIDS because it makes it difficult for them to seek voluntary testing, counselling, treatment and support (UNAIDS, 2007).

Stigma has been described by Parker & Aggleton (2003:13) and UNAIDS (2003 & 2007) as a dynamic process of devaluation that 'significantly discredits' an individual in the eyes of others. HIV-related stigma builds upon and reinforces negative connotations through the association of HIV and AIDS. Discrimination is said to occur when people are singled out in a way that results in them being treated unfairly and unjustly on the basis of their belonging, or being perceived to belong, to a particular group (Dupper, 2003; Kohi, *et al.,* 2003). Stigmatisation associated with AIDS is underpinned by many factors, including lack of understanding of the illness, misconceptions about how HIV is transmitted, lack of access to treatment, irresponsible media reporting on the epidemic, the incurability of AIDS, and prejudice and fears relating to a number of socially sensitive issues including sexuality, disease and death, and drug use (Parker & Aggleton, 2003).

In the workplace, employees experience discrimination when they are treated unfairly and unjustly on the basis of their actual or perceived HIV status. HIV positive employees bare the brunt of stigma and discrimination from co-workers, supervisors and managers in the form of being dismissed from work, being relocated to another position or having their job benefits limited (Dickinson, 2003a). Stigma is so powerful that certain peer educators have been suspected of been HIV positive by their co-workers because of their involvement in HIV and AIDS programmes in the workplace (*ibid*). According to Dickinson (2003a), HIV and AIDS stigma impacts on the workplace by lowering the morale of the workforce, creating a working environment in which people living with HIV and AIDS are afraid of gossip or of being suspected of being HIV positive and by undermining the overall effectiveness of the company's workplace programme.

It is important to combat stigma in order to fight the negative impacts of HIV and AIDS (Bowen, *et al.*, 2010a, b). Attempts were made by the South African construction industry to address stigma and discrimination with very little success. In a study conducted by Harinarain & Haupt (2010) workers did not disclose their HIV status due to fear of discrimination from their co-workers and not due to fear of losing their jobs. This finding suggests that the workplace polices did not have much effect in reducing the effects of stigma and discrimination as employees still seemed to fear the reactions of their fellow workers.

An area where business has an opportunity to influence the course of the HIV and AIDS is by reducing the stigma around the disease and dispelling myths and reinforcing antidiscrimination policies and programs (BAA, 2007; Bloom, *et al.*, 2006; Bowser, *et al.*, 2004; Dickinson, 2004a; George, 2006; George, Gow & Whiteside, 2009; George & Quinlan, 2009; Karim & Karim, 2010; Page, *et al.*, 2006; Rau, 2004; UNAIDS, 2004, 2011a). In order to reduce the stigma attached to HIV and AIDS, the following are suggested (Harinarain & Haupt, 2010; Piot & Seck, 2001; UNAIDS, 2010a, b, c), namely

- HIV and AIDS education and training which is communicated to all staff repetitively using multiple mediums and the construction vernacular;
- Assistance of people living with HIV and AIDS as role models;
- Improved workplace policies that reassure workers and reduce stigma and discrimination;
- Training of peer educators;
- Voluntary counselling and testing (VCT) services;
- Formation of strategic partnerships to reduce the costs of HIV and AIDS programmes; and
- Visible involvement and commitment of the senior management of firms.

5.5.2 High costs of workplace programmes

High mortality rates due to HIV and AIDS impose costs on businesses (BAA, 2007). Each HIV infection is likely to cost a company between one and six times the employee's annual salary, depending on the company's benefit structure (Ala, 2004).

Because the cost-benefit of interventions is not directly evident (Whelan, Dickinson & Murray, 2008) companies assume that the initiation costs are high (George *et al.*, 2009) and have consequently not implemented HIV and AIDS programmes. Bowen, *et al.* (2010a, b) found a significant relationship between the existence of a treatment programme and perceptions of financial viability. Once firms actual ran treatment programmes they were able to see the financially viability of it. This study also found a significant relationship between the perceived financial viability of treatment programmes and the existence of a treatment policy within the company which may be due to the declining cost of treatment (Bowen, *et al.*, 2010a, b).

There are four care and treatment models (employer provider, medical aid scheme, independent disease management programme and clinic provider) which South African companies can use in order to make HIV and AIDS care and treatment available to employees (Connelly & Rosen, 2005a). Each of these models involves some financial cost to the employer. However, the effectiveness of the different models of care and treatment has rarely been communicated by the providers or purchasers of the services, as this information is deliberately kept out of the public domain (George, 2006).

By tackling HIV and AIDS in the workplace, new infection can be prevented, productivity is ensured and negative effects on the bottom line are mitigated (Ala, 2004). Bowen, *et al.* (2010a, b) and George *et al.* (2009) have provided reasons as to why treatment programmes are viable. These include the fact that it adds value to the workforce; the cost effectiveness of retaining skilled persons; promotes employee wellness; reduces mortality rates; and the short-term costs are outweighed by the long-term savings (providing antiretroviral drugs versus time off to attend government clinics).

Furthermore, employees seek treatment when they are unable to work (George, 2006) which remains a challenge when providing these programmes because the cost of treatment cannot be offset by maintaining productivity.

5.5.3 Voluntary counselling and testing (VCT) and antiretroviral therapy (ART)

The South African construction industry is reluctant to conduct voluntary HIV counselling and testing. VCT is important as it encourages employees to know their status and should be used as part of a wider workplace programme. VCT is most effective if employees who tested positive could access antiretroviral drugs. The second problem faced by South African companies is that they do not provide ART to employees even though the cost of drugs had substantially reduced (Harinarain & Haupt, 2010, 2011b).

The underlying economic imperative for the provision of ART according to Bowen, *et al.* (2010a, b) is that it enables infected workers to remain productive, and contains recruitment, training and absenteeism costs. But the greatest barriers that South Africa faces are a low uptake of HIV counselling and testing (Bhagwanjee *et al.*, 2008; Bowen, *et al.*, 2010a,b; George, 2006; George, Gow & Whiteside, 2009; South African Institute of Race Relations, 2010; Rosen *et al.*, 2003; UNAIDS, 2010), weak integration of tuberculosis–HIV services and poor access to antiretroviral therapy (George, *et al.*, 2009; South African Institute of Race Relations, 2010; UNAIDS, 2010). The low uptake of services has resulted in companies not maintaining a healthy workforce and therefore not experiencing the gains anticipated from investing in treatment (George, 2006). The problems encountered with the low enrolment in VCT and ART programmes include:

- supervisory or co-worker hostility;
- lack of confidentiality;
- distrust regarding the company's true motives for conducting the campaign;
- denial by older employees as they perceived themselves to be invulnerable to HIV, viewing it as a problem for younger people;
- stigma and discrimination;
- fear of being exposed in the workplace as HIV positive;
- poor quality of post-test counselling and follow-up;
- emotional difficulties in coping with the diagnosis;
- lack of 'buy-in' from management;
- limited time to attend treatment programmes;
- the fact that treatment collection points are too far away which results in absenteeism;
- employees are unaware of their HIV status and do not present themselves to be tested; and
- interventions that 'do not speak' to the individual, taking into account factors such age, culture, etc. (Barnett & Whiteside, 2006; BER/SABCOHA, 2005; Bhagwanjee, *et al.*, 2008; Bowen, *et al.*, 2010a,b; Bowser, *et al.*, 2004; Brink & Pienaar, 2007; Charalambous, Grant, Day, Pemba, Chaisson, Kruger, Martin, Wood, Brink, and Churchyard, 2007; Connelly and Rosen, 2006; Dickinson, 2006c; George, 2006; George & Quinlan, 2009; Marais, 2007; Mundy & Dickinson, 2004; Poku, 2008).

Reasons cited for not mounting a treatment programme (Bhagwanjee *et al.*, 2008; Bowen, *et al.*, 2010; George & Quinlan, 2009) included:

- the cost of such campaigns;
- insufficient resources to manage the process;
- guaranteeing the confidentiality and anonymity of employees;
- a focus on production;

- employees often present for treatment in advanced stages of illness;
- time constraints;
- the perception that HIV and AIDS has very little effect on the company;
- the perception that the need does not exist;
- a preference for publicly provided treatment offered through state hospitals;
- the perception that HIV and AIDS has very little effect on the company;
- high costs in time and resources expended to enrol employees in programmes;
- the size of the firm precluding practical involvement.

According to Bowen, *et al.* (2010a, b) these barriers are surmountable, given genuine willingness by the organisation to implement treatment programmes for employees. Reasons cited by Bowen, *et al.* (2010a,b) for supporting the implementation of treatment programmes include:

- the added value to the workforce;
- the cost effectiveness of retaining skilled persons;
- it promotes employee wellness and acts as a motivating factor;
- facilitates knowledge about employee wellness;
- retains senior staff;
- reduces mortality rates; reduces infections and the need for financial assistance; and
- the short-term costs are outweighed by the long-term savings.

In order to assist in combating these barriers, the South African government has dramatically increased its funding for HIV and AIDS (South African Institute of Race Relations, 2010). The business case has been bolstered by the falling costs of ARV treatment over the past five years which has provided a greater incentive for business to provide treatment for employees, rather than relying on the public health system (Feeley, Bukuluki, Collier, Fox, 2004; ODI, 2007).

5.5.4 Lack of prevalence testing

Prevalence is the most common measure of the HIV and AIDS epidemic. Prevalence is the absolute number of people infected at a particular time (or averaged over a period of time). It provides a bird's eye view of the epidemic. Incidence is the number of new infections over a given period of time. HIV and AIDS are largely determined by risk factors, such as age, sex, race, social class, occupational group and residential area or geographical region of employment (Bowen, Cattell, Edwards & Marks, 2010; Bowen, Dorrington, Distiller, Lake & Besesar, 2008; Johnson & Budlender, 2002). Incidence is expensive and difficult to measure because HIV infected individuals only leave the pool of HIV infections when they die but they are being replaced by newly infected individuals and the introduction of ART complicates the data as people are living longer (Barnett & Whiteside, 2006; Bowser, *et al.*, 2004; Gouws & Williams, 2000; Karim & Karim, 2005; 2010; Poku, 2008; Van Niekerk, 2005; Whiteside, 2008; Whiteside, Barnett, George & Van Niekerk, 2003).

Understanding the epidemiology of HIV in the workplace assists in facilitating effective management of the epidemic which can be used to monitor and evaluate the success of treatments. However data on HIV prevalence in South Africa is drawn from sentinel surveys of pregnant women attending antenatal clinics and are not representative of formal sector workforces. Evian, Fox, MacLeod, Slotow & Rosen (2004) carried out voluntary anonymous, unlinked sero-prevalence surveys of 34 workforces with 44 000 employees in South Africa, Botswana, and Zambia in 2000-2001. Their study found that HIV prevalence among workers is different to those among antenatal clinic attendees because workplace surveys generate prevalence estimates for demographic groups that are not represented in antenatal surveys which in fact strengthens support for prevention and treatment interventions (*ibid*). The problem is further exacerbated by the fact the HIV and AIDS is not a reportable disease in SA as compared to other diseases, e.g. Tuberculosis or Malaria (Department of Health, 2012), which also affects the accuracy of prevalence rates. A study by Harinarain & Haupt (2011a) found that none of the firms in KZN had conducted prevalence testing. As a result their estimates on numbers of HIV positive people in the company were based solely on perception and the inference they were making when tracing, for example, high absenteeism rates and sick leave.

In order to implement and maintain effective HIV and AIDS treatment and prevention programmes, business needs to conduct voluntary anonymous, unlinked sero-prevalence surveys, in order to know the true extent of the damage on the workforce. Firms also need to promote the construction profession.

5.5.5 Lack of HIV and AIDS policies

One of the most effective ways of reducing and managing the impact of HIV and AIDS in the workplace (Department of Labour, 2000b) is through the implementation of an HIV and AIDS policy and programme that guides the employer and employee on their rights and responsibilities. The primary response of the South African government to protect those infected and affected by HIV and AIDS was through creating a legal framework of various Acts of Parliament (Harinarain & Haupt, 2010). The most important outcome of these Acts is the prohibition of discrimination against anyone on the basis of HIV status. SA companies are therefore required to comply with laws, regulations and protocols relevant to HIV and AIDS

(Dickinson & Innes, 2004) regardless of whether or not they had an HIV and AIDS policy in place.

Bowen, *et al.* (2010) found that a slight majority of the participating Western Cape construction firms (55%; n=23) perceive HIV and AIDS to constitute a long-term problem for the industry with only two-thirds (67%) of the companies reported having an HIV and AIDS policy. Large firms were found to be no more likely than smaller ones to have developed such a policy. A significant relationship was found between the presence of a policy and the perception of HIV and AIDS as a threat to the industry (*ibid*).

Harinarain & Haupt (2011a) found that the legal framework did not influence companies to respond to the HIV and AIDS pandemic. However, these firms ensured that there was no pre-employment HIV testing and that as far as possible they did not discriminate against their employees on the basis of their HIV serostatus.

5.5.6 Low usage of codes, guidelines and better practice

In order to assist the private sector in dealing with those infected and affected by HIV and AIDS, various government departments and organisations had written up better-practice guidelines and codes. However, unlike the various previously mentioned Acts, these policies and codes were voluntary frameworks for action.

These documents provide companies with guidance in drawing up policies and outline what steps or programmes they should implement in the workplace (Dickinson & Innes, 2004). However, Vass (2004) and Whelan *et al.* (2008) argued that the connection between the guidelines and implemented best practice remained weak and incompatible. According to Harinarain & Haupt (2011a) voluntary best-practice guidelines and codes was not a major driver for these construction companies to take action in order to combat HIV and AIDS. But the marginal uptake of the codes and guidelines raises two important concerns: first, from where are companies accessing information on how to design and implement best-practice HIV and AIDS programmes; and, second, how reliable are alternative resources? (Whelan *et al.*, 2008).

5.5.7 Slow response by the construction industry

The response of the South African construction industries to HIV and AIDS started late in the epidemic, with only 12.5% of the companies in KZN implementing an HIV and AIDS policy 8 years ago. The majority of the firms (75%) have their respective policies in place between 3 to 5 years and 12.5% have only starting implementing their policy as recently as one year ago (2009) (Harinarain & Haupt, 2010).

In 2002, the South African Business Coalition on HIV and AIDS (SABCOHA) reported that the majority of companies in South Africa had yet to assess the risk of HIV and AIDS within their workforces and begin to mount a response to this risk. Not much seems to have changed years later as ninety percent of contractors in KZN (Harinarain & Haupt, 2010) still do not intend implementing a specific HIV and AIDS policy even though they are aware of employees who have died from AIDS and that some of their current workforce are HIV-positive. The reasons given were that they considered themselves a "small company, and do not have the resources to implement an HIV and AIDS policy which probably be too expensive and time consuming". This is in line with other studies conducted by Connelly & Rosen (2005b); Stevens, *et al.* (2005) and BER/SABCOHA (2004).

Dickinson (2004a) offered two explanations for the slow response of South African business to the threat of AIDS. The first reason was the failure of the South African government to lead and co-ordinate a national response to AIDS and the second reason was that senior managers believed that AIDS would not have a significant impact on their operations.

5.5.8 Lack of action by small and medium enterprises

The majority of small and medium sized enterprises (SMEs) with between 5 to 100 employees (Chao, Pauly, Szrek, Pereira, Bundred, Cross & Gow, 2007; Connelly & Rosen, 2005b; Rosen, Feeley, Connelly & Simon, 2006, 2007) and which employs 29% of the working population (George, Gow & Whiteside, 2009) have not as yet begun offering HIV and AIDS prevention and treatment services to employees (BAA, 2007; Barnett & Whiteside, 2006; BER/SABCOHA, 2004; 2005; Bloom, Mahal & River Path Associates, 2001; Connelly & Rosen, 2005b; Dickinson, 2004b; Dickinson, 2005; Dickinson, 2006a; George, Gow & Whiteside, 2009; Rosen, Feeley, Connelly & Simon, 2006; Stevens, *et al.*, 2005). Ninety percent of contractors in KZN (n=123) have not as yet realised the importance of having and implementing a HIV and AIDS policy (Harinarain & Haupt, 2010).

The Bureau for Economic Research (BER/SABCOHA, 2004) conducted a study that provided insights into the impact of HIV and AIDS on 3 different size businesses, small (< 100 employees), medium (between 100 – 500 employees) and large (> 500 employees). Table 5.1 indicates that small and medium companies considered productivity losses as the most important factor whereas large companies generally considered higher employee benefit costs as the most important cost factor.

Table 5.1. Ranking of HIV and AIDS related costs according to the impact (BER/SABCOHA, 2004:41).

Ranking of HIV/AIDS related costs according to the impact they have on company costs

Importance of cost factor	Small companies Less than 100 employees	Medium companies 100 to 500 employees	Large companies More than 500 employees	Total All Sizes
Most important	Lower productivity / increased absenteeism	Lower productivity / increased absenteeism	Higher employee benefit costs	Lower productivity / increased absenteeism
2nd most important	Loss of experience and vital skills	Higher employee benefit costs	VCT or awareness programmes	Higher employee benefit costs
3rd most important	Higher labour turnover rates	Loss of experience and vital skills	Lower productivity / increased absenteeism	Loss of experience and vital skills
4th most important	Higher employee benefit costs	Higher labour turnover rates	HIV/AIDS treatment / provision of ARV	Higher labour turnover rates
5th most important	Higher recruitment and training costs	Higher recruitment and training costs	Research into the impact of HIV/AIDS	Higher recruitment and training costs

There are a number of constraints that small businesses encounter which include:

- the fact that they were a small company with average numbers of employees < 25;
- that they did not have the human resources to research, draft and implement an HIV and AIDS policy;
- employers incur few direct and indirect costs in replacing workers, especially for unskilled workers;
- HIV and AIDS is not regarded as a pressing issue;
- the lack of information about HIV and AIDS services;
- the lack of access to these services; little perception of costs or damages being imposed by AIDS, leading to low willingness-to-pay for services;
- stigma among employees; lack of external pressure from labour unions, shareholders, or advocacy groups;
- the relative weight of other problems facing the companies, making HIV and AIDS a low business priority;
- managers' level of concern about the epidemic is low overall;
- the belief that the epidemic is not currently having large impact on their business;
- HIV and AIDS is not discussed as a business issue by management, the belief that it would be too expensive and time consuming and other problems, such as regulation, tax and infrastructure, are seen as much more serious threats to business operations (Ala, 2004; BAA, 2007; BER/SABCOHA, 2005; Bowen, *et al.*, 2010a,b; Connelly & Rosen, 2005a,b; Haacker, 2004; Mahajan, *et al.*, 2007; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Feeley, Connelly & Simon, 2006; Van Dyk, 2008; Weston, Churchyard, Mametja, McIntyre and Randera, 2007).

There are many inexpensive actions that small and medium enterprises can take to protect their employees from the ravages of HIV and AIDS. Bigger companies can also do a lot to support smaller employers in taking action by the effective sharing of good practice (BAA, 2007; Daly, 2000; Weston, *et al.*, 2007). Although small firms perceived the development of a policy to be costly and time consuming, the fact that they are doing something, even in a small way, shows commitment and can assist in creating a working environment of trust and confidence (Harinarain & Haupt, 2010).

5.5.9 Migrant Labour

The construction industry is particularly vulnerable to the pandemic because it employs a constantly changing labour force (Whiteside & Sunter, 2000) that works on short-term contracts. It also employs permanent employees who move between projects across the country and in other countries (Dickinson & Versteeg, 2004). The migrant labour work in conditions that promote poor lifestyle choices increasing their risk of contracting HIV (Barac & Otter, 2001; Bowen, *et al.*, 2008; ILO, 2001; Lisk, 2002). The spread of HIV and AIDS can be limited by education programmes and information handed out in the workplace.

5.5.10 The asymptomatic period

The progression from HIV to AIDS differs from person to person. Symptoms can appear anytime up to 6-8 years after infection (Dickinson & Innes, 2004; Dickinson, 2006a; Evian, 2008; George *et al.*, 2009; Lake, 2006; O'brien, & Koerkenmeier, 2001). The initial costs associated with HIV and AIDS are very low but as the employee progresses to AIDS then these costs increase (George *et al.*, 2009).

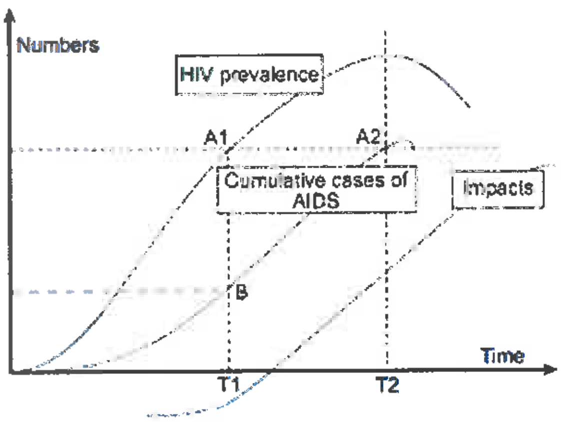


Figure 5.4. Three curves depicting the HIV and AIDS epidemic (Whiteside & Sunter, 2000: 27).

Figure 5.4 illustrates the asymptomatic/incubation period (8–10 years) between initial HIV infection, and the period of subsequent cumulative AIDS-related illnesses and deaths (Whiteside & Sunter, 2000; Whiteside, Barnett, George & Van Niekerk, 2003). The impacts that would follow are represented by a third curve; it is these impacts that are being felt by many companies in South Africa (George, 2006). Figure 5.4 portrays the gradual impact of this on absenteeism and productivity, resulting in employers having to replace and train new employees to fill positions left by those who have died or left work due to ill health. As a result, companies will experience a large-scale loss of existing skills and institutional memory within the organisation (George, 2006). However, according to Chazan, Brklacich & Whiteside (2009) one needs to bear in mind that Figure 5.4 does not capture the inequities inherent in AIDS impacts (i.e. differentiation within or between societies); the root causes of vulnerabilities to any of the three curves; where or how to intervene or what actions will alter future trajectories.

Science and medicine have made tremendous inroads in the treatment of HIV, which assists in prolonging the productive lives of people living with HIV and thereby enables them to work for a longer period of time after being infected. According to Oppenheimer (2007) antiretroviral therapy (ART) is vital to control the virus, but there is a danger that other equally important aspects, including HIV prevention and combating stigma, are slipping off the radar. This problem therefore needs to be looked at holistically in order to win the fight posed by HIV and AIDS.

5.5.11. 'AIDS fatigue'

Dealing with a devastating issue like HIV and AIDS for a long time has a debilitating effect on everyone involved and this becomes oppressive resulting in AIDS fatigue. People now feel they have heard it all before and have information overload and want to avoid the topic (Lake, 2006; Lamptey *et al*., 2003; Van Wyk, 2007)

5.5.12 Other challenges

Other challenges include:

- The fact that HIV and AIDS has to compete with many other initiatives;
- There is resistance from senior management;
- Lack of education materials;
- Lack of funding;
- Corporate culture;
- Lack of leadership training;
- Employee resistance;
- Lack of personnel;
- Lack of commitment;
- Frozen groups, certain groups of people who believe HIV and AIDS is not their

problem, e.g. married men/women or older individuals; and

- Middle management resistance (Dickinson, 2002; The Conference Board, 1997; Van Wyk, 2007).

5.6 Summary

The workplace can be the most important place for the transference of information on prevention, treatment and care of employees. There is also the potential for the workplace to reach families and communities related to employees. This chapter discussed the workplace response to HIV and AIDS and the challenges that they faced. Chapter 6 goes onto discuss the drivers that influence corporate behaviour.

CHAPTER 6

DRIVERS THAT INFLUENCE CORPORATE BEHAVIOUR

6.1 Introduction

The drivers (legal requirement, social pressure, business costs, voluntary regulation, visibility of disease and individuals within the companies) that influence corporate behaviour are discussed in this chapter.

6.2 Drivers that influence corporate behaviour

Six key 'drivers' of company HIV and AIDS responses were identified by Dickinson & Stevens (2005), namely legal requirements, social pressures, business costs, voluntary regulation, visibility of the disease, and individuals within companies as summarised in Table 1. The study found that legal requirements, economic performance, and social pressures were external to the company and were generally weak in framing the corporate response to HIV and AIDS. An important finding of this study was that cost calculations were not driving company responses to HIV and AIDS but in fact it was the pressure of other companies' responses and the general visibility of the AIDS epidemic.

Table 6.1 Drivers of company response (Dickinson & Stevens, 2005).

No.	Driver	Explanation	Type of driver
1	Legal considerations/ requirements	Legal considerations played a major role in the wider national response to HIV & AIDS but it had a limited impact in the workplace. HIV & AIDS law has been fragmented, with no single overarching piece of legislation. The law is unable to penetrate into the lower levels within the company resulting in companies having HIV & AIDS policies that are rarely consulted.	External
2	Social pressure	Involves the relationships between business and all other major social actors, as well as the pressures that are exerted on business by the response or non-response of other businesses. Business is generally cautious and a 'strategy' of following others has been as applicable to corporate HIV & AIDS responses.	
3	Business costs	Was seen as the most obvious driver in prompting a corporate response to HIV & AIDS, but this is no	

		longer true because it has not always been easy (requires reliable information) to show the impact of HIV & AIDS on the companies' bottom line. The business rationale for responding to HIV & AIDS is important but not the overriding factor taking into account other (social, political and psychological) facets.	
4	Voluntary regulations	In the context of HIV & AIDS, voluntary regulation can be the use of a code of good practice or one of the corporate reporting frameworks, for example the King III Report. The role of voluntary regulation in driving company responses to HIV & AIDS has been limited.	Internal
5	Visibility of disease	The lack of visibility (as a result of the biological nature of HIV and AIDS and the stigma and discrimination) of HIV & AIDS has resulted in a slow and reactive response by industry.	
6	Individuals within companies	Individuals (frequently black, managers, nurses and administrators) who worked hard to get HIV & AIDS to be taken seriously by companies. Because these responses are driven from below, they are generally weak and fragmented.	

The 6 drivers in Table 1 were used and tested within the context of the KZN construction industry (n=123) to determine the industry response to the HIV and AIDS pandemic by Harinarain and Haupt (2011a). They found that the business case was the most important factor driving the response of construction firms to HIV and AIDS. An important point to note is that none of these firms in KZN had as yet conducted prevalence testing. As a result their estimates on numbers of HIV positive people in their respective companies were based solely on perception and the inference they were making when tracking, for example, high absenteeism rates and sick leave. Visibility or lack thereof of HIV and AIDS was ranked second. The third most important prompt to action was legal requirements. Individuals who assumed responsibility for the company's response to HIV and AIDS was ranked fourth. The fifth factor was found to be social reasons, or being a good corporate citizen. Voluntary reporting was ranked sixth (Harinarain & Haupt, 2011a).

According to the Conference Board (1997) other factors motivating employers to address HIV and AIDS included:

- ethics;
- fear;
- concern for worldwide epidemic safety prevention;
- welfare of employees;

- demands from investors and consumers for increased productivity, efficiency, and innovation; and
- impact on the quality of products and services.

In order to postulate a model that will assist in the effective management of HIV and AIDS in the construction industry an extensive literature review was conducted. In order to validate the 6 categories/drivers and to ensure that there were no new categories 270 books and journals papers were reviewed. The initial table consisted of 175 sources and 120 items under the 6 drivers. The table was then refined and duplicated and redundant items removed. The final completed table is depicted in Appendix B and consists of 175 sources and 87 items. This comprehensive review confirmed that there were indeed 6 drivers and no new categories were added. This refined table consisted of 14 items under legal consideration, 5 items under social pressures, 35 items under business case, 11 under voluntary regulation, 7 under visibility of the disease and 15 items under internal agents.

6.3 Summary

If the construction industry wants to do well financially, they need a healthy, productive workforce. This in itself should be reason enough to take part in this fight against HIV and AIDS. There are 6 factors that drive a company to respond to HIV and AIDS.

The response of the construction industry to HIV and AIDS to date has been feeble. The industry has yet a long way to go in terms of adequately assisting its employees in the fight against HIV and AIDS. Even small steps taken to manage HIV and AIDS could show rewards in the future in terms of a healthy workforce and reduced financial impact on business. Chapter 7 discusses the research methodology adopted or this research.

CHAPTER 7

RESEARCH METHODOLOGY

7.1 Introduction

In developing a research design the purpose, context and the research techniques used for data collection and analysis needs to be considered. This chapter discusses the research methodology designed to achieve the research aim and objectives. The research process, paradigms and methodology is also discussed. The sampling methodology is illustrated and the data analysis is also explained. The chapter concludes by discussing reliability, validity and ethics of this research.

7.2 What is research?

White (2002) describes research as a process; a series of activities unfolding over time. Sharp & Howard (1996) define research as seeking through methodical processes to add to one's own body of knowledge. Leedy & Ormrod (2010) describe research as a systematic process of collecting, analysing and interpreting information in order to increase one's understanding of a phenomenon of interest. These definitions imply that research is a systematic process, has objectives or purpose, aims to increase human knowledge and allows for the collection of information and evaluation of it before making a final decision.

Although research projects vary in complexity and duration, research according to Leedy (2005), typically entails eight distinct characteristics, namely:

- Originates with a question or problem;
- Requires clear articulation of a goal;
- Requires a specific plan for proceeding;
- Divides the principal problem into more manageable sub-problems;
- Is guided by the specific research problem, question, or hypothesis;
- Accepts certain critical assumptions;
- Requires the collection and interpretation of data in an attempt to resolve the problem that initiated the research; and

- Is cyclical in nature.

7.2.1 The Research Process

Fellows and Lui (1997) describe the research process as one that is dynamic and flexible and allows for changes throughout the research process. Research is an on-going process. Each research project builds on prior research and contributes to a large body of knowledge (Nachmias and Nachmias, 1996; Neuman, 2000).

The "*Research Process Onion Model*" developed by Saunders, Lewis & Thornhill (2009:108) as depicted in Figure 7.1 was used to describe and understand the research methodology adopted for this study. The first layer is that of the research paradigm. The second layer is research logic/function, which is followed by research strategies and time horizons. The last layer is that of the data collection methods.

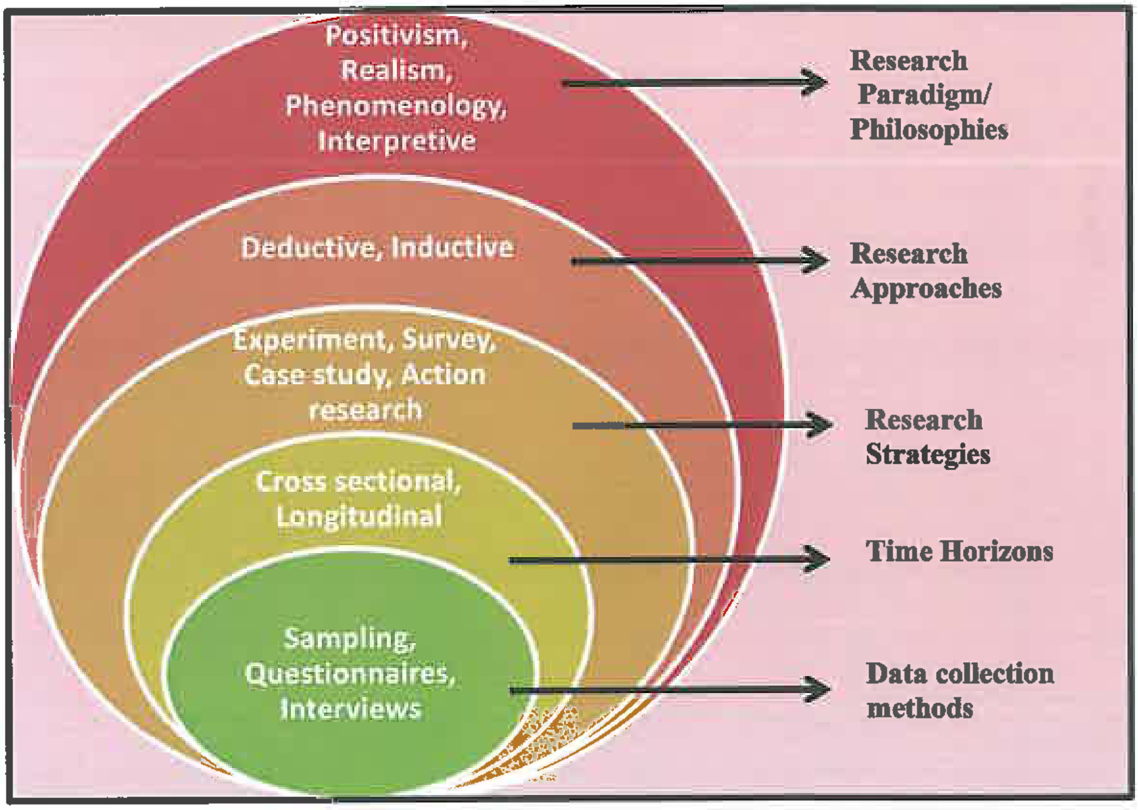


Figure 7.1. Research Process Onion Model (adapted from Saunders, *et al.*, 2009: 108).

7.3 Research Paradigms/Philosophies

Paradigms are systems of interrelated ontological, epistemological, and methodological assumptions (Blanche, Durrheim, Painter, 2006) which assist the researcher in determining which research instruments and methods of data collection to use (Maree & van der Westhuizen, 2009).

Ontology is the way in which one views the world and is considered the initial step when conducting research (Grix, 2004; Wisker, 2008). Epistemology is the way in which knowledge is acquired, constructed, interpreted and represented (Grix, 2004; Maree & van der Westhuizen, 2009; Wisker, 2008). Methodology is the approach used by a researcher to investigate a subject whereas research methods are the techniques used for data collection (Bryman, 2004; Grix, 2004; Lee & Lings, 2008; White, 2002; Wisker, 2008).

A paradigm is a theoretical framework which includes the way one views events, the approach to questioning, discovery and interpretation of data (Bryman, 2004; Fellows & Liu, 1997; Wisker, 2008). Paradigms are important as they shape how researchers view the world and indicate the manner in which the research is designed, data is collected and the presentation of results (Williams, 1998). Some of the key research paradigms include interpretivism, phenomenology, feminist, positivism and realism.

- In an interpretive paradigm the researcher tries to comprehend and understand the data with the underlying assumption that there are no fixed truths, but the social reality is created from human perception and interaction (Grix, 2004; Maree & van der Westhuizen, 2009). Interpretivists study their subjects in their natural environment (Grix, 2004; Wisker, 2008) by spending periods of time in direct contact with the subjects (Neuman, 2000).
- In a phenomenological study the researcher tries to understand the interpretation of subjects of a situation as opposed to the study of the event as it exists external to the subjects (Leedy, 2005). This paradigm supports a qualitative approach to social inquiry as its aim is to probe into the various unexplored dimensions of a phenomenon. Phenomenologists believe that the world is a social construct and that the observer is a part of what is being observed.
- Feminist research according to (Neuman, 2000) and (Walliman, 2011) is generally carried out by researchers who use a feminist perspective in an attempt to rectify the male dominated perspectives which have developed in social science.

- Positivism is the study of human society in the widest sense (Walliman, 2011). This principle lies in the belief that social life is an objective structure that exists independent of people. It comes from the ontology that an unchanging reality exists, from which objective and accurate knowledge can be obtained for research. Positivism is used when researchers seek exact measures, objective research and test the hypotheses by analysing the data collected from the measures (Grix, 2004; Neuman, 2000; Schutt, 2006; Wisker, 2008). It is also referred to as a 'scientific method' or hypothetico-deductive method (Lee & Lings, 2008). Positivism also entails the generation of hypotheses that can be tested and a deductive research strategy that allows explanations of laws to be assessed (Bryman, 2004; Grix, 2004). The underlying assumption for this paradigm is that the results can be accepted as empirical generalisations (Walliman, 2011). The weakness of the positivist paradigm is that there is a tendency to reduce people to statistics and this approach assumes that subjects remain constant (Bryman, 2004; Wisker, 2008).
- Realism as a paradigm, has elements of both positivism and phenomenology, as it concerns multiple perceptions about a single, mind-independent reality (Healy & Perry, 2000). In other words, researchers working from a realist perspective use a combination of theory and experimentation to arrive at conclusions in a study (Outhwaite, 1983).

The positivist paradigm was adopted for this study. The methodology was that of a quantitative strategy using survey research. The method adopted was that of questionnaires. This is depicted in Figure 7.2 below. While other paradigms such as the interpretivist, could have been used they were not deemed suitable because of geographical limitations, coupled with the time consuming qualitative nature of interviews that was required for these paradigms. The research selected the positivist paradigm because the development of a HIV and AIDS model for the construction industry required a highly structured quantitative measurement with large samples and hypothesis testing that can be generalised to the sample population.

Figure 7.2 depicts the research process adopted or this study which is discussed in detail under the various sections.

Figure 7.2. The research process adopted for this study.

7.4 Research Approach

Saunders, *et al.* (2009) classifies research logic as either deductive or inductive. In deductive theory the researcher deduces a hypothesis (or hypotheses) that must then be subjected to empirical testing. The researcher has to specify how data is collected in relation to the concepts that make up the hypothesis (Bryman, 2004; Crowther & Lancaster, 2009; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Saunders, *et al.*, 2009). In deductive research theory guides research. With an inductive stance, theory is the outcome of research. Induction involves drawing generalisable inferences from observations and does not require prior theories or hypotheses (Bryman, 2004; Crowther & Lancaster, 2009; Grix, 2004; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Saunders, *et al.*, 2009). Figure 7.3 depicts the process of deduction and induction.

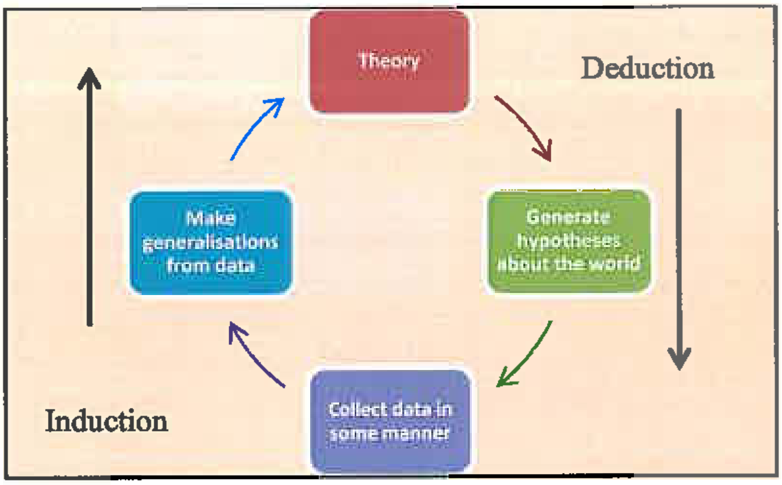


Figure 7.3. Induction and deduction in social science (adapted from Lee & Lings, 2008:7).

The deductive (testing theory), as opposed to induction (building theory) approach was utilised in this research. Commencing the research from a theoretical perspective was deemed advantageous, as there was a need for a clear understanding of the underlying theory. The deductive approach also allowed the researcher to find causal relationships between variables and the structured methodology facilitated replication ensuring validity and reliability of the results.

The next layer of the research onion is the research strategy or design. According to Blanche, Durrheim & Painter (2006:34) "*a research design is a strategic framework for action that serves as a bridge between research questions and the execution or implementation of the research.*"

7.5 Research Strategies/Designs

The following are some of the research designs that can be used in a study, namely

- In ethnographic research, the researcher gains insight into what, how and why subjects behave in a certain way by becoming a part of the group under study and observing behaviours of the subjects' (Bryman, 2004; Fellows & Liu, 1997; Neuman, 2000).
- Grounded theory study utilises qualitative research via multiple stages of data collection and interpretation to derive a theory (Leedy & Ormrod, 2010).
- Case study research according to Leedy and Ormrod (2010) is the study of a particular individual, group or event over a specific period of time.
- In experimental research one is primarily interested in a cause and effect. Researchers identify the variables of interest and seek to determine if changes in one variable

(independent variable, or cause) result in changes in another (dependent variable, or effect) (Bryman, 2004; Creswell, 2005; Fellows & Liu, 1997; Leedy & Ormrod, 2010; Melville & Goddard, 1996).

- Generally, action research involves active participation by the researcher in the process under study, in order to identify, promote and evaluate problems and potential solutions (Creswell, 2005; Dane, 2011; Fellows & Liu, 1997; Leedy & Ormrod, 2010; Maree & van der Westhuizen, 2009; Melville & Goddard, 1996).
- Exploratory studies are used to provide new insights into a study or to investigate an area of research that is relatively by utilising an open, flexible, and inductive approach to research (Blanche, Durrheim, Painter, 2006; Dane, 2011).
- Descriptive studies aim to describe phenomena and focuses on the validity (accuracy) and reliability (consistency) of the observations, and the representativeness of sampling (Blanche, Durrheim, Painter, 2006; Dane, 2011; Maree & van der Westhuizen, 2009; Schutt, 2006).
- Explanatory studies are designed to identify causality that is whether or not one or more independent variables could cause one or more dependent variables. The focus of the design should be on eliminating plausible rival hypotheses (Blanche, Durrheim, Painter, 2006; Dane, 2011; Schutt, 2006).
- Applied and basic research. The results of basic research are used to enhance the fundamental knowledge of the world which is used to either refute or support theories. Applied research on the other hand, contributes towards practical issues of problem solving and decision making and the findings are only generalisable to the specific context under study. The difference in the level of generalisation between basic and applied research impacts on the design of the study (Blanche, Durrheim, Painter, 2006).
- Survey research comprises a cross-sectional design in which data are collected by either questionnaire or structured interview. This is usually done on many cases at a single point in time so that quantifiable data can be collected via questionnaires and/or interviews which are analysed to determine patterns of association (Bryman, 2004; Creswell, 2005; Dane, 2011; Fellows & Liu, 1997; Fink, 2003; Maree & van der Westhuizen, 2009; Neuman, 2000).

The survey research design was adopted for this study as it allowed the collection of a large amount of data in a highly economical way. The standardisation of the data allowed for easy comparison and is easy to explain and understand. The survey research design also allowed the use of descriptive and inferential statistics so that relationships between variables could be seen and the relationships modelled.

7.6 Time Horizons

Another aspect of research is the time dimension of research which is either cross sectional or longitudinal. In cross-sectional designs data about current attitudes, opinions, or beliefs are collected by the researcher at one point in time. With this design there is no need to follow up with additional data collection and the sampling requirements for cross-sectional research are generally less difficult than sampling requirements for longitudinal research (Creswell, 2005; Daniel, 2012; Fellows & Liu, 1997; Grix, 2004; Neuman, 2000).

Longitudinal designs are used to study individuals over time (Creswell, 2005). The researcher has to be aware of bias in longitudinal designs due to repeated surveying, attrition and data collection on respondents (Daniel, 2012). There are three different types of longitudinal designs, namely trend study, cohort study, and panel study. A trend study involves identifying a population and examining changes within that population over time. In a cohort study the researcher identifies a subpopulation based on some specific characteristic and then studies that subpopulation over time and a panel study is used to examine the same people over time (Creswell, 2005; Daniel, 2012; Fellows & Liu, 1997; Grix, 2004; Neuman, 2000).

A cross sectional research design was adopted for this study because data was collected at one point in time.

7.7 Data Collection methods

The data collected for this study was carried out in 2 phases. Phase one involved the use of the Delphi technique in which a questionnaire was distributed to a panel of experts to understand the key drivers to HIV and AIDS management in the South African construction industry. Phase two involved the development of a HIV and AIDS management model that was validated via a survey questionnaire that was distributed nationally and then the analysis and validation of the model. Figure 7.4 outlines the research process used for this study.

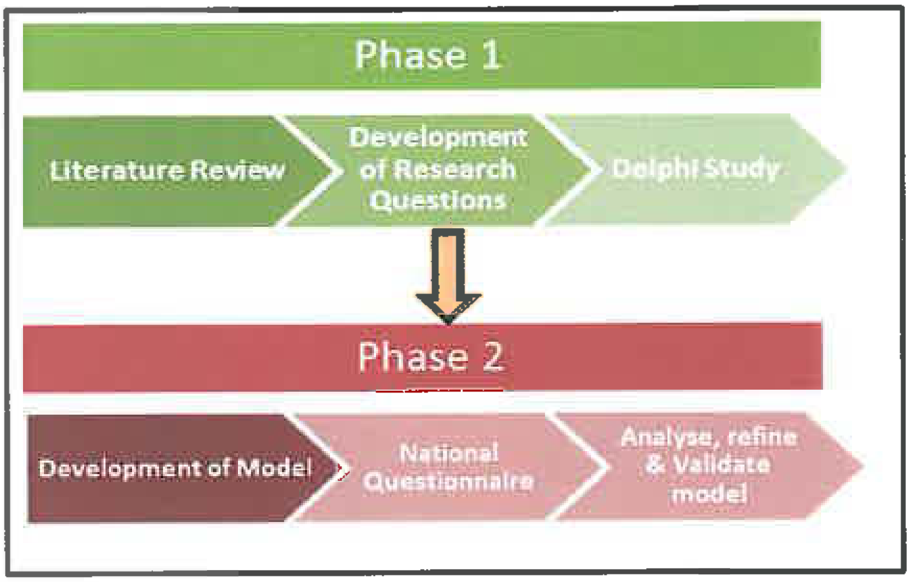


Figure 7.4. Research design outline.

In order to ensure that the adopted research methodology and methods achieved the research aim and objectives Table 7.1 summarised the methods applied to address the specific research objectives.

Table 7.1. The Research Methods Assigned to Achieve the Research Objectives

Research Phase	Objective	Data Collection Method	Data Analysis Method	Outcome	Chapter
Phase one – Literature Review	Describe the current body of knowledge with regard to HIV and AIDS - in general; - its effect on the construction industry; - as well as the workplace response to HIV and AIDS; and - the business case for addressing HIV and AIDS in the workplace.	Literature review	Literature Synthesis	- The HIV & AIDS status in South Africa - Its effect on the construction industry; - The status of HIV & AIDS workplace response - The business case for addressing HIV & AIDS in the workplace.	2-5
Phase one – Delphi Method	Determine which factors drive corporate response to effective management of HIV and AIDS.	Delphi study	Descriptive Statistics	Consensus on the drivers to effective management of HIV and AIDS	6-9
Phase two – Model development	To develop a theoretical model to effectively manage HIV and AIDS in the construction industry.	Desk study	Theory	HIV and AIDS management model	10
Phase two – Survey Questionnaire	- Test & validate the model for HIV & AIDS management for perfect fit. - Evaluate the practical & statistical significance of the hypothesized paths in the proposed theoretical model.	Survey Questionnaire	Exploratory factor analysis, Confirmatory factor analysis, Path Modelling	Validated model Goodness-of-fit test results	7 and 11

The data collection methods utilised in this research were the literature review, the Delphi study and the questionnaire.

Holt (1998) defines the literature review as the collection and incorporation of as much information as can be discovered with respect to a given topic that allows the researcher to understand and develop a theoretical background to the research. In this way the literature review helps generate ideas and identify key variables impacting the research. The purpose of a literature review is to avoid duplication, discover areas where knowledge can be added (research gaps) and position the contemplated research among the work of other scholars (Grix, 2004).

The literature review was used during this research to:

- Establish a clear understanding of the nature of HIV and AIDS management in South Africa and the construction industry in particular.
- Determine the extent to which HIV and AIDS management programmes are currently been implemented in the workplace.

A critical review and analysis of textbooks, academic journals, professional magazines, conference proceedings and internet websites were utilised to meet the objectives. Before explaining the questionnaire and its design, quantitative, qualitative and mixed methods will be described.

7.7.1 Quantitative, qualitative and mixed methods research.

Researchers can adopt a qualitative (data collection in the form of words), quantitative (data collection in the form of numbers) or mixed-method (data collection in the form of words and numbers) technique in order to collect data.

The researcher doing qualitative research attempts to obtain an inside view of the research, getting as close as possible to the subject of the research in order to collect resonant and fertile data. Qualitative research is typically used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view. Researchers see themselves as part of the research process (Fellows & Liu, 1997; Walliman, 2011; White, 2000, 2002). This type of research is sometimes called relativist or phenomenalist, interpretative, constructivist, or post-positivist approach (Grix, 2004; Leedy, 2005). In qualitative research the issue is studied in depth. The data is collected in the form of either interviews, observation, diaries, case studies and action research (Blanche, Durrheim, Painter, 2006; Fellows & Liu, 1997; Leedy & Ormrod, 2010). The criticism of qualitative research is that it cannot be generalised (de Vaus, 2002).

Quantitative research originates from science and therefore is sometimes referred to as the 'scientific method' or the positivist method. This method is based on the assimilation of facts and observable phenomena. Scientists use these to deduce laws and establish relationships such as for example the cause-and-effect relationship. The techniques used always generate numerical data which are then analysed (Blanche, Durrheim, Painter, 2006; Creswell, 2005; Curwin & Slater, 2002; de Vaus, 2002; Fellows & Liu, 1997; Grix, 2004; Leedy & Ormrod, 2010; Neuman, 2000; White, 2000, 2002). The purpose of quantitative researchers according to Blanche, Durrheim & Painter (2006), Bryman (2004) and Leedy & Ormrod (2010) is to seek explanations and predictions that will generalise to other persons and places. The intent is to establish, confirm, or validate relationships and to develop generalisations that contribute to theory. Replication in quantitative research is also important because it can then be verified which provides reliability (Bryman, 2004; Grix, 2004). The analysis of quantitative data can be simple in mathematical terms involving the production of tables, charts and diagrams such as pie charts and bar char referred to as descriptive statistics or it can be complicated when inferential statistics are used (White, 2000, 2002).

Mixed methods research combines both qualitative and quantitative methods (collection and analysis of data) in order to better understand the problem. The use of both methods eliminates bias as it combines the benefits of both methods and reduces the disadvantages of each (Creswell, 2005).

The quantitative technique was adopted for this research as the data generated could be generalised and allowed the researcher to objectively measure the variables of interest. This approach was also very structured and allowed the researcher to conduct a pilot study.

7.7.2 Sampling

Sampling is a technique for selecting a subset or specimen from a whole population for analysis so that it mirrors the population it represents. The aim of sampling was to select a representative and non-biased sample to allow for valid and reliable findings that can be generalised (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Creswell, 2005; Dane, 2011; de Vaus, 2002; Fellows & Liu, 1997; Gelo, Braakmann & Benetka, 2008; Melville & Goddard, 1996; Naoum, 1998.

There are two main sampling categories, namely probability sampling and non-probability sampling.

7.7.2.1 Probability sampling

Probability sampling ensures a random sample by guaranteeing that every element in the sample has an equal chance of being selected. With this form of sampling the researcher is able to make generalisations to the population. Probability sampling represents the population but does not guarantee representativeness. (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Burgess, 1993; Creswell, 2005; Dane, 2011; Davies, 2007; Denzin & Lincoln, 1998; de Vaus, 2002; Fink, 2003; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Neuman, 2000; Schutt, 2006; White, 2000, 2002). There are four major types of probability sample designs, namely: simple random sampling, stratified sampling, systematic sampling and cluster sampling.

- Simple random sampling gives every element in the target population an equal chance of being selected. It works best when the sample is small and the elements are known. For this method a list of members in the population is needed so that numbers can be assigned to each member so that they can be randomly selected. The strength of this method is that it yields a representative sample and allows inferential statistics to be used. The weakness of this method is that there are larger sampling errors.
- In stratified sampling the population is split into groups/stratum and then a random sample is then selected from each subgroup.
- Systematic sampling is used in large sampling frames were simple random sampling would be difficult. In systematic sampling a fixed distance or sampling interval (n) between elements is calculated, the population is ordered, the first element is randomly selected and then every nth element is selected.
- Cluster sampling is used where the population is widely dispersed. The population is subdivided in clusters/groups and elements are randomly selected. Cluster sampling requires less time, money and labour. The weakness of this method is that it may not be as representative and reliable of the population as a simple random sample, there is greater sampling error and clusters may dramatically differ in opinion. Cluster sampling differs from stratified sampling because its main aim is to decrease costs and increase operational efficiency whereas the aim of stratified sampling is to increase precision and representativeness (Blanche, Durrheim, Painter, 2006; Clark & Creswell, 2008; Creswell, 2005; Dane, 2011; Daniel, 2012; Davies, 2007; Denzin & Lincoln, 1998; de Vaus, 2002; Fellows & Liu, 1997; Fink, 2003; Gelo, Braakmann & Benetka, 2008; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Neuman, 2000; Scheaffer, Mendenhall & Ott, 1990; Saunder, 2009; Schutt, 2006; White, 2000, 2002).

7.7.2.2 Non-Probability sampling

In non-probability sampling the sample is selected on the subjective judgement of the researcher because the individuals are available and convenient. The elements do not have an equal chance of being selected and therefore the sampling error cannot be estimated and the findings cannot be generalised (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Creswell, 2005; Dane, 2011; Daniel, 2012; Denzin & Lincoln, 1998; Fink, 2003; Leedy & Ormrod, 2010; Neuman, 2000; Schutt, 2006). There are four major types of nonprobability sample designs; namely quota sampling, convenience sampling, purposive sampling and snowball sampling.

- In quota sampling the population is divided into subgroups such as for example male or female. The proportion of each subgroup is estimated. To meet the quotas interviewers can choose anyone that meets the requirements.
- The researcher selects participants that are willing and available to participate in the study in convenience sampling. With this sampling method the researcher cannot be confident that the sample is representative of the population.
- In purposive or judgmental sampling, the sample is selected for a purpose, usually because the researcher feels that they can best provide the information needed to answer the questions. The strengths of purposive sampling include the fact that is provides control over who is selected, less selection bias and less opportunity of manipulation of data by data collectors. The major weakness is that the selection of cases requires considerable knowledge of the population before the sample is drawn, it requires greater resources, time and money and there could be bias towards personal beliefs of the researcher. Purposive sampling is not considered to be statistically representative of the total population.
- In snowball sampling initial contact is made by the researcher with a few individuals who are relevant to the study and then uses then to make contact with other people (Burgess, 1993; Creswell, 2005; Curwin & Slater, 2002; Dane, 2011; Daniel, 2012; Davies, 2007; Denzin & Lincoln, 1998; de Vaus, 2002; Fink, 2003; Leedy & Ormrod, 2010; Neuman, 2000; Scheaffer, Mendenhall & Ott, 1990; Saunders, *et al.*, 2009; Schutt, 2006; Tashakkori & Teddlie, 2003; White, 2000, 2002).

Selecting the sample for this research was seen as very important and great care was taken when choosing the type of sample design. The researcher had to ensure that the characteristics of the sample are the same as its population and act as representative of the population as a whole. For this research purposive sampling was used for the Delphi study as discussed further in chapter 8. The research wanted to use stratified sampling in terms of selecting contractors from the nine provinces for the national survey questionnaire but due to the fact that the population size was

1,046, the entire population was emailed the questionnaire. In this way contractors throughout South Africa were contacted, the sample was more representative of the population, yields smaller random sampling errors and enables results to be generalised.

Construction firms in South Africa were identified from the Master Builders Association (MBA) websites for the nine provinces/juristic areas. The MBA was selected as it contains lists of registered building contractors and is of a manageable size. The CIDB database could have been used but it was felt that due to the sheer number of contractors, management of the process by a single researcher would be difficult. The total population size of contractors registered with the MBA for the provinces were 1,046. Table 7.2 indicates the nine MBA provinces/juristic areas together with the number of emails sent out and responses received. The valid responses were 943 of which 311 completed questionnaires were received, indicating a response rate of 33.3%. According to Collis & Hussey (2009:211) for a population size of 1,000 a sample size of 278 is required and according to Gillham (2000); Fellows and Liu (1997) and Saunders *et al.* (2009) a 30%-40% response rate is acceptable because of the fact that few people respond to questionnaires. The South African construction industry is renowned for its lack of participation in research. Therefore the sample of 311 for this study was deemed adequate.

Table 7.2. Study sample and response rate.

No	Province/Juristic area	No of contractors listed on the website and emails sent out	Emails undeliverable	Total no of valid emails
1	MBA-Boland	93	21	72
2	MBA-KZN	178	26	152
3	MBA-Eastern Cape	262	22	240
4	MBA-North Gauteng	299	25	274
5	MBA-Greater Boland	41	1	40
6	MBA-Northern Cape	51	2	49
7	MBA-West Boland	0	0	0
8	MBA-Western Cape	86	13	73
9	MBA-Free State	36	2	34
		1046	112	934

It is not possible to completely remove bias from survey research (White, 2000, 2002) but the researcher can mitigate the impact of the errors. The methods to reduce response bias included using a respondent-cantered approach for designing the questionnaire; data cleaning and validity and reliability checking. Because of the importance of eliminating sampling bias, the researcher eliminated as much bias as possible by looking at three factors and responding to it.

- ***Sampling frame bias*** was avoided by ensuring an up to date list of contractors were obtained within the acceptable sampling frame.

- ***Researcher bias*** was reduced by the use of a structured questionnaire so that the same questions could be asked in the same order.
- ***Non-response bias*** could not be completely avoided, but the researcher tried to reduce it by clearly explaining the research objectives, making the questions easy and simple to understand and answer and removing ambiguity from the questionnaire.

7.7.3 Survey questionnaire

A survey research design was selected for this study. There are two ways in which surveys can be carried out, either by interviews or questionnaires, or both (White, 2000).

7.7.3.1 Interviews

Interviews are a social process, an interaction or cooperative venture, in which words are the main medium of exchange. It is not merely a one-way process of information passing from one (the interviewer) to another (the interviewee), but an interaction, an exchange of ideas and meanings, in which various realities and perceptions are explored and developed. To this extent both the respondent(s) and the interviewer are in different ways involved in the production of knowledge. The challenge with interviews is that is can be time consuming, the data generated can be difficult to analyse and compare and there is the potential that the interviewee could bias responses (Dolowitz, Buckler & Sweeney, 2008; Leedy, 2005; Bauer & Gaskell, 2000; Gillham, 2000; Gorden, 1980; Sharp & Howard, 1996).

Interviews occur in two forms, unstructured and structured. Unstructured interviews are used in exploratory situations due to the fact that the questions are not pre planned or structured and the interview is carried out in an informal manner. The structured interview involves the researcher working through a series of standardised questions known as an interview schedule. This type of interview is likely to be composed mostly of closed questions, they are standardised and respondents are exposed to the same questions (Bryman, 2004; Gillham, 2000; Gorden, 1980; McNeil and Chapman, 2005; White 2002).

7.7.3.2 Questionnaire

A questionnaire is defined as a form containing a set of questions; submitted to people to gain statistical information. One of the main features of a questionnaire is its impersonality. The advantages of using the questionnaire include the fact that questionnaires are cheap to administer and saves time because a large number of people from a wide geographical area can be sent the questionnaire (via post, fax or email) at one time. The questions are fixed, that is they do not change according to how the replies develop, and they are the same for each respondent. Respondents are expected to complete the questionnaire in their own time and at their convenience and return it which reduces the effects of interviewer bias. The anonymity that questionnaires provide allows for sensitive questions to be asked. The biggest disadvantage of questionnaires is the low response rate because people do not always return the questionnaires. Other disadvantages are the fact that the researcher is not able to probe responses, clarify questions or ask additional questions. The researcher is also not sure who completed the questionnaire as someone other than the intended respondent could have completed it. Questionnaires favour literate respondents and there is a greater risk of missing data. (Bryman, 2004; Burgess, 1993; Creswell, 2005; Crowther & Lancaster, 2009; Dolowitz, Buckler & Sweeney, 2008; Fink, 2003; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Neuman, 2000; White, 2000, 2002). The most common scale for obtaining respondents' opinions in a questionnaire is the Likert scale (Fellows and Liu, 1997). Rensis Likert in 1932 developed the Likert scale which represents a systematic and refined means for constructing indexes from questionnaire data. The respondent is presented with a statement in the questionnaire and is asked to indicate their response on response scales consisting of for example five options. Because identical response categories are used for several items intended to measure a given variable, each such item can be scored in a uniform manner. The aim of the Likert scale is to measure intensity of feelings about the area in question. (Bryman, 2004; Dane, 2011; Saunders *et. al.*, 2009; Tashakkori & Teddlie, 2003).

There are two types of questions that can be used in questionnaires, namely open-ended and closed-ended questions. Open-ended questions allow the respondents the freedom to express their feelings, beliefs or recommendations. With closed-ended questions, the respondent is provided with a list of options from which a single response has to be selected. Respondents generally find this type of questions easier and quicker to answer. Closed-ended questions are easily coded so that it can be statistically analysed (Bryman, 2004; Creswell, 2005; Farrell, 2011; Fellows & Liu, 1997; Fink, 2003; Naoum, 1998).

In quantitative research it is important that data is coded so that the responses are converted into numbers that can be analysed statistically. After coding the research needs to 'clean' the data in order to check the accuracy of coding and correct any errors. It is only after the researcher has a clean electronic database, can statistical analysis commence (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Burgess, 1993; Cooper and Schindler, 1995; Neuman, 2000; Saunders *et. al.*, 2009).

In this research the questionnaire was used in both phases. In phase one it was used in the Delphi study to identify the drivers to HIV and AIDS management (elaborated further in chapter 8). In phase two the questionnaire was used to obtain information from the construction sector nationally (cf. par. 7.7.2.1, 7.3.2.2). Due to the time constraints the respondents face due to busy schedules, work commitments, etc., the questionnaire was designed to be simple to read and easy to understand and answer. As a data collection method, questionnaires were selected because they generate data in a very systematic and ordered fashion and the responses to the questions can easily be quantified, categorised and subjected to statistical analysis. Closed questions and Likert scale questions which were coded was used because it allowed the respondents to answer questions so that answers could be meaningfully compared, it produced less variable answers which are much easier to computerise and analyse and respondents generally find close-ended questions easier to answer.

A) Pilot Study

Bryman (2004), Creswell (2005), Farrell (2011), Fellows & Liu (1997), Leedy & Ormrod (2010) and Saunders, *et al.* (2009) highlighted the importance of conducting a pilot study before the questionnaires were sent out to the entire sample population. A pilot study for the Delphi was conducted in September 2012 with 5 members from the construction industry so that the questions could be refined, to test the intelligibility and clarity of questions and highlight ambiguity and repetition. Subsequently the questionnaire was amended and the Delphi study commenced in October 2012. The pilot study for the national survey questionnaire occurred in April 2013 with 10 members from the construction industry and the questionnaire was sent out in May 2013. The pilot study was conducted to ensure that the instructions were clear and understandable, that the participants understood their role, to remove ambiguities and to determine the timeframe. The researcher measured the time it took to complete the questionnaire and revised it by removing duplicated/redundant items.

In order to ensure a good response rate a covering letter was provided that introduced the research aim and objectives and questionnaire to the respondents in both phases of the study (Appendix C and Appendix F). The confidentially of respondents were assured. The questionnaires were designed to be simple and easy to complete and clear instructions on how to complete the questionnaire was given.

B) Instrument administration

The procedures employed in data collection are described below:

A) The Delphi Study

- The Delphi questionnaire (Appendix E) was designed using Microsoft Excel and was emailed to participants.
- The participants were informed about the confidentiality and anonymity of the responses and the procedure and research aims was outlined.

- Participants were selected via purposive sampling.
- Participation was totally voluntary.
- The Delphi study commenced towards the end of September 2012 and concluded in March 2013.

B) The survey questionnaire

- The survey questionnaire (Appendix G) was designed using Microsoft word and was emailed and faxed to participants.
- The participants were informed about the confidentiality and anonymity of the responses and the procedure and research aims was outlined.
- Contractors listed on the Master Builder websites were selected via a stratified random selection procedure.
- Participation was totally voluntary.
- After the first 2 weeks reminder emails were sent.
- The survey took approximately 12 weeks to complete.

7.8 Data Analysis

Data analysis is concerned with the process of converting data into information from the Delphi study and questionnaire by highlighting the main trends and differences in the most appropriate manner. The analysis for the Delphi study is discussed in chapter 9. The subsequent section discusses the data analysis procedure for the national survey questionnaire.

7.8.1 Data screening/cleaning and preparation for the national survey questionnaire

The data from the national survey questionnaire was analysed using the following methods:

- assessment of internal consistency using SPSS (Version 21);
- exploratory factor analysis using SPSS (Version 21);
- confirmatory factor analysis using Mplus (Version 7.11) and
- path modelling using Mplus (Version 7.11).

Prior to the path modelling data screening and preparation was carried out. This is usually regarded as an "*important first step*" (Schumacker & Lomax, 2004: 34). Data screening and preparation was carried out in the following manner:

a) Consideration for sample size;
b) Examination for missing data;

c) Evaluating univariate and multivariate normality;

d) Consideration of outliers; and

e) Item parcelling.

a) Sample size.

Path/SEM modelling requires a large sample (Kline, 2011; Schreiber, Stage, King, Nora & Barlow, 2006 and Schumacker & Lomax, 2004) in order to maintain power and so as not to affect correlations and covariances (Tabachnick & Fidell, 2013). However researchers have not been able to agree on what constitutes a large sample (Raykov & Marcoulides, 2006). Authors have devised rules of thumb to guide one in estimating a sample size but these rules of thumb are limited by their generalisability and sample sizes should be evaluated in terms of the researches data and model (Brown, 2006; Hair, Black, Babin & Anderson, 2010). Schumacker & Lomax (2004) for example examined a number of published research articles and found that the minimum sample size should be 100 to 150 subjects while most authors on average used between 250-500 subjects. Kline (2011) does not believe a sample sizes of less than 100 should be used in path/SEM analysis. Other authors such as Raykov & Marcoulides (2006) suggested a sample size of 10 times the number of free model parameters. Gaur & Gaur (2006) consider a sample size of 200-300 to be adequate for a proper analysis while Hair, *et al.* (2010) suggested sample sizes that range from 100-400. Kline (2011) describes a sample less than 100 as small, between 100 and 200 subjects as a medium sample size and sample sizes that exceed 200 cases as large. The sample size of 311 respondents falls within these recommendations and is considered a large sample.

b) Missing data

Most research usually contains some missing data. Missing data arises from missing completely at random (MCAR) or missing at random (MAR) (Schreiber, *et al.*, 2006; Schumacker & Lomax, 2004). According to Kline (2011) and Tabachnick & Fidell (2013) if there is a few missing values (< 5% on a single variable) it will be of little concern. Tabachnick & Fidell (2013) and Hair, *et al.* (2010) further argue that if the data is missing in a random pattern the choice off procedure to handle missing values is not important since most procedures will yield comparable results. Considering the relatively few missing values in the dataset and the random pattern of missingness the researcher deemed it acceptable to ignore the missing data. Therefore no formal test for missingness was conducted, as the missing data was mostly encountered in the descriptive sections of the data. The researcher therefore stated the number of cases when analysing the data in the successive chapter and utilised the robust maximum likelihood estimate method to address any problems. If there had been missing data, the researcher would have .considered using one of the following methods to address the situation. The options available to the researcher to deal with missing data include deleting cases which have missing values via either pairwise deletion or listwise deletion, replacing the missing data values with the mean of a variable and using robust statistical procedures that accommodate for the presence of missing data (Brown, 2006; Byrne, 2012; Hair, *et al.*, 2010; Kaplan, 2000; Kline, 2011; Niels, 2008; Norusis, 2008; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

c) Univariate and multivariate normality

Path/SEM estimation methods assumes multivariate normality, which means that (1) all the univariate distributions are normal; 2) the joint distribution is bivariate normal; and 3) bivariate scatterplots are linear (Kline, 2011; Schumacker & Lomax, 2004). Skewness and kurtosis are two ways that a distribution can be non-normal. SPSS was used to investigate the skewness and kurtosis of the dataset. Skewness describes the symmetry of a distribution, whereas kurtosis describes the shape of the distribution. Positive skew indicates that most of the scores are below the mean, and negative skew indicates Most of the scores are above the mean. Positive kurtosis indicates heavier tails and a higher peak described as leptokurtic and negative kurtosis indicates lighter tails and a lower peak (platykurtic) (Kline, 2011; Pallant, 2010; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013). The data is regarded as non-normal when there is an extreme value in either measure. Raykov & Marcoulides (2006) describe skewness and kurtosis coefficients under normality as zero and there extreme values are values greater +3 or less than -3. According to Byrne (2012) a violation of this assumption can invalidate the hypothesis and can lead to large differences in the test of chi-square resulting in Type 1 errors (rejecting a model when it should not be rejected).

The researcher wanted to highlight another important data-related point, the assumption that each observed variable is continuous and normally distributed (Kaplan, 2000; Tabachnick & Fidell, 2013). But a study of SEM application by Byrne (2012) showed that likert scaled data was used in a majority of studies, which is strictly speaking not continuous. It can therefore be argued that these constructs violate the assumptions underlying factor analysis. Muthen & Kaplan (1985) carried out a Monte Carlo study on non-normal categorical variables treated as continuous non-normal variables in an SEM framework. The results of their study revealed that likert scaled items did not produce serve distortions in standards error and chi square estimates (*ibid*). According to Byrne (2012) robust methodologies can be used to obtain trustworthy estimates in SEM models when the data is non-normal. Against this background, the researcher adopted the use of the robust maximum likelihood estimation technique.

d) Outliers

Outliers or influential data points are values that are extreme or atypical on the independent or dependent variables or both. Because outliers affect the mean, the standard deviation and correlation coefficient, they must be explained or deleted or accommodated using robust statistics (Bollen, 1989; Hair, *et al*., 2010; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

SPSS was used to detect outliers by first inspecting the mean versus the 5% trimmed mean. By doing this the research was able to determine if the extreme scores were having a strong influence on the mean. The researcher also assessed the skewness, kurtosis, histograms and normal Q-Q plots to see if the scores were normally distributed. Finally the researcher used the box-and-whisker plot verify the detection of outliers. With the box-plot outliers appear as little circles with a number attached (the identification number of the case). SPSS defines outliers if they extend more than 1.5 box-lengths from the edge of the box. Extreme points are those that extend more than three box-lengths from the edge of the box and are indicated with an asterisk. The box plot did reveal some outliers but when the 5% trimmed mean was analysed the values were not too different from the remaining distribution. Given this fact and the problem that different cases can be outliers in different questions the researcher decided not to delete them as the deletion of all outliers will reduce the sample significantly. Leverage was assessed with Mahalonbis distance. No extreme cases were detected. The robust maximum likelihood was used to address any problems of outliers as it replaces ordinary sample covariances with robust estimates of covariances.

e) Item parcelling

Individual items are used to capture the meaning of the construct that the measurement scale was designed to measure. In this study any item that failed to contribute to the internal consistency of the subscale was deleted. The assumption can therefore be made that the remaining items accurately reflect a subscale under consideration. The confirmatory factor analysis (CFA) for this study was initially carried out using individual items because the emphasis was on assessing the measurement integrity of the individual items designated to reflect the subscale under consideration.

The emphasis shifted to the analysis of the structural path once the structural model was specified. Given the six sub-sections and the large number of indicator variables, a comprehensive model fitting would be massive and capacious. This problem is usually oversome by using item parcelling before fitting the structural model.

The advantage of using parcels when specifying models, is a more parsimonious model as fewer parameters need to be estimated and the distribution of these parcels more closely resemble normal distribution than the original items. Item parcelling can therefore be used as a remedial approach to address non-normality (Brown, 2006). The one disadvantage of parcelling is that parcelling depends on the unidimensionality of the items being combined (Bandalos, 2002; Brown, 2006). According to Kline (2011) it is fruitful to parcel items in order to prevent statistical problems when conducting multivariate analyses on individual variables/items. De Bruin (2004) believes that parcels shared variance is pooled leading to stronger factor loadings and communalities and therefore parcels have greater relaibility. The parcelling of items can reduce model complexity, improve the overall model fit and result in lower rejection rates (Bandalos, 2002; Brown, 2006; Hair, *et al.*, 2010; Ho, 2006).

Although it would have been preferable to conduct the analysis at the indicator level the decision was taken not to follow this approach because of the problems associated with conducting item level factor analysis and the complexity of comprehensive path/SEM models. Kline (2011) believes that it is better to analyse indicators that are categorical items (likert-type scale) instead of continuous scales in parcels rather than individually. In this study because the items/variables were already categorised under 6 distinct subscales, these subscales became parcels. Parcelling should be employed after the entire set has been evaluated (Hair, *et al.*, 2010; Ho, 2006) and the items comprising the parcel are unidimensional (Kline, 2011). The researcher therefore conducted an exploratory factor analysis and conducting an exploratory factor prior to parcelling, in order to ensure that the items comprising the subscales/parcels are internally consistent and valid.

7.8.2 Path modelling and Structural equation modelling

Structural equation modelling (SEM) is a family of statistical models such as multiple regression analysis, path analysis, factor analysis, and analysis of covariance structures, that seek to explain the relationships among multiple variables (Blanche, Durrheim, Painter, 2006; Hair, *et al.*, 2010). SEM is a confirmatory procedure that estimates multiple and interrelated dependence relationships, represents unobserved constructs (latent concepts) in their models, and they account for measurement error in the estimation process (Blanche, Durrheim, Painter, 2006; Hair, *et al.*, 2010; Ho, 2006; Schreiber, *et al.*, 2006). SEM comprises two important aspects namely: a) that the causal processes under study are represented by a series of structural or regression equations, and b) that these structural relations can be modelled pictorially to enable a clearer conceptualisation of the theory under study. SEM therefore allows for the hypothesized model to be tested statistically in a simultaneous analysis of the entire system of variables (Blanche, Durrheim, Painter, 2006; Byrne, 2012; Hair, *et al.*, 2010;

Ho, 2006; Kaplan, 2000; Niels, 2008; Schreiber, *et al.*, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

According to Byrne (2012) there are three types of SEM analysis; namely

- *strictly confirmatory* (SC) where the researcher postulates a single model based on theory, collects the appropriate data, and then tests the fit of the hypothesized model to the sample data. From the results of this test, the researcher either rejects or fails to reject the model. No further modifications to the model are made.
- *alternative models* (AM) where the researcher proposes several alternative or competing models, all of which are grounded in theory. Following analysis of a single set of empirical data, he or she selects one model as most appropriate in representing the sample data, and
- *model generating* (MG) where represents the case where the researcher, having postulated and rejected a theoretically derived model on the basis of its poor fit to the sample data, proceeds in an exploratory rather than confirmatory fashion to modify and re-estimate the model. The primary focus, in this instance, is to locate the source of misfit in the model and to determine a model that better describes the sample data.

This study was confirmatory as the researcher wanted to test a single model without major remodelling. Incremental changes that significantly improved the theoretical model's account of the empirical data were considered. However, significant re-specification of the model did not take place because the study is framed within the hypothetical deductionism school of thought.

An important advantage of SEM is that the researcher can specify structural relationships among the latent variables and simultaneously test hypotheses for both structural and measurement relations with a single model. SEM allows for the evaluation of multiple observed variables and accounts for measurement error. SEM also allows for the examination of both direct and indirect effects of the variables and accounts for missing data (Byrne, 2012; Kline, 2011; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

The most important disadvantage or criticism of SEM is that it cannot test the directionality of relationships, namely, causality, at least not in the absence of longitudinal data. Correlation does not imply causation. Directional arrows in path diagrams are incorrectly interpreted by some as indicating that directionality has been tested (Bryman & Cramer, 2005; Hair, *et al.*, 2010; Kline, 2011; Niels, 2008). The other disadvantages include the fact that large samples are required, SEM is complex and difficult to use, prior knowledge about the hypotheses and relationships among the variables is required and the software is difficult to use (Hair, *et al.*, 2010; Kline, 2011; Tabachnick & Fidell, 2013).

Path analysis, a special case of SEM, can be used to obtain both the path values for the model and test the overall model fit. This technique involves observed variables. The goal of path analysis (and SEM) is to see how well the proposed model, which is a set of specified causal and noncausal relationships among variables, accounts for the observed relationships among these variables (Kline, 2011; Raykov & Marcoulides, 2006). According to Bryman & Cramer (2005) path analysis aims to provide quantitative estimates of the causal connections between variables that consist of distinct paths. These ideas are portrayed graphically with the use of a path diagram. Path diagrams explicitly depict the potential connections between variables or how the various model constructs relate to one another and estimate the strength of each relationship or path. Path coefficients are calculated in order to provide estimates of each of the postulated paths (Bollen, 1989; Bryman & Cramer, 2005; Byrne, 2012; Hair, *et al.*, 2010; Kline, 2011; Raykov & Marcoulides, 2006). Path analysis tests theoretical relationships rather than discover causes (Schumacker & Lomax, 2004). One of the advantages of path models as opposed to latent SEM model is that the computational demands and sample size requirements are less demanding, since fewer model parameters are estimated at the same time. Since fever parameters are measured in path model, sample size requirements are also lower. However, one of the key disadvantages of path models is that measurement models are not modelled as latent variables, but rather as observed composites of items.

There are two basic kinds of path models. Recursive models where disturbances are uncorrelated or independent and all causal effects are unidirectional. Nonrecursive models have feedback loops or may have correlated disturbances and have a greater chance of problems due to identification (Kline, 2011).

According to Raykov & Marcoulides (2006) path model assumes
(a) explanatory relationships between its latent variables,
(b) the independent variables to be associated with no error of measurement, and
(c) all latent variables to be measured by single indicators with
(d) unitary loadings on them.
This study met these requirements because the independent variables (the drivers: legal, social, business case, voluntary regulation, visibility of the disease and internal agents) were observed single indicator measures rather than multiple items measures of latent variables. The measurement quality of the multiple item measures were confirmed (via EFA, item analysis,

and CFA) prior to the constructing measurement parcels. Path analysis was therefore used as an approach to model the explanatory relationships between observed variables in the study.

There are several different computer package programs that analyse path/SEM models such as LInear Structural RELationships (LISREL), Equations (EQS), Analysis of Moment Structure (AMOS), Mx Graph, the Reticular Action Model or Near Approximation (RAMONA) module of SYSTAT, Structural Equation Modelling and Path Analysis (SEPATH) module of STATISTICA, CALIS (Covariance Analysis and Linear Structural Equations) procedure is part of SAS/STAT and Mplus (Hair, *et al.*, 2010; Kline, 2011; Tabachnick & Fidell, 2013). These programs differ in the way users interact with the software, in their support for more advanced types of analysis and software support. For this research, the Mplus program (version 7) was selected to perform the statistical analysis of the confirmatory factor analysis and path modelling. Mplus was selected for the following reasons:

- it can estimate SEM and path models with both single or multiple groups;
- it can analyse any combination of continuous, dichotomous, ordinal, or count variables;
- it has rapid computational speed;
- it handles common forms of incomplete data and item parcelling easily and
- it has the ability to recode variables within the context of the model script (Hair, *et al.*, 2010; Kline 2011).

7.8.2.1 Path Modelling Process

Path models and structural models can be conducted through five basic steps namely model specification, identification, estimation, testing and modification (Schumacker & Lomax, 2004). Kline (2011) suggested six steps, namely: specification, identification, selection of the measures, estimation, respecify the model and report the results, with two additional optional steps, replication and application. The steps as suggested by Schumacker & Lomax (2004) were followed in this study.

Step 1: Model Specification

Model specification is usually the first step in path models, structural equation modelling and regression models as it determines every relationship and parameter (Schumacker & Lomax, 2004). This is usually considered as the hardest part of modelling as it involves developing a theoretical model (Schumacker & Lomax, 2004) that is guided by a combination of theory and empirical results from previous research (Hair, *et al.*, 2010). In order to avoid misspecification the theoretical model needs to be consistent with the true model which requires the specification of all relevant variables (Schumacker & Lomax, 2004).

Once the theoretical framework for the model has been developed, the next step involves illustrating this in a path diagram (Byrne, 2012; Hair, *et al.*, 2010; Raykov & Marcoulides, 2006) or alternatively via a series of equations (Kline, 2011). The path diagram was utilised in this study to express the model in a visual form that was easily understood, instead of mathematical equations. Kline (2011) and Raykov & Marcoulides (2006) endorses the use of graphical models as it improves conceptualisation of the model and can highlight omitted variables and links. In path diagrams the observed variables are enclosed by squares or rectangles. Unobserved (latent) variables are depicted in circles or ellipses. Each line with a single arrowhead represents a hypothesized relationship or *direct effect* of one variable on another. The arrowhead points to the presumed effect and the line originates from a presumed cause. Two-way curved arrows with an arrowhead at each end are used to represent co-variation between two variables (Blanche, Durrheim, Painter, 2006; Bollen, 1989; Byrne, 2012; Hair, *et al.*, 2010; Kline, 2011; Marcoulides and Hershberger, 1997; Niels, 2008; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

Model specification was the first step performed in this study. Path modelling was used because of the presence of observed dependent variables. The path analysis was carried out using *Mplus*. A graphical representation of the model is illustrated in chapter 10, Figure 10.1.

Step 2: Model Identification

Model identification is the second step of path and SEM modelling. Kline (2011) and Schumacker & Lomax (2004) believe that identification problems need to be resolved prior to the estimation of parameters. During the identification process the researcher has to determine if there is sufficient information to obtain a unique solution for the parameters to be estimated by the model (Byrne, 2012).

There are three types of model identification, namely:

- *under-identified models* where one or more parameters cannot be estimated or uniquely determined in the matrix due to lack of information and has negative degrees of freedom. This type of model can be unstable and should be looked at with scepticism as it is difficult to determine unique values for the model coefficients.
- *just-identified* (also referred to as a *saturated* model) models where all of the parameters are uniquely determined because there is just enough information in the matrix. This model contains zero degrees of freedom. The model perfectly reproduces the data resulting in a perfect fit.
- *over-identified models* where are the most preferred type of identification, when there is more than one way of estimating a parameter/s because there is more than enough

information in the matrix and the model has positive degrees of freedom (Brown, 2006; Byrne, 2012; Hair, *et al.*, 2010; Kaplan, 2000; Kline, 2011; Schumacker & Lomax, 2004)

The identification process for this study was carried out in two steps. The first step involved checking the measurement quality of the independent variables which were latent in nature. Since the independent variables have multiple items, the CFA models of these variables can be considered over identified with positive degrees of freedom, except for those CFA models which only contained 3 items. These models are by definition just-identified models with 0 degrees of freedom. The second step involved including all indicators of the independent variables into a single composite before you model the structural model. These composites were used to model the structural model in general. However, dependent variables could not be modelled because they are single indicator variables.

Step 3: Estimation

Model estimation is the third step in the modelling process. According to Schumacker & Lomax (2004) model estimation involves estimating the parameters in the regression model or computing the sample regression weights for the independent predictor variables. The aim of estimation is to generate numerical values for free parameters within the model that produces the implied matrix such that the parameter values yield a matrix as close as possible to the sample covariance matrix (Kline, 2011; Schumacker & Lomax, 2004). The methods used to carry this out include unweighted or ordinary least squares (ULS or OLS) generalised least squares (GLS) and maximum likelihood (ML). GLS and ML estimation methods assume multivariate normality of the observed variables (Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004). During the estimation process the model fit is evaluated, the parameter estimates are interpreted and equivalent or near-equivalent models are considered (Kline, 2011).

The maximum likelihood with robust standard errors and chi-square (MLR) in M*plus* program was used in this study, because of slight non-normal data identified in the process of data screening and the usefulness of MLR to rectify non-normality.

Step 4: Model testing

Upon completion of the parameter estimates, the fourth step is to determine how well the data fits the model (Schumacker & Lomax, 2004), that is the extent to which the theoretical model is supported by the obtained sample data.

Assessing the fit of SEM models can be complicated as there is no single statistic that best describes the goodness-of-fit of a model. But model fit measures are important in determining if a proposed model should be accepted or rejected (Hu and Bentler, 1999). Goodness-of-fit measures are classified into three categories: absolute, comparative/incremental; parsimonious (or predictive/ informative fit indices). Brown (2006); Kline (2011) and Hair, *et al.* (2010) suggest using a combination of fit indices so that the overall data fit can be interpreted and recommends the use of at least one measurement from each of the categories.

Various authors have cautioned against the use of goodness-of-fit indices as 'rules of thumb' or 'golden standards' (Ho, 2006; Hu and Bentler, 1999; Schmitt, 2011). This is because all research is unique and sample sizes differ. These authors believe that consideration should be given to the adequacy of model parameters and complexity and therefore the model fit statistics should be used as guidelines (Kline, 2011) as they only provide information on a models lack of fit and do not reflect the extent to which the model is plausible. Even if a model fits well, data can never confirm a model, they can only fail to disconfirm a model. Equivalent or better fitting models may exist. Hair, *et al.* (2010) advises that the researchers desire to achieve good fit should never compromise the theory being tested.

Hooper, *et al.* (2008) believes it unnecessary and unrealistic to include every index in a study and therefore only the main indices considered in this study are discussed below. The programmer's of MPLUS (Muthen & Muthen, 2001 – 2013) seem to agree with the notion, by providing only the important and robust fit indices in each of the main categories. This philosophy differs sharply from traditional SEM software which includes an exclusive list of fit indices (e.g. LISREL, AMOS, EQS).

A) Absolute fit indices

Fit indices measures the overall model fit of the measurement and structural models, independently in order to determine how well the model fit the sample data (Hooper, *et al.*, 2008). Some commonly used measures of absolute fit include the chi-square statistic, the goodness-of-fit statistic, the root mean square error of approximation and the standardized root mean square residual (SRMR) (Brown, 2006; Hooper, *et al.*, 2008).

This study considered the following absolute goodness-of-fit measures: Satorra-Bentler chi-square (χ^2); Root Mean Square Error of Approximation (RMSEA) and Standardised Root Mean Residual (SRMR).

According to Kline (2011) and Hoe (2008) chi-square is the most frequently used measure for evaluating model fit and assesses the '*magnitude of discrepancy between the sample and fitted covariances matrices*' (Hu and Bentler, 1999: 2). With regard to the chi square test, zero indicates perfect fit (smaller values indicate better model fit) and large numbers indicate extreme lack of fit and therefore the chi square test is sometimes referred to as a *lack of fit* test (Hair, *et al.*, 2010; Hoe, 2008; Mulaik *et al.*, 1989).

The chi-square test is still a popular fit statistic but there are two important limitations in its use. Firstly, this test assumes multivariate normality and deviations from normality results in the model being rejected even when the model is properly specified. Secondly, the chi-square statistic is sensitive to sample size implying that the chi-square statistic nearly always rejects the model when large samples are used (Diamantopoulos & Siguaw, 2000; Hair, *et al.*, 2010; Hooper, *et al.*, 2008; Kline, 2011; Raykov & Marcoulides, 2006; Schmitt, 2011; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

Some researchers have used the normed chi-square in order to reduce the sensitivity of the model chi-square to sample size, by dividing the chi-square (χ^2) by its degrees of freedom (*df*) (χ^2/df ratio). Kline (2011) however discourages the use of the normed chi-square because there is little statistical foundation for its use and there are no clear cut guidelines for what are acceptable maximum values.

Because it is not meaningful to interpret chi-square in isolation, no cut-off value is applied. The Robust maximum likelihood factor extraction method was used to account for non-normality of data in this study. The Satorra-Bentler rescaled chi-square was therefore used as it is considered more robust (Kline, 2011; Tabachnick & Fidell, 2013). This approach focuses on the power of the χ^2 difference test to detect specification errors associated with a single parameter (Brown, 2006).

In order to reduce the reliance on chi-square, a number of alternative fit indices have been developed such as the root mean square of approximation (RMSEA) and the Standardised Root Mean Residual (SRMR).

The Root Mean Square Error of Approximation (RMSEA) focuses on the difference between the observed and estimated covariance per degree of freedom (Hoe, 2008; Ho, 2006; Marcoulides and Hershberger, 1997). RMSEA is generally regarded as one of the "*most informative fit indices*" (Diamantopoulos and Siguaw, 2000: 85) because of its sensitivity to the number of estimated parameters in the model (Kline, 2011). An RMSEA value of 0.05 or less is indicative of good fit. Values between 0.05 and 0.08 are considered reasonable. Values between 0.08 and 0.10 are considered mediocre fit while values greater than 0.10 indicate poor fit. Values of 0 indicate perfect fit (Brown, 2006; Hair *et al.*, 2010; Hoe, 2008; Hooper, *et al.*, 2008; Hu & Bentler, 1999; Hsu, *et al.*, 2012; Kline, 2011; Raykov & Marcoulides, 2006; Schreiber, *et al.*, 2006).

Standardised Root Mean Squared Residual (SRMR) transforms the sample and predicted covariance matrix into correlation matrix (Kline, 2011). SRMR values ranges from 0 to 1 with 0 indicating a perfect fit. Good fitting models have values < 0.05 whereas values ranging from 0.05 to 0.08 are considered acceptable fit (Brown, 2006; Hair *et al.*, 2006; Hooper, *et al.*, 2008; Hu & Bentler, 1999; Hsu, *et al.*, 2012; Tabachnick & Fidell, 2013).

B) Incremental/Comparative fit indices

Incremental or comparative fit indices compare the proposed model to a baseline model (Hair, *et al.*, 2010; Ho, 2006; Kline, 2011). Two incremental fit indices were used in this study the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) also referred to as the Non-normed fit index. This study reported both the CFI and TLI indices.

The Comparative Fit Index (CFI) accounts for sample size (Byrne, 2012) and performs well with small samples as well (Tabachnick and Fidell, 2013) making it popular in SEM studies (Hooper, *et al.*, 2008). The CFI assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with the null model. The CFI values range between 0.00 and 1.00 with values closer to 1.00 indicating good fit (Hooper, *et al.*, 2008). Values for CFI greater than to 0.90 (Hu & Bentler, 1999) was initially accepted as reasonable fit. However, Kline (2011); Niels (2008) and Raykov & Marcoulides (2006) believe that values ≥ 0.95 is currently indicative of a good fit. A normative range of 0.90-0.95 was regarded as acceptable fit for this study and ≥ 0.95 as good fit.

The Tucker Lewis Index (TLI) prefers simple models as it includes a penalty for every parameter added that does not improve model fit (Marcoulides and Hershberger, 1997; Schreiber, *et al.*, 2006). It is also less affected by sample size. TLI ≥ 0.90 (Hsu, *et al.*, 2012) indicates acceptable model fit while values > 0.95 is regarded as good fit (Brown, 2006; Hair, *et al.*, 2010; Hoe, 2008; Hooper, *et al.*, 2008).

C) Parsimonious fit indices

Parsimonious fit indices consider model fit relative to model complexity. These indices are sometimes referred to as predictive or informative fit indices (Kline, 2011; Schumacker &

Lomax, 2004). A simpler model improves a parsimony fit measure. This set of indices assesses the fit of replicated hypothetical samples randomly drawn from the same dataset (Brown, 2006; Kline, 2011). This measure should therefore not be used to asses model fit of a single model. It necessitates the formulation of equivalent or alternative models in order to compare models and account for model fit and complexity (Brown, 2006; Diamantopoulos and Siguaw, 2000; Ho, 2006; Hooper, *et al.*, 2008; Kline, 2011; Hair, *et al.*, 2010; Niels, 2008; Raykov & Marcoulides, 2006; Schreiber, *et al.*, 2006). Indices that indicate model parsimony are the parsimony-adjsuted NFI; parsimony-adjsuted CFI; parsimony-adjsuted GFI; the Akaike Information Criterion (AIC) and the Bayes Information Criterion (BIC) (Brown, 2006; Kuha, 2004; Schreiber, *et al.*, 2006 and Schumacker & Lomax, 2004).

Hooper, *et al.* (2008) recommends the use of parsimony fit indices in tandem with other measures of goodness-of-fit, because no threshold levels for these statistics have been recommended therefore making them more difficult to interpret. The parsimonious fit indices were less informative in the current study since the researcher was not comparing alternative models.

Some of the goodness-of-fit statistics with their proposed guidelines for cut-off levels are discussed in chapter 11 (cf. par. 11.5).

Step 5: Model Modification

If the fit of the implied theoretical model is not as strong as desired then the final step is to modify the model and thereafter evaluate this modified model (Schumacker & Lomax, 2004). Modification indices such as the chi-square difference tests, LaGrange multiplier tests (LM), and Wald tests can be used to modify the existing models by linking the indicators to the latent variable from free to fixed or vice versa and allowing or constraining correlations among measurement errors or latent variables (Hair, *et al.*, 2010; Kline, 2011; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013). Model modification is carried out in order to improve the model so that a better fitting model and/or more parsimonious model which were substantively more interpretable can be obtained (Kline, 2011).

Kline (2011) advises that model modification should be guided by theoretical considerations and not just determined by statistical results, because adjusting a model after initial testing increases the chance of making a Type I error. Raykov & Marcoulides (2006) advices that the blind use of modification indices can lead researchers astray from their original goal. Schreiber, *et al.* (2006) advises that it is unwise to modify a model to achieve even better fit because modifications may simply be fitting small idiosyncratic characteristics of the sample.

In this current study, the structural model was not modified, but some of the measurement models were modified by deleting problematic items. The researcher did not improve model fit by correlating uniqueness in the measurement models.

The next section goes on to describe the reliability and validity for the study.

7.9 Reliability and Validity

The central aim of any data gathering methodology is to improve both the reliability and validity of the information obtained (Bauer & Gaskell, 2000; Tashakkori & Teddlie, 2003; Gorden, 1980).

7.9.1 Reliability

Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions. For reliability to be calculated it is incumbent on the scientific investigators to document their procedure and to demonstrate that categories have been used consistently as a measure is only reliable to the degree that it supplies consistent results. If a method of collecting evidence is reliable, it means that anybody else, using this method, or the same person using it at another time, would come up with the same results. The research could be repeated, and the same results would be obtained. The four threats to reliability include subject or participant error, participant bias, observer error and observer bias (Bollen, 1989; Bryman, 2004; Cooper and Schindler, 1995; Creswell, 2005; Crowther & Lancaster, 2009; Dane, 2011; Denzin & Lincoln, 1998; Fellows & Liu, 1997; Fink, 2003; Hair, *et al.*, 2010; Leedy & Ormrod, 2010; Melville & Goddard, 1996; Neuman, 2000; Niels, 2008; Pallant, 2010; Saunders *et al.,* 2009; Schutt, 2006; Tashakkori & Teddlie, 2003; White, 2000, 2002).

The different kinds of reliability include inter-rater reliability (the consistency between different measured subjects), internal reliability/consistency (the consistency within a measuring instrument which can be quantified statistically using Cronbach's *alpha)*, test-retest reliability (the consistency of results when the same measurement tool is repeatedly applied to the same scenario), and parallel forms reliability (the consistency of different, but related, measurement tools when applied to the same sample) (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Bryman & Cramer, 2005; Creswell, 2005; Dane, 2011; Denzin & Lincoln, 1998; Fink, 2003; Hair, *et al.*, 2010; Lucko & Rojas, 2010; Niels, 2008; Pallant, 2010; Salkind, 2004; Schutt, 2006).

7.9.2 Validity

Gelo, Braakmann & Benetka (2008) refers to validity as the level of legitimacy and accountability that was achieved in data collection. Validity is another word for truth. Validity is the degree to which a measure accurately represents what it is supposed to. It refers to the correctness or credibility of a description, conclusion, explanation or interpretation. Validity is concerned with the idea that the research design fully addresses the research questions and objectives researchers are trying to answer and achieve. The threats to validity include history, inappropriate testing, instrumentation, mortality and maturation (Blanche, Durrheim, Painter, 2006; Bollen, 1989; Creswell, 2005; Crowther & Lancaster, 2009; Dane, 2011; Denzin & Lincoln, 1998; Fellows & Liu, 1997; Fink, 2003; Gaur & Gaur, 2006; Hair, *et al.*, 2010; Leedy & Ormrod, 2010; Lucko & Rojas, 2010; Melville & Goddard, 1996; Neuman, 2000; Salkind, 2004; Saunders *et al.,* 2009; Schutt, 2006; White, 2000, 2002).

Validation is divided into two main areas, namely internal and external validity. Internal validity is concerned with causality and the relations within data. External validity is concerned about the generalisability of results. To achieve this, the researcher requires a representative sample by utilising random sampling procedures. Besides internal and external validity other types of validity include face, content, criterion, construct and convergent validity.

- Face validity is the first step taken to assess validity of a measure by ensuring a rigorous examination of the wording of the items and their correspondence with the theoretical literature is correct. It is a subjective judgment that seeks the opinion of non-researchers or domain experts regarding the validity of a particular study.
- Content validity focuses on determining if the content of a study accurately reflects reality. This can be done by documenting in detail the entire research approach with an open and self-critical mind. Refers to whether the elements of a measurement instrument are relevant and fully represents the domain.
- Criterion validity measures the extent to which the results of the instrument correlate with each other. The test reflects a set of abilities in a current (known as concurrent validity) or future (predictive validity) setting.
- Construct validity ensures that a research instrument measures what it is supposed to measure according to its stated objectives by ensuring that the measure correlates with other measures of the construct. Construct validity is explored by investigating its relationship with other constructs, both related (convergent validity) and unrelated (discriminant validity) Positive and significant correlations provide evidence for the construct validity. If negative or near zero correlations undermines construct validity.
    - Convergent validity measures the extent to which an instrument correlates with existing measures of the same concept. The correlations of the different

measures of the same trait should be statistically significant and sufficiently large.

- Discriminant validity is the extent to which a construct is truly distinct from other constructs. High discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not. The correlations between constructs needs to be sufficiently low and there should be no cross-loadings as this indicates a discriminant validity problem (Blanche, Durrheim, Painter, 2006; Bryman, 2004; Bryman & Cramer, 2005; Creswell, 2005; Dane, 2011; Denzin & Lincoln, 1998; Fellows & Liu, 1997; Fink, 2003; Gelo, Braakmann & Benetka, 2008; Gaur & Gaur, 2006; Hair, *et al*., 2010; Leedy & Ormrod, 2010; Lucko & Rojas, 2010; Melville & Goddard, 1996; Niels, 2008; Neuman, 2000; Pallant, 2010; Salkind, 2004; Schutt, 2006).

7.9.3 Reliability and Validity of this research

Table 7.3 discusses the reliability and validity adopted for this study.

Table7.3 Reliability and validity measures used in this study.

Study phase	Reliability	Validity			
		Face validity	Content validity	Construct validity	
				Convergent validity	Discriminant validity
Delphi Technique	Difficult in a Delphi study but certain steps taken as discussed in chapter 8.	A rigorous examination of literature.	Literature; Panel of experts		
National survey	Cronbach Alpha; Item analysis; Corrected-item-correlation	A rigorous examination literature; Adequacy of samples; adequacy of data processing and analysis.	Literature	Correlation coefficient; Standardised factor loadings; Exploratory factor analysis; Confirmatory factor analysis.	Correlations; Exploratory factor analysis; Confirmatory factor analysis.

The coding of all closed questions, cronbach's alpha, correlations and corrected-item-correlation was used to measure reliability in the questionnaire. The reliability for the Delphi study is discussed in depth in chapter 8.

Face validity was ensured by a rigorous examination of literature, adequacy of samples, representatives of samples, adequacy of data processing, correct data analysis, appropriate interpretation and justifiable conclusions. Validity was also ensured during the questionnaires and Delphi process by ensuring there are no basis and confidentiality of information.
Content validity for this study was achieved by the extensive literature review carried out in order to identify the drivers and the various items the make up the subscales as well as the Delphi study which allowed experts in the field to provide to add to or eliminate items in the subscale. The piloting of the Delphi study and the questionnaire also helped to improve its content validity.

Convergent validity was tested by determining whether the scores of items in one scale correlate with the scores on the other scales and converge or load together on a single construct in the measurement model (Hair, *et al.*, 2010). This was tested using correlation coefficients; standardised factor loadings; exploratory factor analysis and confirmatory factor analysis.

Discriminant validity tests whether items on one construct load or converge too closely with items from other scales. High correlations indicate that the variable may be measuring the same construct instead of different constructs (Hair, *et al.*, 2010). Discriminant validity was analysed using correlations; exploratory factor analysis and confirmatory factor analysis.

7.10 Ethical considerations

Murphy & Dillion (2008) describe ethics as a branch of philosophy that deals with moral judgments and perceptions of right and wrong. According to Churchill (1995 cited in White, 2002) ethics is defined as moral principles and values governing the way an individual or group conducts its activities. Neuman (2000) describes ethical research as the moral and legitimate manner in which research is conducted.

Research can have a very powerful impact on people's lives. The researcher must always think very carefully about the impact of the research and how he/she ought to behave, so that no harm comes to the subject of the research or to society in general. Ethics or moral principles must guide research and requires the following:

Ethical issues were considered during this research. It is important to mention that if people do not trust researchers, the validity of the data collected by the researchers will not reflect what respondents are truly thinking or doing. The researcher both verbally, telephonically and via email assured all questionnaire respondents that confidentiality will be maintained through this research and their privacy and any confidential information will be regarded with the strictest confidence. Participants were asked to sign an informed consent letter so that they understood the research being carried out and how the results will be used so that they can make an intelligent choice as to whether they want to take part. Ethical clearance was obtained through the University of KwaZulu-Natal research office.

The risks involved in participating in this study were minimal, namely loss of time required for completing the survey, potential pressure to complete the survey on time and potential stress over not understanding the questionnaire. Numerous measures were put in place to reduce risk. These included a comprehensive study design, the use of informed consent and participant confidentiality and anonymity. Therefore, this research comprehensively covered all ethical issues.

7.11 Summary

This chapter introduced the research methodology designed to achieve the research aims and objectives. Research paradigms as well as the research process for this study were discussed. This study was carried out in 2 phases. Phase one involved the use of the Delphi technique in which a questionnaire was distributed in order to understand the key drivers to HIV and AIDS management in the South African construction industry. Phase two involved the development of a HIV and AIDS management model that was tested via a survey questionnaire that was distributed nationally. Validity, reliability and ethical issues, such as informed consent of the respondent, invasion of privacy and confidentiality were also carefully taken into account. Chapter 8 goes on to discuss the Delphi approach in detail.

CHAPTER 8

THE DELPHI APPROACH

8.1 Introduction

This chapter describes the Delphi technique adopted in the first phase of this study. The steps in a Delphi study are described in detail. The chapter concludes by discussing reliability, validity and the steps taken to minimising the effects of bias.

8.2 The Delphi technique

The Delphi technique started as a military tool by Dalkey and Kaplan of the Rand Corporation in the 1950s and was named after the Delphi oracle from Greek methodology (Hallowell & Gambatese, 2010; Holey, Feeley, Dixon & Whittaker, 2007; Iqbal & Pipon-Young, 2007; Linstone & Turoff, 1975; Loo, 2002; Okoli & Pawlowski, 2004; Rowe & Wright, 1999; Skulmoski, Hartman & Krahn, 2007; Stitt-Gohdes & Crews, 2004; Tersine & Riggs, 1976; Yeung, Chan & Chan, 2009).

The Delphi technique has been described as *"a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem"* (Linstone & Turoff, 1975:3)

The Delphi method is a systematic, structured, formalised and anonymous technique to encourage debate among a panel of experts regarding a particular quandary within their domain of expertise. The Delphi achieves group consensus by using a series of questionnaires delivered using multiple iterations to collect data, which is interspersed with controlled feedback so that individuals can revise their views (Baldwin & Trinkle, 2011; Banks, Shi, McLarty, Cowl, Smith, Tarlo, Daroowalla, Balmes & Baumann, 2009; Holey, Feeley, Dixon & Whittaker, 2007; Hsu & Sandford, 2007; Lilja, Laakso & Palomäki, 2011; Linstone and Turoff, 1975; Loo, 2002; Ludwig, 1997; Okoli & Pawlowski, 2004; Powell, 2003; Procter & Hunt, 1994; Rowe & Wright, 1999; Skulmoski, Hartman & Krahn, 2007; Stitt-Gohdes & Crews, 2004; Tersine & Riggs, 1976; Yeung, Chan & Chan, 2009 ; Zami & Lee, 2009). But even if consensus is not achieved the panel members provides reasons for their disparate views (Iqbal & Pipon-Young, 2007). The Delphi approach tries to address "*what could or should be*" instead of "*what is,*" like common surveys (Hsu & Sandford, 2007).

Some of the advantages of a Delphi study include the following, namely:

- the attainment of consensus and the ability to evaluate the spread of opinion;
- the anonymity of the participants;
- the freedom to express one's opinions without confrontation and group pressures (namely, the effects of dominant individuals);
- the opportunity for feedback;
- the high standard of Delphi participants;
- the ease of adaptability of the technique to different situations and problems and
- the ability to engage with participants from all over the world are just (Hallowell & Gambatese, 2010; Hsu & Sandford, 2007; Iqbal & Pipon-Young, 2007; Linstone & Turoff, 1975; Ludwig, 1997; Murphy, *et al.*, 1998; Okoli & Pawlowski, 2004; Powell, 2003; Rowe & Wright, 1999; Thangaratinam, and Redman, 2005; Zami & Lee, 2009).

Disadvantages of the technique include the following, namely:

- the fact that it is labour intensive and time consuming and therefore requires highly motivated individuals;
- participants with extreme opinions have to justify the response and run the risk of being suppressed;
- new questions cannot be added and
- the study runs the risk of potential bias from the research team in terms of respondent selection and misinterpretation of the data (Hsu & Sandford, 2007; Lang, 1995; Stitt-Gohdes & Crews, 2004; Williams & Webb, 1993; Zami & Lee, 2009).

8.3 Steps in a Delphi study

The detailed steps for conducting a Delphi study are depicted in Figure 8.1. It generally involves the selection of a panel according to predefined guidelines that is then requested to participate in two or more rounds of surveys. Anonymous feedback is provided after each round and participants revise their previous response with the aim of achieving consensus (Hallowell & Gambatese, 2010; Hsu & Sandford, 2007; Iqbal & Pipon-Young, 2007; Lilja, Laakso & Palomäki, 2011; Linstone & Turoff, 1975; Ludwig, 1997; Stitt-Gohdes & Crews, 2004;

Thangaratinam, and Redman, 2005; Verkade, van Meijel, Brink, Os-Medendorp, Koekkoek & Francke, 2010).

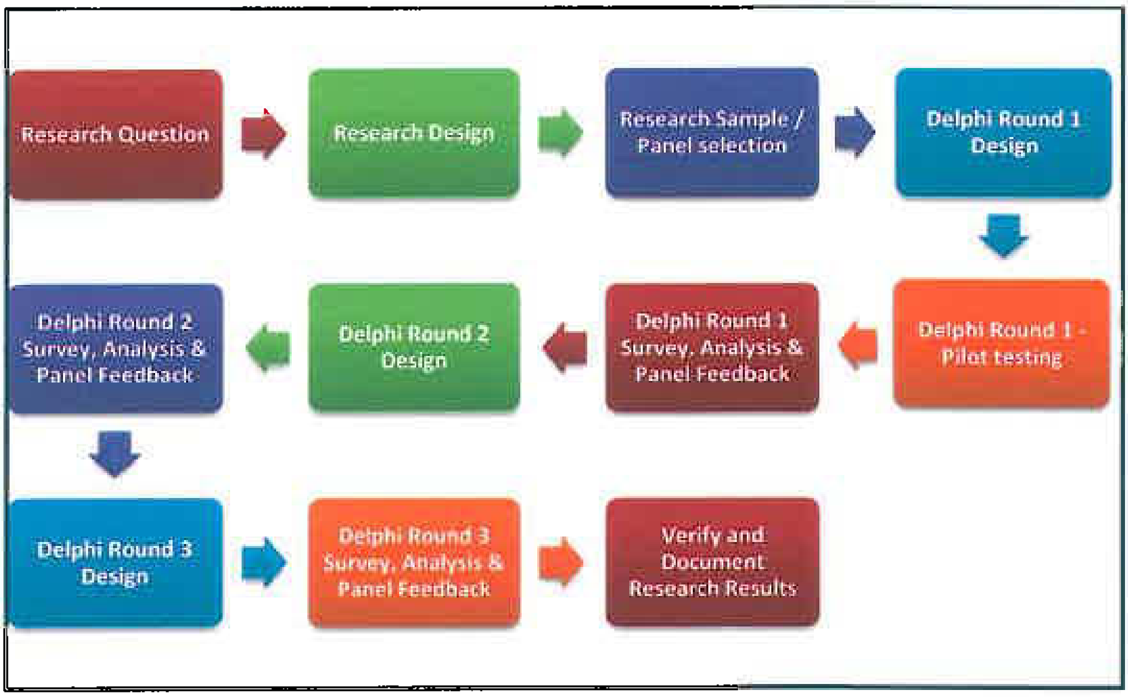


Figure 8.1. Three Round Delphi Process (Adopted from Skulmoski, Hartman & Krahn, 2007:3)

8.3.1 The Research Question

The first step involved in a Delphi study is the formulation of a research question, which can be derived through a literature review (Skulmoski, Hartman & Krahn, 2007). The Delphi approach was used to answer the following research questions:

DQ1. What are the leading drivers that are perceived to be extremely important in the effective management of HIV and AIDS in the South African construction industry? and

DQ2. What are the leading drivers that are perceived to have an extreme impact in the effective management of HIV and AIDS in the South African construction industry?

8.3.2 The Research Design

This step involves the review different research methods namely, qualitative, quantitative or mixed method (Iqbal & Pipon-Young, 2007; Lilja, Laakso & Palomäki, 2011; Ludwig, 1997; Rowe & Wright, 1999; Skulmoski, Hartman & Krahn, 2007). After weighing the advantages and disadvantages of each method the researcher employed a quantitative technique.

8.3.3 Research Sample

Delphi studies typically do not generate statistically significant results as they are based on a non-random sample of experts. The findings depict the opinions of the panel and are not intended for generalisation to a different panel or a larger population (Iqbal & Pipon-Young, 2007; Lilja, Laakso & Palomäki, 2011; Ludwig, 1997; Okoli & Pawlowski, 2004; Powell, 2003; Procter & Hunt, 1994; Skulmoski, Hartman & Krahn, 2007). Loo (2002) believes that researchers can confidently use small panels since the selection of experts is important for the success of a Delphi study. Powell (2003) identified two important aspects that a Delphi study should consider, namely the qualifications of experts and the panel size.

8.3.3.1 Qualification of experts

The successful outcome of a Delphi study depends on the combined expertise of the participants in the panel (Banks, Shi, McLarty, Cowl, Smith, Tarlo, Daroowalla, Balmes & Baumann, 2009; Lilja, Laakso & Palomäki, 2011; Powell, 2003; Skulmoski, Hartman & Krahn, 2007; Yeung, Chan & Chan, 2009; Zami & Lee, 2009).

A heterogeneous sample of experts for this study was identified via purposive sampling. A heterogonous group was used so that diverse opinions could be obtained. Baldwin & Trinkle (2011); Lilja, Laakso & Palomäki, (2011) and Murphy, *et al.* (1998) believe that a varied panel or heterogeneous groups are best to produce results of a higher quality due to their vast knowledge base. The sample was identified from published journal papers and industry experts, so that people who had the experience and could contribute to the study but had not published were not missed out. The criterion that defines an expert was discussed by various authors, such as Hallowell & Gambatese (2010) and Rodger and Lopez (2002) and was adapted for this study.

In order for these individuals to participate they had to meet at least three of the following criteria, namely:

- Knowledge of and experience within the construction sector;
- Knowledge of HIV and AIDS in the private sector;
- Five years construction industry experience;
- An academic from an accredited higher institution;
- Minimum qualification for industry practitioners (for example, diploma or degree)
- Authored books or published articles in peer reviewed journals either as a primary or secondary author in the fields of HIV and AIDS and the private sector;

- Presented or invited to present at conferences in the fields of HIV and AIDS and the private sector.

These experts were then individually emailed and notified about the study with a request to participate (refer to Appendix C for the Delphi invitation letter) and were assured of confidentiality and anonymity. Upon acceptance of the invitation, the participants were requested for a copy of their curriculum vitae so that their eligibility in meeting the above criteria could be verified.

8.3.3.2 Panel size

There are various perspectives from numerous authors as to what size the panel should be. Reid (1988) found panels ranging from 10 to 1,685. Rowe & Wright (1999) reviewed 27 studies and found that the Delphi group size varied from 4 to 98. Okoli & Pawlowski (2004) used panels that consisted of 10 to 18 participants. Ludwig (1997) found a panel between 12 and 15 people was adequate. According to Linstone and Turoff, (1975) panels should consist of between 10 and 50 participants while Zami & Lee (2009) found panel sizes of ten to be sufficient. Research by Skulmoski, Hartman & Krahn (2007) found sample sizes varying between 4 to 171. According to Powell (2003) there was very little actual empirical evidence regarding the effect of the number of participants on the reliability or validity of the processes. Generally the number of participants depended on the purpose of the study (Loo, 2002; Stitt-Gohdes & Crews, 2004). According to Stitt-Gohdes & Crews (2004) and Verkade, van Meijel, Brink, Os-Medendorp, Koekkoek & Francke (2010) 10 to 15 participants might be an adequate number for a Delphi study.

Prior to emailing the questionnaire, an invitation letter was sent to the 33 participants, informing them of the study and requesting their participation in the panel and what was required of them. Nine participants (28%) declined the offer and eight participants did not respond even after being sent reminder emails. The first round of questionnaires was emailed to the 16 Delphi panel members that had agreed to participate. Figure 8.2 depicts the Delphi panel sampling and response rate.

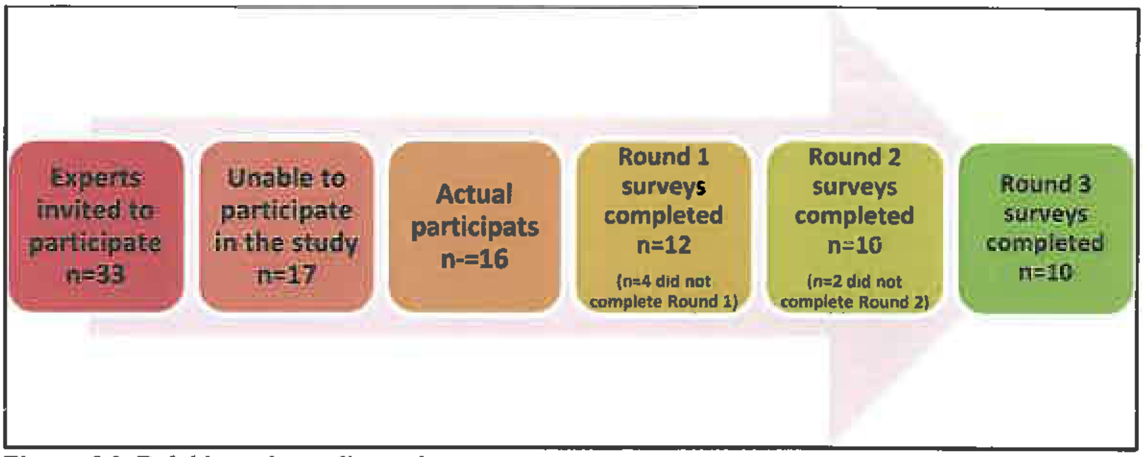


Figure 8.2. Delphi panel sampling and response rate.

8.3.3.3 Number of Rounds

The Delphi method is distinguished from ordinary surveys because of the iteration and feedback used (Lilja, Laakso & Palomäki, 2011). Iterations vary from 2 to 6 rounds (Hallowell & Gambatese, 2010) and depends on the aim of the study as well as the degree of consensus that the research is looking for (Delbecq, Van de Ven, Gustafson, 1975; Hsu & Sandford, 2007; Ludwig, 1994). Two or three rounds are usually sufficient for most studies (Delbecq, Van de Ven and Gustafson, 1975), with three iterations preferred by Hallowell & Gambatese (2010), Hsu & Sandford (2007) and Ludwig (1994, 1997). According to Skulmoski, Hartman & Krahn (2007) three or more rounds will be required for a heterogeneous sample, whereas homogeneous samples require less than three rounds. In order to prevent panel fatigue and attrition, the iterations should be as few as possible. Hallowell & Gambatese (2010) refers to the two main purposes of multiple rounds namely; to reach consensus and to improve precision.

8.3.3.4 The meaning of consensus

Determining the appropriate measure of consensus in Delphi studies is often difficult (Hallowell & Gambatese, 2010; Holey, Feeley, Dixon & Whittaker, 2007) because there are no set rules for when consensus is reached (Linstone & Turoff 1975; van Zolingen & Klaassen, 2003). Typically convergence of opinion usually occurs in the final round.

According to Delbecq, *et al.* (1974) and Holey, Feeley, Dixon & Whittaker (2007:2) consensus also means agreement. Agreement can be determined by:

1) the aggregate of judgments,

2) a move to a subjective level of central tendency, or

3) by confirming stability, which is "the consistency of answers between successive rounds of the study". The first of these occurs within each Delphi round. The second and third occur between rounds.

A study by Williams and Webb (1994) looked for 100% agreement to achieve consensus, while agreement by most participants was regarded as consensus by Butterworth and Bishop (1995). Therefore reaching consensus is up to the researcher, who can decide for example that when "60% or more of respondents give the same response on an item, consensus is achieved" or if any item had "more than 15% change in the mean score from one round to the next, the item is considered unstable and a succeeding round was needed" (Stitt-Gohdes & Crews, 2004:63). A study by Boulkedid, Abdoul, Loustau, Sibony and Alberti (2011) of 62 cases found that the main method used to achieve a consensus was median scores above a predefined threshold and a high level of agreement among panel members were selected.

Consensus for this study needed to be reached for the importance and impact of the listed elements. The pre-determined level of consensus was set before the questionnaires were sent out in order to reduce research bias. For consensus in both the importance and impact scales the median which is less sensitive to outlier responses and is less affected by biased responses was used and set at 8, 9 and 10. The percentage response rates was also used to achieve consensus, which meant that more than 60% of the respondents had to rate the statement between 8 and 10. The consensus criteria are depicted in Table 2. The cut-off criteria were set high so that very important indicators with a very high impact could be identified.

Table 8.1. Criteria to reach consensus

	Importance Scale		**Impact Scale**	
	% response (8,9,10)	**Median**	**% response (8,9,10)**	**Median**
Consensus	> 60%	8, 9, 10	> 60%	8, 9, 10

8.3.4 Develop Delphi Round One Questionnaire

Delphi instructions (attached in Appendix D) as well as a quantitative structured questionnaire that was designed from the review of relevant literature was used for the first round (attached in Appendix E). It was carefully designed and developed, so that the participants could easily understand the questions and complete it within 20 minutes. The questionnaire consisted of the six drivers, namely legal requirements, social pressure, business case, voluntary regulations, visibility of the disease and internal agents with a total of 64 statements that were identified via an extensive literature review as discussed in chapter 6 and edited after the Delphi pilot study (cf. par. 8.3.5). The content of the questionnaire was clearly explained in a cover letter. A definition of each driver was provided in the questionnaire. Participants had to rate the 64 statements according to a 10 point Likert importance scale where 1 = not important at all and 10 = extremely important and on a 10 point Likert impact scale where 1 = no impact and 10 = major impact as indicated in Table 8.2.

Table 8.2 Importance and impact scale.

IMPORTANCE SCALE (Importance in percentage)									
0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
IMPACT SCALE									
No impact		Low impact		Moderate impact		High impact		Major impact	
1	2	3	4	5	6	7	8	9	10

The Delphi rounds were conducted as per Figure 8.3.

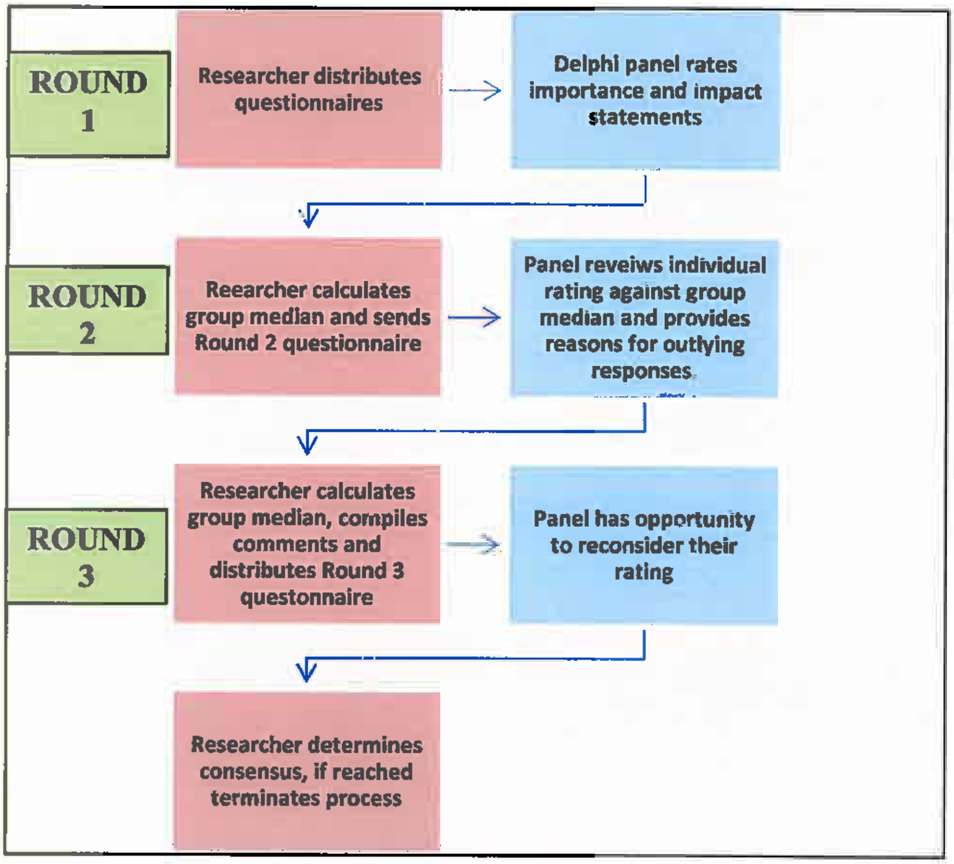


Figure 8.3. The Delphi rounds (Adapted from Thangaratinam, and Redman (2005:124).

8.3.5 Delphi Pilot Study

Prior to emailing the questionnaires a pilot study was carried out as discussed in chapter 7 (cf. par. 7.3.2.1). The pilot study was conducted to ensure that the instructions were clear and understandable, that the participants understood their role, to remove ambiguities and to determine the timeframe. Five people completed the pilot study. The time it took to complete the questionnaire was measured and the questionnaire revised by removing duplicated items.

The drivers were therefore reduced from eighty seven after the literature review to 64 after the pilot study.

8.3.6 Release and Analyse Round One Questionnaire

The first round of questionnaires was emailed to the 16 Delphi panel members that agreed to participate at the end of September 2012. Twelve participants (75%) completed and returned the questionnaires representing an acceptable response rates according to Iqbal & Pipon-Young (2007). The four participants that did not respond did not give any reason for declining to participate in the study. A reminder email was sent one week after the questionnaire was sent out. The responses received for Round One were then analysed using Microsoft Excel 2007 and the median of the response for each statement was computed.

8.3.7 Develop Round Two Questionnaire

In round two, an updated set of Delphi instructions as well as an adapted version of the questionnaire was sent to the participants. The difference between the questionnaires from round one and two was that the questionnaire for round two showed the group median and the participants score. The participants were emailed individually (anonymity was ensured) so that they could respond to the second questionnaire taking into account the group median and their previous response[7]. The panel members, in round two, were requested to follow one of the following 3 actions, namely:

- Retain their response form round one;
- Change their response from round one to be in line with the group median or
- Make a new response.

This round also provided participants with the opportunity to justify their response if that response was one unit on either side of the median.

8.3.8 Release and Analyse Round Two Questionnaire

The revised questionnaire which included the group median was emailed to 12 participants in December 2012. Two reminder emails were sent after they were dispatched. This stage of the Delphi was delayed because most of the participants were on annual holiday in December. A follow up email was sent in mid-January and ten participants returned their questionnaires. One participant had undergone surgery and could not participate and the other did not provide a reason for declining to participate in round 2. The responses received for round two were then

[7] Participants' scores were not revealed to the entire group, only to the participant who owned the score

analysed using Microsoft Excel 2007 and the median for each statement was computed. The researcher observed consensus starting to form after round 2.

8.3.9 Develop Round Three Questionnaire

The response from round 2 assisted in the development of the questionnaire for round three. Round 3 involved sending out the questionnaire which now incorporated the group median from round two as well as the reasons for dissenting opinions. Here again participants could retain their response form round two; change their response from round two to be in line with the group median or make a new response. But they were advised to consider the comments on the outlining responses.

8.3.10 Release and Analyse Round Three Questionnaire

The questionnaire for round 3 was set out at the end of February 2013. Ten completed questionnaires were received. Upon receipt of the questionnaire from round 3, the criteria to obtain consensus was used to analyse the results. The analysis of the third round indicated that there was no need to proceed to the fourth round as very little further value would be added to the degree of consensus that had already been attained.

8.3.11 Verify, Analyse and Document Research Results

This step involved determining consensus and terminating the process. The results were continuously verified throughout the Delphi process as follows, namely:

8.3.11.1 Reliability and validity of the Delphi method

The researcher ensured reliability and validity of the study by ensuring the following:

- careful design and a pilot test was carried out to ensure construct validity;
- that the participants were in fact experts by requesting their curriculum vitae to confirm that they satisfied the minimum criteria for selection;
- that the panel was as heterogeneous as possible to ensure discourse;
- that the size of the panel was adequate according to literature;
- that the entire processes was properly documented in order to leave an audit trail of all decisions taken during the study;
- the researcher was in constant communication with the participants, so that questions could be clarified;
- the achievement of consensus was evidence of concurrent validity as the experts themselves had identified and agreed upon the statements;
- the level of consensus was clearly specified prior to the questionnaire was set out;

- the researcher ensured reliability by maintaining anonymity of the participants while allowing them to compare one's own expertise and knowledge to those of others and providing each participant with the opportunity to evaluate their answer and comment on the answers of others.

8.3.11.2 Minimising the Effects of Bias

Hallowell and Gambatese (2010:104) identified eight different types of bias that could occur in a Delphi study, namely:

- collective unconscious ("*bandwagon effect*" individuals unconsciously feel pressure to conform to the common beliefs within a group);
- contrast effect (the perception of a given subject is enhanced/diminished by the value of the immediately preceding subject);
- neglect of probability (involves the disregard of likelihood when making a decision under uncertainty);
- von Restorff effect (individuals were found to recognize and remember relatively extreme events more often and more accurately than less extreme events);
- myside bias (occurs when an individual generates arguments only on one side of an issue);
- recency effect (recent events are given inappropriate levels of salience in relation to others);
- primacy effect (is a relatively subtle form of cognitive bias); and
- dominance (occurs when one very vocal/intimidating group member, exhibits great control over the ratings of the other members).

In order to reduce bias in the study the researcher carried out the following procedures:

- Ensured that the participants were anonymous to each other (reducing von Restorff and dominance bias);
- Carried out multiple iterations (reducing von Restorff and dominance bias);
- Provided reasons for dissenting views in feedback (reducing collective unconscious, von Restorff and myside bias);
- Reported on medians as they were less likely to be affected by outlying responses (reducing contrast, von Restorff , myside bias, recency and primary bias).

8.4 Summary

The Delphi method was employed to provide a systematic approach to achieve consensus on the six drivers for effective HIV and AIDS management. An expert panel responded to three rounds of questionnaires in order to achieve consensus. The Delphi findings will be discussed in chapter 9.

CHAPTER 9

RESULTS OF DELPHI STUDY AND DISCUSSION

9.1 Introduction

Having discussed the steps carried out in the Delphi process, this chapter discusses the results of the three rounds of the Delphi study.

9.2 Demographic information of panel

Thirty three participants were identified from journal publications and from the private sector to participate in the Delphi study. Sixteen experts participated in round 1. Twelve participants (75%) completed and returned the questionnaires. The round 2 questionnaires were emailed to these 12 participants. Ten completed responses were received for each of rounds 2 and 3.

The final panel consisted of 50% females and 50% males. This was unique as studies that focused on the construction industry usually found that most of the respondents were male. Twenty percent of the members were from the United States of America and the remaining eighty percent from South Africa. This geographical distribution was adequate because the study focused on HIV and AIDS management in the South African construction industry. The national expertise was a necessity as well as expertise in HIV and AIDS management.

The sample was heterogeneous because 30% of the participants were academics, 20% Health experts and 50% industry practitioners. According to Hallowell and Gambatese (2010) the level of education qualification is an important attribute when selecting experts for the panel. This panel consisted of 40% of experts with a doctorate degree, 30% with a master's degree and 10% with a honours degree and 20% with diplomas.

In total the panel had 191.5 years of experience (mean 19.5 years per expert) which is in line with other studies (Rajendran and Gambatese, 2009). The panel had extensively contributed to the body of knowledge by publishing a total of 137 conference papers, 78 journal publications, 7 books, 11 articles, 1 patent, 14 research projects, 3 live broadcasts and co-organised, chaired and presented 85 workshops and training programmes.

9.2 Delphi research questions

The research questions the Delphi study had to address were, namely:

DQ1. What are the leading drivers that are perceived to be extremely important in the effective management of HIV and AIDS in the South African construction industry? and

DQ2. What are the leading drivers that are perceived to have an extreme impact in the effective management of HIV and AIDS in the South African construction industry?

9.3 Delphi results

Consensus for this study needed to be reached for the importance and impact of the listed elements. For consensus in both the importance and impact scales the median was used and set at 8, 9 and 10. The percentage response rates was also used to achieve consensus, which meant that more than 60% of the respondents had to rate the statement between eight and ten. The cut-off criteria were set high so that very important indicators with a very high impact could be determined.

Table 9.1 to 9.3 indicates the 64 indicators categorised under six headings and show the number of participants that rated the indicators between eight to ten as a percentage, the median and the mean.

9.3.1 Delphi Round 1 results and discussion

Table 9.1 indicates the response of the first round of the Delphi study. Fifty one indicators achieved consensus in terms of the importance rating and forty seven under the impact ratings after round 1.

9.3.1.1 Legal aspects

The legal aspects of effective HIV and AIDS management were measured using six indicators. All six indicators met the requirements for consensus in the importance and impact criteria. In fact more than 75% of the panel thought that four of the indicators were extremely important and deserved at rating of ten.

9.3.1.2 Social elements

Eight indicators were used to measure the social aspects of effective HIV and AIDS management. Five of the indicators did not meet the requirements for consensus in the importance ratings and four indicators in the impact ratings.

9.3.1.3. Business case

The business case consisted of twenty elements. Two indicators did not meet consensus in terms of the importance ratings and 5 in the impact ratings.

9.3.1.4. Voluntary regulation

Of the 14 indicators in voluntary regulation, five did not met consensus in the importance ratings and three in the impact ratings.

9.3.1.5. Elements for visibility of the disease

All 6 indicators for visibility of the disease were considered important, whereas only three indicators were considered to have a high impact.

9.3.1.6. Internal agents

This category consisted of ten internal agents, eight of which met the requirements for consensus in the importance ratings and seven in the impact ratings.

Table 9.1 Importance and impact results for Round 1 of the Delphi study.

No		Importance Ratings: % response (8, 9, 10)	Importance Ratings: Median	Importance Ratings: Mean	Importance Ratings: Consensus achieved	Impact Ratings: % response (8, 9, 10)	Impact Ratings: Median	Impact Ratings: Mean	Impact Ratings: Consensus achieved
No	**1 Legal**								
1	Implement a HIV and AIDS policy	67	9.00	7.92	Yes	58	8.00	7.75	Yes
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	83	10.00	9.00	Yes	75	9.00	8.58	Yes
3	Protect the employees right to privacy about their HIV status at work	67	9.00	8.67	Yes	75	8.50	8.25	Yes
4	Reduce the risk of occupational exposure to HIV	75	10.00	8.33	Yes	67	10.00	8.08	Yes
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period	75	10.00	8.75	Yes	83	9.00	8.67	Yes
6	Prohibit mandatory pre- and post-employment HIV testing, unless the employer has applied to the Labour Court for authorisation	83	10.00	9.25	Yes	83	10.00	8.67	Yes
No	**2 Social Elements**								
1	Follow the example and practices of other competitors (benchmarking against other industry participants)	50	7.50	7.33	No	50	7.50	6.92	No
2	Pressure by civil society to implement HIV and AIDS management strategies	50	7.50	7.25	No	58	8.00	7.25	No
3	Pressure by trade unions to implement HIV and AIDS management strategies	67	8.00	7.67	Yes	67	8.00	7.92	Yes
4	Pressure by NGOs to implement HIV and AIDS management strategies	42	7.00	6.50	No	50	7.00	6.5	No
5	Corporate social responsibility to implement HIV and AIDS management strategies	67	8.00	8.08	Yes	75	8.00	8.08	Yes
6	Ethical pressure to implement HIV and AIDS management strategies	50	7.50	6.83	No	50	7.00	6.92	No
7	Positively engage with surrounding communities (as worker come from and return to these communities)	58	8.50	7.83	No	75	9.00	8.25	Yes
8	External support (e.g. government, funding agencies) to ensure effective strategies are put in place in a sustainable manner	67	8.00	8.00	Yes	83	9.00	8.33	Yes
No	**3. Business case elements**								
1	Provide awareness programmes	58	8.00	7.67	Yes	67	8.00	7.42	Yes
2	Undertake behaviour change communication	50	7.50	7.83	No	58	8.00	7.5	No
3	Provide education and training programmes (e.g. knowledge of first aid practices)	50	7.50	7.42	No	58	8.00	7.42	No
4	Conduct voluntary counselling and testing	67	9.00	8.17	Yes	75	9.00	8	Yes
5	Implement wellness programmes	75	9.00	7.92	Yes	75	9.00	7.83	Yes
6	Distribute male/female condoms	67	9.50	8.33	Yes	75	10.00	8.33	Yes
7	Provide antiretroviral therapy and/or referral to external health care providers	92	10.00	9.25	Yes	92	10.00	9.25	Yes
8	Provide assistance with combating TB and STI's	92	9.00	8.58	Yes	83	10.00	8.83	Yes
9	Engage in community outreach programmes	75	8.50	7.83	Yes	58	8.50	7.5	No
10	Conduct a risk and impact assessment	67	9.00	7.17	Yes	67	8.50	6.67	Yes
11	Conduct a needs and resource assessment	75	9.00	7.67	Yes	67	9.00	7.58	Yes
12	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan	67	9.00	8.08	Yes	67	9.00	7.83	Yes
13	Appoint active peer educators	67	8.50	7.67	Yes	67	8.50	8	Yes
14	Monitor labour absenteeism and turnover	75	9.00	8.25	Yes	67	9.00	8.08	Yes
15	Improve the morale of employees	67	8.50	7.33	Yes	58	8.00	7	No
16	Address stigma and discrimination	75	10.00	8.58	Yes	75	9.50	8.42	Yes
17	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.	67	8.50	7.42	Yes	58	8.00	6.92	No
18	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	75	8.50	8.08	Yes	75	8.50	8.08	Yes
19	Accommodate the needs of infected persons	75	9.00	8.50	Yes	75	9.00	8.17	Yes
20	Promote a safe working environment	75	10.00	8.00	Yes	67	9.00	7.5	Yes

Table 9.1 continued.

No		Importance Ratings: % response (8, 9, 10)	Importance Ratings: Median	Importance Ratings: Mean	Importance Ratings: Consensus achieved	Impact Ratings: % response (8, 9, 10)	Impact Ratings: Median	Impact Ratings: Mean	Impact Ratings: Consensus achieved
No	4 Voluntary regulation elements								
1	Provide comprehensive care and treatment for people living with HIV and AIDS	58	8.50	7.33	No	75	9.00	8.42	Yes
2	Develop, implement, monitor and evaluate the HIV and AIDS policy	67	9.00	8.00	Yes	67	9.00	7.92	Yes
3	Promote gender equality	83	9.00	8.08	Yes	75	9.00	7.83	Yes
4	Promote non-discrimination	83	9.00	8.33	Yes	75	9.00	8.25	Yes
5	Protect the human rights and dignity of people living with HIV and AIDS	75	9.00	8.17	Yes	75	9.00	8	Yes
6	Include HIV and AIDS awareness programmes	58	9.00	7.25	No	58	9.00	7.25	No
7	Promote condom distribution and use	58	9.00	8.17	No	58	9.00	7.92	No
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)	75	10.00	8.75	Yes	75	10.00	9	Yes
9	Provide education and training on HIV and AIDS	67	8.50	7.75	Yes	58	8.50	7.75	Yes
10	Encourage treatment of STIs, TB and HIV and AIDS	75	10.00	8.67	Yes	75	9.50	8	Yes
11	Provide a 'wellness' programme for employees	75	9.00	8.00	Yes	67	9.00	8	Yes
12	Contractually commit construction firms to implement HIV and AIDS programmes	58	9.50	7.42	No	67	9.50	7.83	Yes
13	Report financially on HIV and AIDS, e.g. GRI and King III report	58	8.00	8.17	No	50	8.00	7.75	No
14	Benchmark HIV and AIDS organisational practices against industry norms	67	9.00	7.92	Yes	67	10.00	8.33	Yes
No	5 Elements for Visibility of the disease								
1	Create a supportive, safe and healthy work environment	67	9.50	8.25	Yes	67	9.50	8.25	Yes
2	Accommodate the needs of sick employees	83	9.00	8.67	Yes	58	9.00	8.25	No
3	Encourage open communication between management and employees.	67	9.00	8.42	Yes	58	8.50	7.83	No
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	83	9.50	8.92	Yes	58	8.50	8.08	No
5	Promote confidentiality and privacy in the workplace	83	9.50	8.83	Yes	75	9.00	8.25	Yes
6	Encourage employees to test for HIV	92	10.00	9.25	Yes	75	10.00	8.75	Yes
No	6 Internal agent								
1	Senior management	75	9.50	8.75	Yes	75	9.50	8.83	Yes
2	Middle or line management	75	9.50	8.58	Yes	67	9.50	8.5	Yes
3	Peer educators	67	9.00	8.25	Yes	67	9.00	7.92	Yes
4	Traditional healers	50	7.50	6.92	No	42	6.50	6.42	No
5	Counsellors	75	9.00	8.00	Yes	58	9.00	7.75	Yes
6	Medical personnel	67	9.00	8.50	Yes	67	9.00	8.33	No
7	CEO/president	83	9.50	8.92	Yes	83	10.00	8.5	Yes
8	Staff members	58	9.00	7.42	No	50	8.00	7.33	No
9	Unions representatives	67	9.00	8.33	Yes	67	9.00	8.08	Yes
10	Human resource manager/s	83	9.00	8.83	Yes	75	9.00	8.58	Yes

9.3.2 Delphi Round 2 results and discussion

Round 2 was emailed to twelve participants, ten of whom responded. Round 2 provided the experts with the opportunity to review their ratings based on the group median achieved after round 1. The experts were encouraged to provide a reason for any rating that was more than 1 unit on either side of the median for both the importance and impact ratings. Table 9.2 indicates the response of the second round of the Delphi study. Fifty eight indicators achieved consensus in terms of the importance rating and fifty nine under the impact ratings after round 2. These indicators were categorised under the six drivers.

9.3.2.1 Legal aspects

All six indicators that measured the legal aspects achieved consensus in the importance and impact criteria. This result concurred with the result in round 1.

9.3.2.2 Social elements

Eight indicators were used to measure the social aspects of effective HIV and AIDS management. Four of the indicators did not meet the requirements for consensus in the importance ratings as compared to five in round 1. Two indicators did not achieve consensus in the impact ratings compared to four in round 1.

9.3.2.3. Business case

The business case consisted of twenty elements. Two indicators did not meet consensus in terms of the importance ratings which is consistent with round 1. In round 2 only one indicator did not achieve consensus in the impact ratings compared to five indicators in round 1.

9.3.2.4. Voluntary regulation

Of the 14 indicators in voluntary regulation, five did not met consensus in the importance ratings and three in the impact ratings in round 1. After round 2 all fourteen indicators achieved consensus in the importance ratings and thirteen in the impact ratings.

9.3.2.5. Elements for visibility of the disease

All 6 indicators for visibility of the disease were considered important which is consistent with round 1. After round 2 all the indicators was considered to have a high impact compared to only 3 after round 1.

9.3.2.6. Internal agents

This category consisted of ten internal agents, eight of which was met the requirements for consensus in the importance ratings and seven in the impact ratings after round 1. On completion of round 2, all ten indicators achieved consensus in the importance ratings and nine in the impact ratings.

Table 9.2 Importance and impact results for Round 2 of the Delphi study.

		Importance Ratings				Impact Ratings			
		% response (8, 9, 10)	Median	Mean	Consensus Achieved	% response (8, 9, 10)	Median	Mean	Consensus Achieved
No	1. Legal								
1	Implement a HIV and AIDS policy	80	9.00	8.60	Yes	70	8.50	8.10	Yes
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	80	10.00	9.40	Yes	80	9.50	8.80	Yes
3	Protect the employees right to privacy about their HIV status at work	80	9.00	8.80	Yes	80	8.50	8.40	Yes
4	Reduce the risk of occupational exposure to HIV	90	10.00	9.50	Yes	70	10.00	8.70	Yes
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period	90	10.00	9.50	Yes	90	8.50	8.60	Yes
6	Prohibit mandatory pre- and post-employment HIV testing, unless the employer has applied to the Labour Court for authorisation	100	10.00	9.40	Yes	90	9.50	9.10	Yes
No	2 Social Elements								
1	Follow the example and practices of other competitors (benchmarking against other industry participants)	50	7.50	7.40	No	60	8.00	7.70	Yes
2	Pressure by civil society to implement HIV and AIDS management strategies	50	7.50	7.50	No	70	8.00	7.80	Yes
3	Pressure by trade unions to implement HIV and AIDS management strategies	70	8.00	7.50	Yes	70	8.00	8.20	Yes
4	Pressure by NGOs to implement HIV and AIDS management strategies	40	7.00	6.30	No	50	7.00	6.60	No
5	Corporate social responsibility to implement HIV and AIDS management strategies	80	8.00	8.20	Yes	80	8.00	8.20	Yes
6	Ethical pressure to implement HIV and AIDS management strategies	50	7.50	7.30	No	50	7.00	6.90	No
7	Positively engage with surrounding communities (as worker come from and return to these communities)	60	8.00	8.20	Yes	80	9.00	8.20	Yes
8	External support to ensure effective strategies are put in place in a sustainable manner	70	8.00	7.70	Yes	90	9.00	8.40	Yes
No	3 Business case elements								
1	Provide awareness programmes	60	8.00	8.00	Yes	70	8.00	7.60	Yes
2	Undertake behaviour change communication	50	7.50	7.90	No	70	8.00	7.60	Yes
3	Provide education and training programmes	50	7.50	7.60	No	60	8.00	7.70	Yes
4	Conduct voluntary counselling and testing	70	9.00	8.10	Yes	60	9.00	8.20	Yes
5	Implement wellness programmes	80	9.00	8.00	Yes	80	9.00	7.90	Yes
6	Distribute male/female condoms	90	9.50	9.10	Yes	90	10.00	9.40	Yes
7	Provide antiretroviral therapy and/or referral to external health care providers	90	10.00	9.50	Yes	100	10.00	9.50	Yes
8	Provide assistance with combating TB and STI's	90	9.00	8.60	Yes	90	10.00	9.00	Yes
9	Engage in community outreach programmes	80	8.50	7.90	Yes	60	8.50	7.10	Yes
10	Conduct a risk and impact assessment	80	9.00	8.40	Yes	100	9.00	7.40	Yes
11	Conduct a needs and resource assessment	90	9.00	8.50	Yes	100	9.00	7.80	Yes
12	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan	90	9.00	8.80	Yes	100	9.00	8.30	Yes
13	Appoint active peer educators	70	8.50	8.00	Yes	70	8.50	8.00	Yes
14	Monitor labour absenteeism and turnover	80	9.00	8.40	Yes	70	9.00	8.30	Yes
15	Improve the morale of employees	70	8.50	7.50	Yes	60	8.00	7.10	Yes
16	Address stigma and discrimination	90	10.00	9.10	Yes	90	9.50	9.00	Yes
17	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.	90	8.50	8.10	Yes	50	8.00	7.20	No
18	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	90	9.00	8.20	Yes	70	8.50	7.80	Yes
19	Accommodate the needs of infected persons	90	9.00	8.70	Yes	80	9.00	8.30	Yes
20	Promote a safe working environment	90	10.00	9.00	Yes	80	9.00	8.40	Yes

Table 9.2 continued.

No		Importance Ratings: % response (8, 9, 10)	Importance Ratings: Median	Importance Ratings: Mean	Importance Ratings: Consensus Achieved	Impact Ratings: % response (8, 9, 10)	Impact Ratings: Median	Impact Ratings: Mean	Impact Ratings: Consensus Achieved
No	**4 Voluntary regulation elements**								
1	Provide comprehensive care and treatment for people living with HIV and AIDS	70	8.50	7.40	Yes	80	9.00	8.60	Yes
2	Develop, implement, monitor and evaluate the HIV and AIDS policy	80	9.00	8.40	Yes	80	9.00	8.40	Yes
3	Promote gender equality	90	9.00	8.40	Yes	80	9.00	8.10	Yes
4	Promote non-discrimination	90	9.00	8.40	Yes	80	9.00	8.30	Yes
5	Protect the human rights and dignity of people living with HIV and AIDS	80	9.00	8.30	Yes	80	9.00	8.20	Yes
6	Include HIV and AIDS awareness programmes	80	9.00	8.30	Yes	70	9.00	8.10	Yes
7	Promote condom distribution and use	70	9.00	8.40	Yes	70	9.00	8.30	Yes
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)	80	10.00	8.80	Yes	80	10.00	9.10	Yes
9	Provide education and training on HIV and AIDS	70	8.00	7.80	Yes	60	8.50	8.00	Yes
10	Encourage treatment of STIs, TB and HIV and AIDS	80	9.50	8.50	Yes	80	9.50	8.70	Yes
11	Provide a 'wellness' programme for employees	70	9.00	7.90	Yes	80	9.50	8.40	Yes
12	Contractually commit construction firms to implement HIV and AIDS programmes	70	9.50	7.40	Yes	70	9.50	7.70	Yes
13	Report financially on HIV and AIDS, e.g. GRI and King III report	60	8.50	8.30	Yes	50	8.00	7.70	No
14	Benchmark HIV and AIDS organisational practices against industry norms	80	8.50	8.00	Yes	70	10.00	8.60	Yes
No	**5 Elements for Visibility of the disease**								
1	Create a supportive, safe and healthy work environment	80	9.50	8.90	Yes	90	9.50	8.80	Yes
2	Accommodate the needs of sick employees	90	9.00	8.80	Yes	90	9.00	8.70	Yes
3	Encourage open communication between management and employees.	90	9.00	8.70	Yes	80	9.00	8.40	Yes
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	90	9.50	9.00	Yes	80	9.00	8.50	Yes
5	Promote confidentiality and privacy in the workplace	90	9.50	9.00	Yes	90	10.00	9.00	Yes
6	Encourage employees to test for HIV	90	10.00	9.40	Yes	90	10.00	9.50	Yes
No	**6 Internal agent**								
1	Senior management	80	9.50	8.80	Yes	80	9.50	8.90	Yes
2	Middle or line management	80	9.50	8.80	Yes	80	10.00	9.00	Yes
3	Peer educators	80	9.00	8.70	Yes	70	9.00	8.30	Yes
4	Traditional healers	60	8.00	7.60	Yes	30	7.00	7.10	No
5	Counsellors	80	9.00	8.20	Yes	60	9.00	7.90	Yes
6	Medical personnel	80	9.00	8.70	Yes	80	9.00	8.40	Yes
7	CEO/president	60	9.00	8.80	Yes	90	10.00	9.30	Yes
8	Staff members	60	9.00	7.90	Yes	70	9.00	8.10	Yes
9	Unions representatives	90	9.00	8.80	Yes	90	9.00	8.70	Yes
10	Human resource manager/s	90	9.50	9.10	Yes	90	9.50	8.90	Yes

9.3.3 Delphi Round 3 results and discussion

Round 3 was emailed to ten participants all of whom responded. Round 3 also provided the experts with the opportunity to review their ratings based on the group median achieved after round 2. The experts could comment if any rating was more than 1 unit on either side of the median for both the importance and impact ratings. Table 9.3 indicates the response of the third round of the Delphi study. Fifty six indicators achieved consensus in terms of the importance rating and sixty under the impact ratings after round 3. These indicators were categorised under the 6 drivers.

9.3.3.1 Legal aspects

All six indicators that measured the legal aspects achieved consensus in the importance and impact criteria. This result concurred with the results from round 1 and 2.

9.3.3.2 Social elements

Eight indicators were used to measure the social aspects of effective HIV and AIDS management. Four of the indicators did not meet the requirements for consensus in the importance ratings which is consistent with round 2 and five indicators in round 1. Two indicators did not achieve consensus in the impact ratings which is consistent with round 2 and four in round 1. In order for the indicators to be carried through to the model they needed to achieve consensus in both the importance and impact ratings. Given this four indicators were eliminated from this driver namely, "*follow the example and practices of other competitors (benchmarking against other industry participants*"; "*pressure by civil society to implement HIV and AIDS management strategies*"; "*pressure by NGOs to implement HIV and AIDS management strategies*"; "*ethical pressure to implement HIV and AIDS management strategies*".

9.3.3.3. Business case

The business case consisted of twenty elements. Two indicators did not meet consensus in terms of the importance ratings in all 3 rounds. All the indictors achieved consensus in the impact ratings scale compared to eighteen in round 2 and fifteen in round 1. Therefore two indicators were eliminated namely, "*undertake behaviour change communication*" and "*provide education and training programmes (e.g. knowledge of first aid practices and 'universal precautions')*". The fact that the experts did not think the provision of education and training programmes were important for the business case was an unusual outcome.

9.3.3.4. Voluntary regulation

Of the fourteen indicators in voluntary regulation, five did not met consensus in the importance ratings and three in the impact ratings in round 1. After round 2 and 3 all fourteen indicators achieved consensus in the importance ratings and thirteen in the impact ratings. One indicator "*report financially on HIV and AIDS, for example GRI and King III report*" was eliminated.

9.3.3.5. Elements for visibility of the disease

All six indicators for visibility of the disease were considered important and had a high impact rating therefore none of the indicators were eliminated.

9.3.3.6. Internal agents

This category consisted of ten internal agents, one of which "traditional healers" was eliminated as it did not meet the criteria for consensus.

Table 9.3 Importance and impact results for Round 3 of the Delphi study.

No		Importance Ratings				Impact Ratings			
		% response (8, 9, 10)	Median	Mean	Consensus Achieved	% response (8, 9, 10)	Median	Mean	Consensus Achieved
No	1 Legal								
1	Implement a HIV and AIDS policy	80	9.00	8.50	Yes	70	8.50	8.10	Yes
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	100	10.00	9.40	Yes	90	9.50	9.00	Yes
3	Protect the employees right to privacy about their HIV status at work	80	9.00	8.70	Yes	80	8.50	8.40	Yes
4	Reduce the risk of occupational exposure to HIV	90	10.00	9.50	Yes	70	10.00	8.70	Yes
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period	90	10.00	9.50	Yes	90	8.50	8.60	Yes
6	Prohibit mandatory pre- and post-employment HIV testing, unless the employer has applied to the Labour Court for authorisation	90	10.00	9.40	Yes	100	9.50	9.30	Yes
No	2 Social Elements								
1	Follow the example and practices of other competitors (benchmarking against other industry participants)	50	7.50	7.40	No	60	8.00	7.60	Yes
2	Pressure by civil society to implement HIV and AIDS management strategies	50	7.50	7.50	No	70	8.00	7.60	Yes
3	Pressure by trade unions to implement HIV and AIDS management strategies	70	8.00	7.50	Yes	70	8.00	8.00	Yes
4	Pressure by NGOs to implement HIV and AIDS management strategies	40	7.00	6.30	No	50	7.00	6.40	No
5	Corporate social responsibility to implement HIV and AIDS management strategies	80	8.00	8.20	Yes	80	8.00	8.20	Yes
6	Ethical pressure to implement HIV and AIDS management strategies	50	7.50	7.30	No	50	7.00	6.90	No
7	Positively engage with surrounding communities (as worker come from and return to these communities)	60	8.00	8.20	Yes	90	9.00	8.20	Yes
8	External support to ensure effective strategies are put in place in a sustainable manner	70	8.00	7.70	Yes	80	9.00	8.40	Yes
No	3 Business case elements								
1	Provide awareness programmes	60	8.00	8.00	Yes	70	8.00	7.60	Yes
2	Undertake behaviour change communication	40	7.00	7.70	No	70	8.00	7.60	Yes
3	Provide education and training programmes (e.g. knowledge of first aid practices and 'universal precautions')	40	7.00	7.30	No	60	8.00	7.60	Yes
4	Conduct voluntary counselling and testing	70	9.00	8.00	Yes	80	9.00	8.20	Yes
5	Implement wellness programmes	80	9.00	7.90	Yes	80	9.00	7.90	Yes
6	Distribute male/female condoms	90	9.00	9.00	Yes	90	10.00	9.40	Yes
7	Provide antiretroviral therapy and/or referral to external health care providers	90	10.00	9.50	Yes	100	10.00	9.50	Yes
8	Provide assistance with combating TB and STI's	90	9.00	8.60	Yes	90	10.00	9.00	Yes
9	Engage in community outreach programmes	80	8.50	7.90	Yes	60	8.50	7.10	Yes
10	Conduct a risk and impact assessment	80	9.00	8.40	Yes	70	8.50	7.30	Yes
11	Conduct a needs and resource assessment	90	9.00	8.40	Yes	70	9.00	7.80	Yes
12	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan	90	9.00	8.70	Yes	80	9.00	8.30	Yes
13	Appoint active peer educators	70	8.50	8.00	Yes	80	9.00	8.30	Yes
14	Monitor labour absenteeism and turnover	80	9.00	8.50	Yes	70	9.00	8.30	Yes
15	Improve the morale of employees	70	8.50	7.50	Yes	60	8.00	7.10	Yes
16	Address stigma and discrimination	90	10.00	9.10	Yes	90	9.50	9.00	Yes
17	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.	90	8.50	8.10	Yes	60	8.00	7.20	Yes
18	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	90	9.00	8.20	Yes	70	8.50	7.80	Yes
19	Accommodate the needs of infected persons	90	9.00	8.70	Yes	80	9.00	8.30	Yes
20	Promote a safe working environment	90	10.00	9.00	Yes	80	9.00	8.40	Yes

Table 9.3 continued.

No		Importance Ratings: % response (8, 9, 10)	Importance Ratings: Median	Importance Ratings: Mean	Importance Ratings: Consensus Achieved	Impact Ratings: % response (8, 9, 10)	Impact Ratings: Median	Impact Ratings: Mean	Impact Ratings: Consensus Achieved
No	**4 Voluntary regulation elements**								
1	Provide comprehensive care and treatment for people living with HIV and AIDS	70	8.50	7.40	Yes	80	9.00	8.60	Yes
2	Develop, implement, monitor and evaluate the HIV and AIDS policy	80	9.00	8.40	Yes	80	9.00	8.40	Yes
3	Promote gender equality	90	9.00	8.40	Yes	80	9.00	8.10	Yes
4	Promote non-discrimination	90	9.00	8.30	Yes	80	9.00	8.30	Yes
5	Protect the human rights and dignity of people living with HIV and AIDS	80	9.00	8.20	Yes	80	9.00	8.20	Yes
6	Include HIV and AIDS awareness programmes	80	9.00	8.30	Yes	70	9.00	8.10	Yes
7	Promote condom distribution and use	70	9.00	8.40	Yes	60	9.00	8.00	Yes
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)	80	10.00	8.80	Yes	80	10.00	9.10	Yes
9	Provide education and training on HIV and AIDS	70	8.00	7.80	Yes	60	8.50	8.00	Yes
10	Encourage treatment of STIs, TB and HIV and AIDS	80	10.00	8.60	Yes	80	9.50	8.70	Yes
11	Provide a 'wellness' programme for employees	80	9.00	8.10	Yes	80	9.50	8.40	Yes
12	Contractually commit construction firms to implement HIV and AIDS programmes	60	9.50	7.30	Yes	70	9.50	7.70	Yes
13	Report financially on HIV and AIDS, e.g. GRI and King III report	60	8.00	8.10	Yes	50	8.00	7.70	No
14	Benchmark HIV and AIDS organisational practices against industry norms	80	8.50	8.00	Yes	70	10.00	8.60	Yes
No	**5 Elements for Visibility of the disease**								
1	Create a supportive, safe and healthy work environment	80	9.50	8.90	Yes	90	9.50	8.80	Yes
2	Accommodate the needs of sick employees	90	9.00	8.90	Yes	90	9.00	8.70	Yes
3	Encourage open communication between management and employees.	90	9.00	8.80	Yes	80	9.00	8.40	Yes
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	90	9.00	8.90	Yes	80	9.00	8.50	Yes
5	Promote confidentiality and privacy in the workplace	90	9.00	8.90	Yes	90	10.00	9.00	Yes
6	Encourage employees to test for HIV	90	10.00	9.40	Yes	90	10.00	9.50	Yes
No	**6 Internal agent**								
1	Senior management	80	9.50	8.80	Yes	80	9.50	8.90	Yes
2	Middle or line management	80	9.50	8.80	Yes	80	10.00	9.00	Yes
3	Peer educators	80	9.00	8.70	Yes	70	9.00	8.30	Yes
4	Traditional healers	60	8.00	7.60	Yes	30	7.00	7.10	No
5	Counsellors	80	9.00	8.20	Yes	60	9.00	7.90	Yes
6	Medical personnel	80	9.00	8.70	Yes	80	9.00	8.40	Yes
7	CEO/president	80	9.00	8.80	Yes	90	10.00	9.30	Yes
8	Staff members	60	9.00	7.90	Yes	70	8.50	8.00	Yes
9	Unions representatives	90	9.00	8.80	Yes	90	9.00	8.70	Yes
10	Human resource manager/s	90	9.50	9.10	Yes	90	9.50	8.90	Yes

9.3.4 Results of all three Delphi rounds

Table 9.4 illustrates the results of all 3 rounds of the Delphi study.

Table 9.4 Importance and impact results for 3 Rounds of the Delphi study.

		Importance Ratings						Impact Ratings					
		% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median
		R 1	R 1	R 2	R 2	R 3	R 3	R 1	R 1	R 2	R 2	R 3	R 3
No	**1 Legal**												
1	Implement a HIV and AIDS policy	67	9.0	80	8.8	80	9.0	58	8.5	70	8.5	70	8.5
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	83	10.0	80	10.0	100	10.0	75	9.4	80	9.5	90	9.5
3	Protect the employees right to privacy about their HIV status at work	67	9.0	80	9.0	80	9.0	75	8.7	80	8.5	80	8.5
4	Reduce the risk of occupational exposure to HIV	75	10.0	90	10.0	90	10.0	67	10	70	10.0	70	10.0
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period	75	10.0	90	10.0	90	10.0	83	9.5	90	8.5	90	8.5
6	Prohibit mandatory pre- and post-employment HIV testing, unless the employer has applied to the Labour Court for authorisation	83	10.0	100	10.0	90	10.0	83	9.5	90	9.5	100	9.5
No	**2 Social Elements**												
1	Follow the example and practices of other competitors	50	8.0	50	7.2	50	7.5	50	7.8	60	8.0	60	8.0
2	Pressure by civil society to implement HIV and AIDS management strategies	50	8.0	50	7.3	50	7.5	58	7.5	70	8.0	70	8.0
3	Pressure by trade unions to implement HIV and AIDS management strategies	67	8.0	70	8.0	70	8.0	67	8.0	70	8.0	70	8.0
4	Pressure by NGOs to implement HIV and AIDS management strategies	42	7.0	40	6.7	40	7.0	50	6.2	50	7.0	50	7.0
5	Corporate social responsibility to implement HIV and AIDS management strategies	67	8.1	80	8.0	80	8.0	75	8.1	80	8.0	80	8.0
6	Ethical pressure to implement HIV and AIDS management strategies	50	7.0	50	7.2	50	7.5	50	6.7	50	7.0	50	7.0
7	Positively engage with surrounding communities (as worker come from and return to these communities)	58	9.0	60	8.0	60	8.0	75	8.1	80	9.0	90	9.0
8	External support (e.g. government, funding agencies) to ensure effective strategies are put in place in a sustainable manner	67	8.0	70	8.0	70	8.0	83	8.0	90	9.0	80	9.0
No	**3 Business case elements**												
1	Provide awareness programmes	58	8.0	60	8.0	60	8.0	67	8.0	70	8.0	70	8.0
2	Undertake behaviour change communication	50	8.0	50	7.0	40	7.0	58	7.9	70	8.0	70	8.0
3	Provide education and training programmes (e.g. knowledge of first aid practices)	50	8.0	50	7.0	40	7.0	58	7.2	60	8.0	60	8.0
4	Conduct voluntary counselling and testing	67	9.0	70	8.5	70	9.0	75	9.0	60	9.0	80	9.0
5	Implement wellness programmes	75	9.0	80	8.5	80	9.0	75	9.0	80	9.0	80	9.0
6	Distribute male/female condoms	67	10.0	90	9.0	90	9.0	75	9.5	90	10.0	90	10.0
7	Provide antiretroviral therapy and/or referral to external health care providers	92	10.0	90	10.0	90	10.0	92	9.8	100	10.0	100	10.0
8	Provide assistance with combating TB and STI's	92	10.0	90	9.0	90	9.0	83	9.0	90	10.0	90	10.0
9	Engage in community outreach programmes	75	8.5	80	8.0	80	8.5	58	8.3	60	8.5	60	8.5
10	Conduct a risk and impact assessment	67	9.0	80	9.0	80	9.0	67	8.7	100	8.5	70	8.5
11	Conduct a needs and resource assessment	75	9.0	90	8.7	90	9.0	67	9.0	100	9.0	70	9.0
12	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan	67	9.0	90	9.0	90	9.0	67	8.9	100	9.0	80	9.0
13	Appoint active peer educators	67	9.0	70	8.0	70	8.5	67	8.8	70	9.0	80	9.0
14	Monitor labour absenteeism and turnover	75	9.0	80	9.0	80	9.0	67	9.0	70	9.0	70	9.0
15	Improve the morale of employees	67	9.0	70	8.0	70	8.5	58	7.8	60	8.0	60	8.0
16	Address stigma and discrimination	75	10.0	90	10.0	90	10.0	75	9.6	90	9.5	90	9.5
17	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.	67	9.0	90	8.1	90	8.5	58	8.1	50	8.0	60	8.0
18	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	75	9.0	90	8.6	90	9.0	75	8.6	70	8.5	70	8.5
19	Accommodate the needs of infected persons	75	9.0	90	9.0	90	9.0	75	9.0	80	9.0	80	9.0
20	Promote a safe working environment	75	10.0	90	10.0	90	10.0	67	9.0	80	9.0	80	9.0

Table 9.4 continued.

		Importance Ratings						Impact Ratings					
		% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median	% response (8, 9, 10)	Median
		R 1	R 1	R 2	R 2	R 3	R 3	R 1	R 1	R 2	R 2	R 3	R 3
No	**4 Voluntary regulation elements**												
1	Provide comprehensive care and treatment for people living with HIV and AIDS	58	9.0	70	8.3	70	8.5	75	8.3	80	9.0	80	9.0
2	Develop, implement, monitor and evaluate the HIV and AIDS policy	67	9.0	80	9.0	80	9.0	67	8.7	80	9.0	80	9.0
3	Promote gender equality	83	9.0	90	9.0	90	9.0	75	9.0	80	9.0	80	9.0
4	Promote non-discrimination	83	9.0	90	9.0	90	9.0	75	9.0	80	9.0	80	9.0
5	Protect the human rights and dignity of people living with HIV and AIDS	75	9.0	80	9.0	80	9.0	75	9.0	80	9.0	80	9.0
6	Include HIV and AIDS awareness programmes	58	9.0	80	9.0	80	9.0	58	9.0	70	9.0	70	9.0
7	Promote condom distribution and use	58	9.0	70	8.7	70	9.0	58	8.7	70	9.0	60	9.0
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)	75	10.0	80	10.0	80	10.0	75	10.0	80	10.0	80	10.0
9	Provide education and training on HIV and AIDS	67	9.0	70	8.0	70	8.0	58	7.9	60	8.5	60	8.5
10	Encourage treatment of STIs, TB and HIV and AIDS	75	10.0	80	9.5	80	10.0	75	9.5	80	9.5	80	9.5
11	Provide a 'wellness' programme for employees	75	9.5	70	9.0	80	9.0	67	9.0	80	9.5	80	9.5
12	Contractually commit construction firms to implement HIV and AIDS programmes	58	10.0	70	8.2	60	9.5	67	9.3	70	9.5	70	9.5
13	Report financially on HIV and AIDS, e.g. GRI and King III report	58	8.0	60	8.0	60	8.0	50	7.5	50	8.0	50	8.0
14	Benchmark HIV and AIDS organisational practices against industry norms	67	10.0	80	8.0	80	8.5	67	9.3	70	10.0	70	10.0
No	**5 Elements for Visibility of the disease**												
1	Create a supportive, safe and healthy work environment	67	10.0	80	9.0	80	9.5	67	9.3	90	9.5	90	9.5
2	Accommodate the needs of sick employees	83	9.0	90	9.0	90	9.0	58	9.0	90	9.0	90	9.0
3	Encourage open communication between management and employees.	67	9.0	90	9.0	90	9.0	58	9.0	80	9.0	80	9.0
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	83	9.0	90	9.0	90	9.0	58	9.0	80	9.0	80	9.0
5	Promote confidentiality and privacy in the workplace	83	10.0	90	9.0	90	9.0	75	9.5	90	10.0	90	10.0
6	Encourage employees to test for HIV	92	10.0	90	10.0	90	10.0	75	10.0	90	10.0	90	10.0
No	**6 Internal agent**												
1	Senior management	75	9.5	80	9.3	80	9.5	75	9.0	80	9.5	80	9.5
2	Middle or line management	75	10.0	80	9.3	80	9.5	67	9.3	80	10.0	80	10.0
3	Peer educators	67	9.0	80	9.0	80	9.0	67	8.9	70	9.0	70	9.0
4	Traditional healers	50	8.0	60	7.8	60	8.0	42	7.3	30	7.0	30	7.0
5	Counsellors	75	9.0	80	9.0	80	9.0	58	9.0	60	9.0	60	9.0
6	Medical personnel	67	9.0	80	9.0	80	9.0	67	9.0	80	9.0	80	9.0
7	CEO/president	83	10.0	60	9.0	80	9.0	83	9.5	90	10.0	90	10.0
8	Staff members	58	8.5	60	8.5	60	9.0	50	8.0	70	8.5	70	8.5
9	Unions representatives	67	9.0	90	9.0	90	9.0	67	9.0	90	9.0	90	9.0
10	Human resource manager/s	83	9.5	90	9.1	90	9.5	75	9.1	90	9.5	90	9.5

9.3.5 Ranking of Drivers

After the conclusion of round 3 and the elimination of the items that did not meet the consensus requirements, the drivers were ranked in terms of importance and impact as indicated in Table

9.5. In total there were six items under the legal driver, four items in the social driver, eighteen items under the business case driver, thirteen items under voluntary regulation, six under visibility of the disease and nine under internal agents.

9.3.5.1 Legal aspects

'*Reduce the risk of occupational exposure to HIV*' and '*Maintain the right to certain basic standards of employment*' were regarded as most important in the legal driver, whereas prohibition of mandatory pre- and post-employment HIV testing had the highest impact.

9.3.5.2 Social elements

In the social driver '*Corporate social responsibility*' and '*Positively engage with surrounding communities*' were raked as most important but only had a medium impact. '*External support to ensure effective strategies are put in place in a sustainable manner*' was regarded as having the highest impact.

9.3.5.3. Business case

'*Provide antiretroviral therapy and/or referral to external health care providers*' was ranked as most important and also had the highest impact in the business driver. '*Addressing stigma and discrimination*' was regarded as the second most important item. But the Delphi participants felt that '*distribution of male/female condoms*' will have a greater impact than addressing stigma and discrimination.

9.3.5.4. Voluntary regulation

The participants ranked '*Provide access to counselling for people affected by HIV and AIDS - (VCT)*' as most important and having the highest impact. '*Encourage treatment of STIs, TB and HIV and AIDS*' was ranked second in terms of importance and impact.

9.3.5.5. Elements for visibility of the disease

In the visibility of the disease driver, '*Encourage employees to test for HIV*' was regarded as most important and had the highest impact. '*Create a supportive, safe and healthy work environment*' and '*accommodate the needs of sick employees*' was ranked 2nd in terms of importance but third and fourth respectively in term of impact.

9.3.5.6. Internal agents

Human resource managers were regarded as the most important people to effectively manage HIV and AIDS but they ranked 3rd in terms of impact. The CEO/president was regarded as having the highest impact.

Table 9.5 Ranking of drivers in terms of importance and impact.

No		Importance Mean	Importance Ranking	Impact Mean	Impact Ranking
No	**1 Legal**				
1	Implement a HIV and AIDS policy	8.5	4	8.1	6
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	9.4	2	9.0	2
3	Protect the employees right to privacy about their HIV status at work	8.7	3	8.4	5
4	Reduce the risk of occupational exposure to HIV	9.5	1	8.7	3
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period	9.5	1	8.6	4
6	Prohibit mandatory pre- and post-employment HIV testing, unless the employer has applied to the Labour Court for authorisation	9.4	2	9.3	1
No	**2 Social Elements**				
1	Pressure by trade unions to implement HIV and AIDS management strategies	7.5	3	8.0	3
2	Corporate social responsibility to implement HIV and AIDS management strategies	8.2	1	8.2	2
3	Positively engage with surrounding communities (as worker come from and return to these communities)	8.2	1	8.2	2
4	External support (e.g. government, funding agencies) to ensure effective strategies are put in place in a sustainable manner	7.7	2	8.4	1
No	**3 Business case elements**				
1	Provide awareness programmes	8.0	10	7.6	9
2	Conduct voluntary counselling and testing	8.0	10	8.2	6
3	Implement wellness programmes	7.9	11	7.9	7
4	Distribute male/female condoms	9.0	3	9.4	2
5	Provide antiretroviral therapy and/or referral to external health care providers	9.5	1	9.5	1
6	Provide assistance with combating TB and STI's	8.6	5	9.0	3
7	Engage in community outreach programmes	7.9	11	7.1	12
8	Conduct a risk and impact assessment	8.4	7	7.3	10
9	Conduct a needs and resource assessment	8.4	7	7.8	8
10	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan	8.7	4	8.3	5
11	Appoint active peer educators	8.0	10	8.3	5
12	Monitor labour absenteeism and turnover	8.5	6	8.3	5
13	Improve the morale of employees	7.5	12	7.1	12
14	Address stigma and discrimination	9.1	2	9.0	3
15	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.	8.1	9	7.2	11
16	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	8.2	8	7.8	8
17	Accommodate the needs of infected persons	8.7	4	8.3	5
18	Promote a safe working environment	9.0	3	8.4	4

Table 9.5 continued.

No		Importance Mean	Importance Ranking	Impact Mean	Impact Ranking
No	**4 Voluntary regulation elements**				
1	Provide comprehensive care and treatment for people living with HIV and AIDS	7.4	9	8.6	3
2	Develop, implement, monitor and evaluate the HIV and AIDS policy	8.4	3	8.4	4
3	Promote gender equality	8.4	3	8.1	7
4	Promote non-discrimination	8.3	4	8.3	5
5	Protect the human rights and dignity of people living with HIV and AIDS	8.2	5	8.2	6
6	Include HIV and AIDS awareness programmes	8.3	4	8.1	7
7	Promote condom distribution and use	8.4	3	8.0	8
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)	8.8	1	9.1	1
9	Provide education and training on HIV and AIDS	7.8	8	8.0	8
10	Encourage treatment of STIs, TB and HIV and AIDS	8.6	2	8.7	2
11	Provide a 'wellness' programme for employees	8.1	6	8.4	4
12	Contractually commit construction firms to implement HIV and AIDS programmes	7.3	10	7.7	9
13	Benchmark HIV and AIDS organisational practices against industry norms	8.0	7	8.6	3
No	**5 Elements for Visibility of the disease**				
1	Create a supportive, safe and healthy work environment	8.9	2	8.8	3
2	Accommodate the needs of sick employees	8.9	2	8.7	4
3	Encourage open communication between management and employees.	8.8	4	8.4	6
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	8.9	3	8.5	5
5	Promote confidentiality and privacy in the workplace	8.9	3	9.0	2
6	Encourage employees to test for HIV	9.4	1	9.5	1
No	**6 Internal agent**				
1	Senior management	8.8	2	8.9	3
2	Middle or line management	8.8	2	9.0	2
3	Peer educators	8.7	3	8.3	6
4	Counsellors	8.2	4	7.9	8
5	Medical personnel	8.7	3	8.4	5
6	CEO/president	8.8	2	9.3	1
7	Staff members	7.9	5	8.0	7
8	Unions representatives	8.8	2	8.7	4
9	Human resource manager/s	9.1	1	8.9	3

Table 9.6 indicates the overall ranking of the drivers. The legal driver was considered most important but only second in terms of impact. The second most important driver was the visibility of the disease and this was regarded as the driver that had the highest impact. Internal agents ranked third in terms of importance and impact. A surprising outcome was the fact that the business case driver ranked fourth in terms of importance and fifth in terms of impact. The driver voluntary regulation ranked fifth in terms of importance and fourth in terms of impact. The least important driver was the social elements and this was also considered as the driver having the least impact.

Table 9.6 Ranking the importance and impact of all drivers.

Driver	Importance		Impact	
Legal	9.20	1	8.70	2
Elements for Visibility of the disease	9.00	2	8.80	1
Internal agent	8.50	3	8.50	3
Business case elements	8.30	4	8.10	5
Voluntary regulation elements	8.20	5	8.30	4
Social Elements	7.50	6	7.70	6

9.4. Summary

This chapter discussed the results of the three rounds of the Delphi study as well as the demographic details of the participants. After the final round eight indicators were eliminated and fifty six indicators categorised under six drivers were carried through to the next phase of the study. The findings from the Delphi study and literature review postulates the theoretical model for the effective management of HIV and AIDS the South African construction industry in chapter 10.

CHAPTER 10

A CONCEPTUAL MODEL FOR EFFECTIVE HIV AND AIDS MANAGEMENT

10.1 Introduction

In order to ensure effective HIV and AIDS management a well-designed conceptual model with hypothesized relationships are discussed in this chapter.

10.2 Proposed conceptual model for effective HIV and AIDS management

A model is basically a simplified abstract view of the complex reality. Models differ from theories in that the role of a theory is explanation whereas the role of a model is representation (Cooper and Schindler, 1995) the purpose of which is to provide a framework for applying logic and mathematics that can be independently evaluated. The path modelling process used in this study was discussed in detail in chapter 7. Path modelling involves the development of a theoretical framework illustrated via a path diagram (Byrne, 2012; Hair, *et al.,* 2010; Kline, 2011; Raykov & Marcoulides, 2006). The path diagram was utilised in this study to express the model in a visual form that is easily understood. In path diagrams the observed variables are enclosed by squares or rectangles. Unobserved (latent) variables are depicted in circles or ellipses. Each line with a single arrowhead represents a hypothesized relationship or direct effect of one variable on another. Two-way curved arrows with an arrowhead at each end are used to represent co-variation between two variables (Blanche, Durrheim, Painter, 2006; Bollen, 1989; Byrne, 2012; Hair, *et al.*, 2010; Kline, 2011; Marcoulides and Hershberger, 1997; Niels, 2008; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Tabachnick & Fidell, 2013).

The conceptual model proposed in Figure 10.1 includes the six drivers or leading variables namely:

- legal,
- social,
- business,
- voluntary regulation,

- visibility of the disease and
- internal agents.

The seven observed dependent variables are, namely:

1. Profitability;
2. Productivity;
3. Image and/or reputation;
4. Sustained strategic focus;
5. Employee morale;
6. Medical aid/health insurance and
7. Conducive environment, openness, disclosure and acceptance of HIV and AIDS among all staff.

The conceptual model was tested and validated via a national questionnaire survey which is presented in the next section.

10.2.1 The selection of dependent variables

The problems experienced by workers exposed to and infected with HIV and AIDS as well as the problems experienced by firms that do not have HIV and AIDS policies and programmes have been previously discussed in detail. Therefore only the reasons for the selection of the seven dependent variables will be discussed here.

HIV and AIDS results in human capital being lost which also results in the loss of workplace skills and knowledge (Karim & Karim, 2005, 2010). There is a strong business case for the corporate response against AIDS (Lutalo, 2006) as the pandemic is having an extensive financial impact on business (BER/SABCOHA, 2004; Evian, 2008; George, 2006). The construction industry needs to understand that it makes good business sense to address HIV and AIDS in the workplace because failure to do so results, *inter alia,* in:

- increasing costs and decreasing profits in terms of replacing those lost skills and/or training new employees;
- reduced productivity due to high morbidity, absenteeism and mortality in the workplace, the loss of skills and experience and increasing staff turnover;
- acquired bad company image and/or reputation;
- diverted attention of management from strategic and operational issues to cope with high workforce morbidity and mortality;

- a hostile environment that is not conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.
- increasing cost of employee benefits (such as health and medical aid); and
- decreasing staff morale due to stigma which creates a working environment in which people living with HIV and AIDS are afraid of gossip or of being suspected of being HIV positive and by undermining the overall effectiveness of the company's workplace programme (Ahwireng-Obeng & Akussah, 2003; Ala, 2004; Arndt & Lewis, 2000; BAA, 2007; Barac & Otter, 2001; Barnett & Whiteside, 2006; Bendell, 2003; BER/SABCOHA, 2004, 2005; Bloom, Mahal & River Path Associates, 2001; Bloom, Rosenfield & River Path Associates, 2000; Bollinger & Stover, 1999; Booysen, Geldenhuys, & Marinkov, 2003; Colvin, Connolly & Madurai, 2007; Daly, 2000; De Villiers, 2003; Department of Labour, 2000b; Dickinson, 2003a,b; Dickinson, 2004a,b; Dickinson, 2006a; Dickinson & Innes, 2004; Du Bruyn & Venter, 2006; Ellis, *et al.*, 2003; Essex, *et al.*, 2002; Fourie, 2006; George, Gow & Whiteside, 2009; Haacker, n.d; Hoffman, 1997; ILO, 2002, 2008, 2010; Kauffman & Lindauer, 2004; Kyereh & Hoffman, 2008; Lake, 2006; Lamptey, *et al.*, 2003; Laubscher, 2000; Lisk, 2002; Lutalo, 2006; Marais, 2007; Meintjes, *et al.*, 2007; Nattrass, 2004; Nattrass, *et al.*, 2004; ODI, 2007; Oppenheimer, 2007; Page, *et al.*, 2006; Piot, *et al.*, 2001; Quattek, 2000; Rau, 2004; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, Simon, Thea & Vincent, 2000a; Rosen, *et al.*, 2003; Rosen, Thea, Simon, Vincent, MacLeod, 2000b; Rosen, Vincent, MacLeod, Fox, Thea, Simon, 2004; Simon, Rosen, Whiteside, Vincent and Thea, 2000; Rothberg & Van Huyssteen, 2008; Smit, *et al.*, 2001; Stevens, *et al.*, 2005; ; Sunter, 1992; 1996; UNAIDS, 2004; UNAIDS/IOE, 2002; U.S. Agency for International Development (USAID), 2001; Van Dyk, 2008; Weston, Churchyard, Mametja, McIntyre & Randera, 2007; Whiteside, 2008; Whiteside and Sunter 2000).

The working environment is a place where most people spend a large amount of their time and people infected with HIV remain working wherever possible because work allows them to earn a regular income and also provides a daily routine. Therefore the workplace is an ideal setting in which to address HIV and AIDS (BER/ SABCOHA, 2005; ILO, 2010; Miller, 1987; Nattrass, *et al.*, 2004).

The most important reason why business involvement is necessary is to protect the most valuable asset of a business, namely its workers. Improving the quality of life of their workers will positively impact on productivity. Business is a profit-oriented venture and needs to protect its bottom line and therefore needs healthy workers (Barnett & Whiteside, 2006; Bloom, Bloom, Steven & Weston, 2006; Bloom & Buve, 2007; Nattrass, *et al.*, 2004). The five to ten year incubation period after an employee is infected with HIV and access to ART means that infected employees will remain fully productive for most of their lives. The employer acquires the liability of costs from the moment the employees is infected with HIV. For as long as the infected employee is employed and does not have access to treatment, these costs are unavoidable (Ala, 2004; George, Gow & Whiteside, 2009; ILO, 2005; Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon, 2006; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, Simon, Thea & Vincent, 2000a; Rosen, *et al.*, 2003; Rosen, Vincent, MacLeod, Fox, Thea, Simon, 2004). Business therefore needs to take the initiative in terms of HIV and AIDS.

Medical aid/health insurance will be reduced when wellness programmes are introduced as these programmes include medical management, access to counselling and support; referral systems and partnerships with other health care providers; family assistance programmes; and reasonable accommodation for infected persons (Department of Labour, 2000b; Van Dyk, 2008).

According to the Occupational Health and Safety Act, South African Code of Good Practice on Key Aspects of HIV/AIDS and Employment and the HIV/AIDS Technical Assistance Guidelines and the ILO employees have the right to a safe working environment (Department of Labour, 2000b; ILO, 2002, 2010; Occupational Health and Safety Act). The South African Department of Labour (2000b) advocates workplace wellness programmes in order to improve the quality of life of infected employees, keep them productive at work for a longer period and create a supportive and accepting environment (Department of Labour, 2000b; Van Dyk, 2008).

Failure by firms to address AIDS may impact negatively on their reputation and, consequently, their bottom line. Conversely, high profile AIDS programmes involving local communities could have a positive impact on the brand of a company, enhance the company's image (Bloom, Bloom, Steven & Weston, 2006; Dickinson & Stevens, 2005) and also assist communities in which workers live (ODI, 2007; Oppenheimer, 2007). The risk to their reputation may be the key motivator for businesses in certain sectors to take action against HIV and AIDS (Lutalo, 2006).

Business has the skills, imagination, innovation, creativity, mass communication skills, information, marketing and the drive to enhance their image and to assist with increasing employee morale (Ala, 2004; Bendell, 2003; BER/SABCOHA, 2004; Bloom, Mahal & River Path Associates, 2001, Bloom, Rosenfield & River Path Associates, 2000; Nattrass, *et al.*, 2004; Weston, Churchyard, Mametja, McIntyre & Randera, 2007) Business must grasp the opportunity to make a difference (Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000).

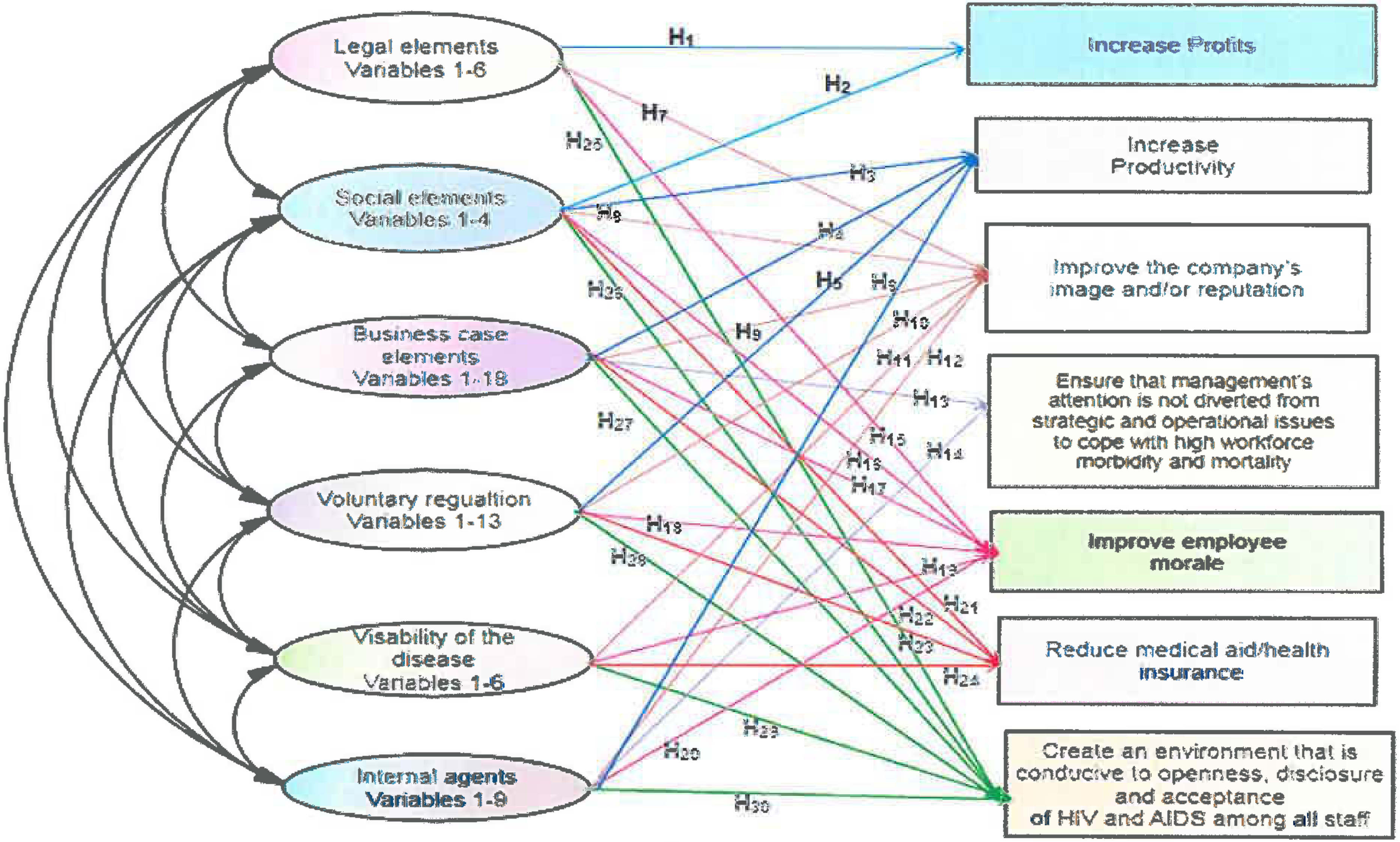
HIV and AIDS workplace strategies aims primarily to manage the risk to affected employees by prevention or reducing the number of new infections, managing the current HIV infection and AIDS prevalence and providing treatment, care and support which ensures a healthy workforce, increases productivity and reduces absenteeism (Ala, 2004; Department of Labour, 2000b; Karim & Karim, 2005; Nattrass, *et al.*, 2004; Rosen, Simon, Thea & Vincent, 2000a; Simon, *et al.*, 2000).

Therefore the observed variables selected where based on the fact that should a firm implement a HIV and AIDS policy/programme they would experience, *inter alia,* the following, namely

- an increase in profits;
- an increase in productivity;
- improve the company's image and/or reputation;
- ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality;
- improve employee morale;
- reduce medical aid/health insurance and
- create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff (Ala, 2004; Barac & Otter, 2001; Barnett & Whiteside, 2006; Bloom, *et al.*, 2001; BAA, 2007; Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000; Dickinson, 2002; George, 2006; George *et al.*, 2009; Haupt, *et al.*, 2005a, b; IOM, 2010; Lake, 2006; McGreevey, Alkenbrack & Stover, 2003; Nattrass, *et al.*, 2004; O'brien, & Koerkenmeier, 2001; Oppenheimer, 2007; Rosen, Feeley, Connelly & Simon, 2006, 2007; Rosen, *et al.*, 2003; Rosen, Simon, Thea & Vincent, 2000a; Rosen, Thea, Simon, Vincent, MacLeod, 2000b; Santis, *et al.*, 2003; UNAIDS, 2004; Walch, Lezama, and Giddie, 2005; Whiteside & Sunter, 2000).

Figure 10.1 also illustrates the 30 hypothesised relationships between the drivers and the various dependent variables. The model theorises a direct positive relationship between the following observed and independent variables.

Figure 10.1. The proposed theoretical path model.



Observed variable 1 - **increase in profits**

- **H_1:** A positive relationship is predicted between *Legal requirements* and increase in profits.
- **H_2:** A positive relationship is predicted between *Social aspects* and increase in profits.

Observed variable 2 – **increase productivity**

- **H_3:** A positive relationship is predicted between *Social aspects* and increase productivity.
- **H_4:** A positive relationship is predicted between *Business case elements* and increase productivity.
- **H_5:** A positive relationship is predicted between *Voluntary regulation* and increase productivity.
- **H_6:** A positive relationship is predicted between *Internal agents* and increase productivity.

Observed variable 3 - **Improve the company's image and/or reputation**

- **H_7:** A positive relationship is predicted between *Legal requirements* and improve the company's image and/or reputation.
- **H_8:** A positive relationship is predicted between *Social aspects* and improve the company's image and/or reputation.
- **H_9:** A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation.
- **H_{10}:** A positive relationship is predicted between *Voluntary regulation* and improve the company's image and/or reputation.
- **H_{11}:** A positive relationship is predicted between *Visibility of the disease* and improve the company's image and/or reputation.
- **H_{12}:** A positive relationship is predicted between *Internal agents* and improve the company's image and/or reputation.

Observed variable 4 – **ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality**

- **H_{13}:** A positive relationship is predicted between *Business case elements* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.
- **H_{14}:** A positive relationship is predicted between *Internal agents* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

Observed variable 5 – **improve employee morale**

- **H_{15}:** A positive relationship is predicted between *Legal requirements* and improve employee morale
- **H_{16}:** A positive relationship is predicted between *Social aspects* and improve employee morale
- **H_{17}:** A positive relationship is predicted between *Business case elements* and improve employee morale
- **H_{18}:** A positive relationship is predicted between *Voluntary regulation* and improve employee morale
- **H_{19}:** A positive relationship is predicted between *Visibility of the disease* and improve employee morale
- **H_{20}:** A positive relationship is predicted between *Internal agents* and improve employee morale

Observed variable 6 – **reduce medical aid/health insurance**

H_{21}: A positive relationship is predicted between *Social aspects* and reduce medical aid/health insurance

H_{22}: A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance

H_{23}: A positive relationship is predicted between *Voluntary regulation* reduce medical aid/health insurance

H_{24}: A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance

Observed variable 7 - **create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff**

H_{25}: A positive relationship is predicted between *Legal requirements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff

H_{26}: A positive relationship is predicted between *Social aspects* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff

H_{27}: A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff

H_{28}: A positive relationship is predicted between *Voluntary regulation* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff

H_{29}: A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff

H_{30}: A positive relationship is predicted between *Internal agents* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

10.3 Summary

This chapter discussed the proposed conceptual HIV and AIDS management model, based on the drivers identified through literature and confirmed by the Delphi study and the seven observed variables. The relationships hypothesized between the independent variables (drivers) and the seven observed variables were supported from literature. The next chapter discusses the national survey questionnaire and presents an analysis of the results.

CHAPTER 11

RESULTS FROM THE QUESTIONNAIRE SURVEY

11.1 Introduction

The questionnaire on the HIV and AIDS drivers that could potentially lead to effective HIV and AIDS management was analysed in two stages, namely:

1. Descriptive data analysis;
2. Multivariate data analysis which involved conducting an exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and structural equation modelling (SEM); and

EFA and CFA are the two main types of factor analysis that are found in practice. EFA is used in the formative stages of the research in order to explore the possible relationships among the variables. CFA is generally conducted after the EFA because it is used to test specific theories and/or hypotheses in order to determine if the sample data confirms the model (Brown, 2006; Gaur & Gaur, 2006; Pallant, 2010; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004). Both EFA and CFA were used for data analysis. According to Brown (2006) CFA is used as a precursor to path modelling. Path/SEM models comprise of two major parts: (1) the measurement model which specifies the number and relationship between factors, namely the CFA model and (2) the structural model which specifies the relationship between latent factors. The statistical analysis was conducted using IBM SPSS Statistics (formerly Statistical Package for the Social Sciences) (SPSS) version 21. SPSS is regarded as the most popular statistical packages currently available for statistical analysis because it allows for of flexibility in the data format and offers a variety of statistical analyses processes (Ho, 2006). This was followed by the use of the Mplus version 7.11 software for the path modelling. The use of Mplus was influenced by the model complexity, the use of parcels and the fact that the model was a mixed one. Mplus compared to other programmes has more capabilities to handle these kinds of complexities in addition to been able to handle up 1000 iterations during analysis.

11.2 Descriptive data analysis

11.2.1 Section A

Section A of the questionnaire collected demographic information on the individual firms that participated in the survey.

Table 11.1 reflects the position held in the company by the person completing the questionnaire. The majority of the respondents (34.7%) were quantity surveyors, closely followed by project managers (26.7%) and human resource managers (18.3%).

Table 11.1. Respondents position in the company

Respondents position in the company	Frequency	Percent
Director	7	2.23%
CEO/Managing Director	8	2.60%
Owner	14	4.50%
Manager	10	3.20%
Health & Safety Officer	11	3.50%
HR manager	57	18.30%
Project manager	83	26.70%
Quantity Surveyor	108	34.70%
Other, Specify	13	4.20%
Total	**311**	**100%**

Sixty eight percent of the firms defined themselves as general contractors, 15.8% as subcontractors and 12.2% as home building contractors as indicated in Table 11.2.

Table 11. 2. Nature of your business.

Nature of business	Frequency	Percent
General contractor	212	68.20%
Subcontractor	49	15.80%
Civil contractor	10	3.20%
Home building contractor	38	12.20%
Other, specify	2	0.60%
Total	**311**	**100%**

Table 11.3 shows the number of employees that the different organisations employed. The majority of the firms (73%) employed less than 100 employees. These firms can therefore be classified as small enterprises according to The Bureau for Economic Research (BER/SABCOHA, 2004). There were 23% responses from medium (between 100 – 500 employees) firms and 4% responses from large (> 500 employees) firms. Two firms declined to provide information on the number of employees they employed.

Table 11.3. Number of employees

Number of employees	Frequency	Percent
1-49	48	15.53%
50-99	179	57.93%
100-149	22	7.12%
150-199	15	4.85%
200-249	13	4.21%
250-299	4	1.29%
300-349	4	1.29%
350-399	4	1.29%
400-449	4	1.29%
450-499	5	1.62%
500-549	1	0.32%
550-599	0	0.00%
600-649	10	3.24%
Total	**311**	**100%**

Despite trying to obtain responses from all nine provinces, completed questionnaires were only received from 5 provinces. The majority of the responses (96.4%) were received from KZN (67.5%) and Gauteng (28.9%) as depicted in Table 11.4.

Table 11.4. Distribution of provinces.

Province	Frequency	Percent
North West Province	3	1.00%
Gauteng	90	28.90%
KZN	210	67.50%
Northern Cape	2	0.60%
Western Cape	6	1.90%
Total	**311**	**100%**

Table 11.5 indicates that the majority of firms (85.48%) were registered in grades 2 to 6 of the CIDB register of contractors. There were no respondents in grade 1 and 7 respondents had not registered with the CIDB at all. One respondent failed to provide this information.

Table 11.5. CIDB grading.

CIDB grading	Frequency	Percent
Grade 2 - R200 000 – R650 000 thousand	29	9.35%
Grade 3 - R650 000 – R2 million	86	27.74%
Grade 4 - R2 – R4 million	83	26.77%
Grade 5 - R4 – R6.5 million	37	11.94%
Grade 6 - R6.5 – 13 million	30	9.68%
Grade 7 - R13 – R40 million	13	4.19%
Grade 8 - R40 – R130 million	14	4.52%
Grade 9 - > R 130 million	11	3.55%
N/A	7	2.26%
Total	**311**	**100.00%**

Table 11.6 depicts the age distribution of the employees as a percentage. One hundred and sixty three firms (52%) did not have any employees less than 20 years old. One hundred and sixty four firms (53%) had 11-19% of their employees between the ages of 20 to 29 years old. Fifty two percent of the firms had 30-39% of their workforce in the 30 to 39 years old category, while 65% of firms had 30-39% in the 40 to 49 years old. Forty two percent of firms had 11-19% of their employers older than 50 years of age.

Table 11.6. Respondents position in the company

	< 20 years old		20 to 29 years old		30 to 39 years old		40 to 49 years old		> 50 years old	
% of employees	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	163	52%	0	0%	1	0.32%	1	0.32%	1	0.32%
1-10	148	48%	72	23%	2	0.64%	0	0%	47	15.11%
11-19	0	0%	164	53%	11	4%	3	0.94%	132	42.44%
20-29	0	0%	74	24%	104	33%	14	4.50%	110	35.37%
30-39	0	0%	1	0.32%	161	52%	202	65%	17	5.47%
40-49	0	0%	0	0%	20	6%	86	28%	4	1.29%
50-59	0	0%	0	0%	9	3%	3	0.94%	0	0%
60-70	0	0%	0	0%	3	0.94%	2	0.64%	0	0%
Total	**311**	**100%**	**311**	**100%**	**311**	**100%**	**311**	**100%**	**311**	**100%**

The racial profile of the organisation is illustrated in Table 11.7. Fifty six percent of the firms employed between 40-49% Black employees, while 20-29% of White employees were employed by 159 (51.12%) of the firms and the same percentage of Indian employees by 131 (42.12%) firms. Ten to nineteen percent of the workforce comprised of Coloured employees in 168 (54.02%) firms. One firm did not employ any people of Black origin compared to another firm that had a workforce comprising 80-90% Black employees.

Table 11.7. Racial profile of the organisation

	Black		White		Indian		Coloured	
% of employees	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
0	1	0.32%	1	0.32%	11	3.54%	6	1.92%
1-9	0	0.00%	1	0.32%	29	9.32%	35	11.25%
10-19	1	0.32%	67	21.54%	114	36.66%	168	54.02%
20-29	5	1.61%	159	51.12%	131	42.12%	101	32.48%
30-39	54	17.36%	55	17.68%	20	6.43%	1	0.32%
40-49	175	56.27%	23	7.40%	5	1.61%	0	0%
50-59	54	17.36%	2	0.64%	1	0.32%	0	0%
60-69	10	3.22%	2	0.64%	0	0%	0	0%
70-79	10	3.22%	0	0.00%	0	0%	0	0%
80-90	1	0.32%	1	0.32%	0	0%	0	0%
Total	**311**	**100.00%**	**311**	**100%**	**311**	**100%**	**311**	**100%**

Table 11.8 depicts the gender distribution expressed as a percentage of the organisations. Ninety percent of the firms employed 80-99% male employees. The female workforce was

between 10-19% in 198 firms. One firm however broke this pattern by employing 90-99% female employees.

Table 11.8. Gender distribution

	Male		Female	
% of employees	**Frequency**	**Percent**	**Frequency**	**Percent**
1-9	0	0.00%	39	12.54%
10-19	1	0.32%	198	63.67%
20-29	0	0.00%	66	21.22%
30-39	0	0.00%	5	1.61%
40-49	0	0.00%	2	0.64%
50-59	0	0.00%	0	0.00%
60-69	2	0.64%	0	0.00%
70-79	27	8.68%	0	0.00%
80-89	193	62.06%	0	0.00%
90-99	88	28.30%	1	0.32%
Total	**311**	**100.00%**	**311**	**100%**

The occupational breakdown of the organisation is depicted in Table 11.9. There were between 10-19% office managers and site managers in 78% and 49% of the firms respectively. Eight seven percent of the firms employed between 30-59% of their workforce as general (unskilled) workers.

Table 11.9. Occupational breakdown

	Office manager		Site manager		Site supervisory staff		Artisan Skilled		Operator Semi-skilled		General worker-Unskilled	
% of employees	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
0	0	0.00%	5	1.61%	56	18.01%	4	1.29%	58	18.65%	3	0.96%
1-9	53	17.04%	20	6.43%	78	25.08%	10	3.22%	208	66.88%	2	0.64%
10-19	245	78.78%	153	49.20%	136	43.73%	217	69.77%	43	13.83%	9	2.89%
20-29	13	4.18%	117	37.62%	34	10.93%	68	21.86%	1	0.32%	22	7.07%
30-39	0	0.00%	14	4.50%	4	1.29%	8	2.57%	1	0.32%	124	39.87%
40-49	0	0.00%	2	0.32%	0	0.00%	0	0%	0	0.00%	114	36.66%
50-59	0	0.00%	0	0.00%	0	0.00%	2	0.64%	0	0.00%	34	10.93%
60-69	0	0.00%	0	0.00%	1	0.32%	2	0.64%	0	0%	3	0.96%
70-79	0	0.00%	0	0.00%	1	0.32%	0	0%	0	0%	0	0%
80-90	0	0.00%	0	0.00%	1	0.32%	0	0%	0	0%	0	0%
Total	**311**	**100%**	**311**	**100%**	**311**	**100%**	**311**	**100%**	**311**	**100%**	**311**	**100%**

Table 11.10 shows that the human resources manager was responsible for HIV and AIDS programme in 26% of firms. The important point to note is that 69% of firms reported having no one responsible for these programmes.

Table 11.10. HIV and AIDS responsibility

HIV and AIDS responsibility	Frequency	Percent
Director	1	0.32%
CEO/Managing Director	9	2.90%
Health & Safety Officer	3	0.97%
HR manager	82	26.45%
N/A	215	69.35%
Total	**310**	**100%**

Respondents were asked whether they had an HIV and AIDS policy and an overwhelming majority, namely 79.7% reported that they did not have a policy (depicted in Table 11.11). Although this is a sad reality, the feedback received from these respondents will show what these firms will/will not do in order to implement an HIV and AIDS policy during the SEM process.

Table 11.11. Do you have a HIV and AIDS policy?

Do you have a HIV and AIDS policy?	Frequency	Percent
Yes	63	20.3%
No	248	79.7%
Total	**311**	**100%**

Table 11.12 depicts the reasons the respondents gave for not having a HIV and AIDS policy and/or programme in place. The main reason was that they thought it was too costly (23%). This was followed by time constraints (21.4%), lack of resources (17.2%) and the fact the HIV and AIDS is considered a low business priority (17.1%). This finding also ties in with findings from Ala (2004); BAA (2007); BER/SABCOHA (2005); Bowen, *et al.* (2010a,b); Connelly & Rosen (2005a,b); Haacker (2004); Mahajan, *et al.* (2007); Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon (2006); Rosen, Feeley, Connelly & Simon (2006); Van Dyk (2008) and Weston, Churchyard, Mametja, McIntyre and Randera (2007).

Table 11.12. Reasons for not having a policy and/or programme in place

Reasons for not having a policy and/or programme in place	Responses	
	No.	Percent
Too costly	218	23.0%
Limited information on HIV & AIDS in the workplace	10	1.1%
Managers level of concern is low	35	3.7%
Employers incur few direct costs	16	1.7%
Lack of information about HIV & AIDS	25	2.6%
Lack of external pressure from labour unions	3	0.3%
Epidemic is not currently having a large impact on business	37	3.9%
HIV and AIDS is not the firms problem	14	1.5%
Time constraints	202	21.4%
Lack of resources	163	17.2%
Your firm is too small	7	0.7%
HIV and AIDS is not regarded as a pressing issue	54	5.7%
HIV and AIDS is a low business priority	162	17.1%
Total	**946**	**100.0%**

Respondents were asked their opinion of the impact that HIV and AIDS was having on the morale of the workforce and their responses are shown in Table 11.13. Sixty one percent of the respondents felt that HIV and AIDS had a moderate to high impact on the morale of the workforce.

Table 11.13. Impact of HIV and AIDS

Impact of HIV and AIDS	Frequency	Percent
Do not know	85	27.3%
No Impact	7	2.3%
Low Impact	29	9.3%
Moderate Impact	126	40.5%
High impact	64	20.6%
Total	**311**	**100 %**

Table 11.14 shows that 81% of the respondents did not believe that they had done enough to assist their employees in terms of HIV and AIDS. It is likely that the industry was ready for an effective HIV and AIDS model, thereby highlighting the importance of this study. Some of the reasons given by the respondents were that they had:

- "*no information on HIV and AIDS programmes whatsoever*";
- "*none of our employees make their status known*" and
- "*there are too many other pressures to consider*".

Table 11.14. Have you done enough for your employees in terms of HIV and AIDS?

Have you done enough for your employees?	Frequency	Percent
Yes	59	19%
No	252	81%
Total	**311**	**100%**

11.2.2 Section B

Table 11.15 illustrates the descriptive statistics of the HIV and AIDS drivers. Path/SEM estimation methods assume multivariate normality (Kline, 2011; Schumacker & Lomax, 2004). Skewness and kurtosis are two ways that a distribution can be non-normal. The data is regarded as non-normal when there is an extreme value in either measure of skewness and kurtosis. According to Raykov & Marcoulides (2006) extreme values of skewness and kurtosis are values greater +3 or less than -3. Table 15 indicates that none of the items were severely skewed although a majority of the items displayed negative skewness. With the exception of items B1.1.1, B1.1.5, B1.1.6, B1.6, B1.3.7 and B1.3.14 which was excessively peaked, none of the other items were overly kurtotic. The skewness and kurtosis of this dataset indicates that the data is non-normally distributed and therefore robust maximum likelihood estimation was used as recommended by Kline (2011) to estimate models using non-normal data.

Table 11.15 also indicates that the item "B1.1.6 - *Prohibit mandatory pre- and post-employment HIV testing, unless we have applied to the Labour Court for authorisation*" of the legal driver had the highest mean score (4.82). The item "B1.3.5 - *Provides antiretroviral therapy and/or referral to external health care providers*" under the business case element had the lowest mean score (2.83).

Table 11.15. Descriptive statistics of the HIV and AIDS drivers.

	N	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis
Legal Aspects							
B1.1.1. Implement a HIV and AIDS policy	311	4.75	5.00	5	.514	-2.710	11.347
B1.1.2. Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	310	4.78	5.00	5	.432	-1.580	1.171
B1.1.3. Protect the employees right to privacy	311	4.81	5.00	5	.419	-1.954	2.867
B1.1.4. Reduce the risk of occupational exposure to HIV	311	4.81	5.00	5	.406	-1.904	2.471
B1.1.5. Maintain the right to certain basic standards of employment, including 6 weeks of paid sick leave over a 3-year period	311	4.81	5.00	5	.424	-2.088	3.595
B1.1.6. Prohibit mandatory pre- and post-employment HIV testing, unless we have applied to the Labour Court for authorisation	311	4.82	5.00	5	.417	-2.196	4.130
Social elements							
B1.2.1. Implement HIV and AIDS management strategies due to pressure from Trade unions	311	3.31	3.00	3	.894	.231	-.679
B1.2.2. Implement HIV and AIDS management strategies because of corporate social responsibility	311	3.46	4.00	4	.889	-.090	-.751
B1.2.3. Positively engage with surrounding communities	311	3.88	4.00	4	.733	-.107	-.494
B1.2.4. Find alternate external support (e.g. government, funding agencies) to ensure effective strategies are put in place	311	3.63	4.00	4	.742	.142	-.444
Business case elements							
B1.3.1 Provides awareness programmes	311	4.67	5.00	5	.492	-.965	-.481
B1.3.2 Conducts voluntary counselling and testing	311	4.47	5.00	5	.636	-1.236	2.867
B1.3.3 Implements wellness programmes	311	4.46	5.00	5	.599	-.694	.020
B1.3.4 Distributes male/female condoms	311	4.43	4.00	4	.585	-.445	-.696
B1.3.5 Provides antiretroviral therapy and/or referral	311	2.83	3.00	3	.714	.529	.614
B1.3.6 Provides assistance with combating Tuberculosis and STI's	311	2.86	3.00	3	.777	.412	.117
B1.3.7 Engages in community outreach programmes	311	4.03	4.00	4	.544	-.825	3.765
B1.3.8 Conducts a risk and impact assessment	311	4.10	4.00	4	.510	.165	.661
B1.3.9 Conducts a needs and resource assessment	311	4.14	4.00	4	.552	.059	.059
B1.3.10 Develops, implements, monitors and evaluates the HIV and AIDS policy based on a strategic plan	311	4.23	4.00	4	.584	-.091	-.427
B1.3.11 Appoints active peer educators	311	4.55	5.00	5	.547	-.687	-.639
B1.3.12 Monitors labour absenteeism and turnover	311	4.53	5.00	5	.525	-.405	-1.240
B1.3.13 Improves the morale of employees	311	4.51	5.00	5	.538	-.420	-1.055
B1.3.14 Address stigma and discrimination	311	4.75	5.00	5	.490	-1.961	4.121
B1.3.15 Conducts an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis.	311	3.98	4.00	4	.702	-.146	-.492
B1.3.16 Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	311	3.78	4.00	4	.815	-.329	-.318
B1.3.17 Accommodates the needs of infected persons	311	4.32	4.00	4	.655	-.434	-.729
B1.3.18 Promotes a safe working environment	311	4.51	5.00	5	.667	-1.016	-.157
Voluntary regulation							
B1.4.1 Provides comprehensive care and treatment	311	4.51	5.00	5	.647	-1.206	1.238
B1.4.2 Develops, implements and evaluates HIV and AIDS policy	311	4.60	5.00	5	.515	-.712	-.859
B1.4.3 Promotes gender equality	311	4.64	5.00	5	.514	-1.069	.907
B1.4.4 Promotes non-discrimination	311	4.69	5.00	5	.503	-1.438	2.060
B1.4.5 Protects the human rights and dignity of people living with HIV and AIDS	311	4.44	4.00	4	.523	-.046	-1.385
B1.4.6 Provides HIV and AIDS awareness programmes	311	4.25	4.00	4	.475	.616	-.317
B1.4.7 Promotes condom distribution and use	311	4.19	4.00	4	.461	.645	.448
B1.4.8 Provides access to counselling for people affected by HIV and AIDS	311	3.98	4.00	4	.593	-.182	.482
B1.4.9 Provides education and training on HIV and AIDS	310	4.17	4.00	4	.489	.376	.458
B1.4.10 Encourages treatment of Sexually transmitted infections (STIs), Tuberculosis (TB) and HIV & AIDS	311	3.83	4.00	4	.743	-.432	.401
B1.4.11 Provides a 'wellness' programme for employees	311	3.94	4.00	4	.672	.072	-.775
B1.4.12 Contractually commits construction firms to implement HIV and AIDS programmes	311	3.52	3.00	3	.782	.093	-.411
B1.4.13 Benchmarks HIV and AIDS organisational practices against industry norms	311	3.47	3.00	3	.814	.413	-.440

Visibility of the Disease							
B1.5.1. Create a supportive, safe and healthy work environment	311	4.64	5.00	5	.501	-.817	-.783
B1.5.2. Accommodate the needs of sick employees	311	4.59	5.00	5	.512	-.592	-1.144
B1.5.3. Encourages open communication between management & employees	311	4.54	5.00	5	.543	-.574	-.836
B1.5.4. Involves people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	311	4.41	5.00	5	.730	-1.015	.320
B1.5.5. Promotes confidentiality and privacy in the workplace	311	4.62	5.00	5	.537	-1.124	.995
B1.5.6. Encourages employees to test for HIV	311	4.62	5.00	5	.517	-.862	-.507
Internal Agents							
B1.6.1. Encourage support of Senior management	311	4.65	5.00	5	.553	-1.420	1.711
B1.6.2. Promote the support of Middle or line management	311	4.59	5.00	5	.576	-1.191	.981
B1.6.3. Promote the support of Peer educators	311	4.64	5.00	5	.506	-.899	-.517
B1.6.4. Appoint Counsellors for HIV and AIDS initiatives	311	3.23	3.00	3	.783	.108	-.506
B1.6.5. Appoint Medical personnel for HIV and AIDS initiatives	311	3.19	3.00	3	.773	.256	-.284
B1.6.6 Promote the support of CEO/president	311	4.34	4.00	4	.533	-.058	-.034
B1.6.7 Promote support of Staff members	311	4.34	4.00	4	.538	-.088	-.020
B1.6.8 Promote support of Unions representatives	311	3.42	3.00	3	.766	.018	-.367
B1.6.9 Promote support of Human resource manager/s	311	4.73	5.00	5	.478	-1.497	1.213

11.2.3 Section C

Section C of the questionnaire comprised five questions that collected general information on HIV and AIDS.

Table 11.16 shows that of the 6 steps for implementing a HIV and AIDS policy and/or programme. The respondents regarded steps 4 (*develop and implement and HIV and AIDS policy*), 5 (*develop and implement an integrated HIV and AIDS programme*) and 6 (*monitoring, evaluation and review HIV and AIDS workplace policies and programmes*) as most important. Step 3 (*assess current preparedness, needs and resources of the workplace*) was considered least important.

Table 11.16. Which of the following 6 steps would you use when implementing a HIV and AIDS policy or programme?

Steps to use when implementing a HIV and AIDS policy or programme?	Responses		
	No.	Percent	Rank
1. Establish a representative HIV and AIDS management team	239	15.7%	4
2. Assess the risk and impact of HIV and AIDS on the workforce	202	13.3%	5
3. Assess current preparedness, needs and resources of the workplace	178	11.7%	6
4. Develop and implement and HIV and AIDS policy	308	20.3%	1
5. Develop and implement an integrated HIV and AIDS programme	301	19.8%	2
6. Monitoring, evaluation and review HIV and AIDS workplace policies and programmes.	291	19.2%	3
Total	**1519**	**100.0%**	

HIV and AIDS programmes were only presented in 7 of the 11 official languages in South Africa (Table 11.17). Most programmes were presented in English and isiZulu. Fifty one percent of the firms did not carry out any HIV and AIDS programmes.

Table 11.17. In which of the following official languages are your programmes carried out in?

Language	Responses	
	No.	Percent
Afrikaans	9	1.9%
English	59	12.1%
Tshivenda	29	6.0%
isiXhosa	8	1.6%
isiZulu	55	11.3%
Sesotho	47	9.7%
Xitsonga	30	6.2%
N/A	249	51.2%
Total	486	100.0%

Table 11.18 shows the frequency at which health related aspects are addressed at work. Alcohol abuse and drug abuse were frequently discussed. This was followed by HIV and AIDS. Sexually transmitted infections were very rarely discussed at work. Certain health related aspect such as obesity and family violence were never discussed.

Table 11.18. Frequency at which health related aspects are addressed at work.

Aspect	N	Mean	Median	Mode	Std. Deviation	Variance	Skewness
HIV and AIDS	311	2.13	2.00	3	.948	.900	.243
Sexually transmitted infections (STIs)	311	1.14	1.00	1	.468	.219	4.076
Alcohol abuse	311	2.34	2.00	3	1.051	1.104	.182
Tuberculosis (TB)	311	1.25	1.00	1	.630	.397	2.629
Drug abuse	311	2.30	2.00	3	1.091	1.190	.442
Hypertension	311	1.13	1.00	1	.450	.203	3.737
Nutrition	311	1.03	1.00	1	.186	.035	7.079
Diabetes	311	1.07	1.00	1	.329	.108	5.109
Obesity	311	1.02	1.00	1	.149	.022	10.383
Stress	311	1.25	1.00	1	.634	.401	2.342
Cancer	311	1.04	1.00	1	.276	.076	10.748
Family Planning	311	1.04	1.00	1	.270	.073	11.304
Family violence	311	1.02	1.00	1	.247	.061	14.240

Thirty two percent of the respondents used brochures/pamphlets/flyers to combat HIV and AIDS in their firms as depicted in Table 11.19. The other commonly used interventions were induction programmes, posters and toolbox talks.

Table 11.19. Interventions used to combat HIV and AIDS.

Interventions to combat HIV and AIDS	Responses	
	N	Percent
Provision of condoms	61	11.1%
Awareness education (speaker)	12	2.2%
Wellness management e.g. counselling	30	5.5%
Posters	84	15.3%
Induction programmes	85	15.5%
Newsletters	34	6.2%
Toolbox talks	68	12.4%
Brochures/pamphlets/flyers	176	32.0%
Total	**550**	**100.0%**

Two hundred and fifty respondents (47.6%) believed that there should be a compulsory, industry-wide initiative funded via levies which included education, testing and treatment programmes in order to assist them in implementing a HIV and AIDS programme. Thirty five percent also believe that the CIDB should take on a leadership role in order to provide unifying action as shown in Table 11.20.

Table 11.20. Which of the following do you believe will assist you to implement a HIV and AIDS programme?

Initiatives	Responses	
	N	Percent
A compulsory, industry-wide initiative funded via levies which include education, testing and treatment programmes	250	47.6%
Formal certification as part of the completion of work certification process	89	17.0%
Construction Industry Development Board (CIDB) should take on a leadership role in order to provide unifying action	186	35.4%
Total	**525**	**100%**

Having discussed the descriptive statistics, the next section discusses the results from the exploratory factor analysis.

11.3 Results from the Exploratory factor analysis

In order to test the HIV and AIDS drivers in the construction industry, an EFA was carried out in order to test the reliability and validity of inferences made from the questionnaire and the conceptual model. This was conducted using IBM SPSS Statistics (formerly Statistical Package for the Social Sciences) (SPSS) version 21. SPSS is regarded as the most popular statistical packages currently available for statistical analysis because it allows for of flexibility in the data format and offers a variety of statistical analyses processes (Ho, 2006). EFA was thus used as a quality control procedure to ensure that the questionnaire validly and reliably tested the HIV and AIDS drivers.

11.3.1 Dimensionality analysis

Dimensionality of the data was determined by the factor analysis technique. Before factor analysis can be conducted the researcher should determine if the data can be factor analysed. Pallant (2010) recommends three steps in conducting a factor analysis: 1) assessment of the suitability of the data; 2) factor extraction; and 3) factor rotation and interpretation.

11.3.1.1 Assessment of the suitability of the data

In this regard the sample size and the strength of the intercorrelations among items need to be considered (*ibid*). Preceding the EFA analysis, the data was checked to see if it was suitable for factor analysis.

A) Sample size

As previously mentioned chapter 7 a sample size of 300 was recommended (Tabachnick and Fidell, 2013). Therefore a sample size of 311 for this study was considered adequate.

B) Strength of the intercorrelations among items

In order to determine the strength of the intercorrelations among items the Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling was used. According to Hair, *et al.* (2010) and Tabachnick and Fidell, (2013) a significance ($p < 0.05$) is required in terms of the Bartlett's Test of Sphericity. The KMO index compares the sizes of the observed correlation coefficients to the sizes of the partial correlation coefficients (Norusis, 2008). The minimum acceptable threshold for KMO is 0.60 according to Tabachnick and Fidell, (2013), while Hair, *et al.* (2010) believes that a cut-off criterion 0.70 should be used. In line with the latest study a cut-off criteria of 0.70 was adopted for this study.

11.3.1.2 Factor extraction

Maximum likelihood (ML) with Promax rotation was used as a method of factor extraction in order to determine the dimensionality of the data. In this regard, the Kaiser's criterion (also known as the Eigenvalue greater than one rule) (Pallant, 2010) was used to explain the degree of variance explained by the factor. KMO values range from 0-1, with values above 0.60 indicating minimum factorability (Tabachnick & Fidell, 2013). The eigenvalue was also used to test the data. Eigenvalues greater than 1 are considered significant (Gaur & Gaur, 2006; Hair *et al.*, 2010; Pallant (2010). The dimensionality results can also be viewed diagrammatically with the Catell's scree test. According to Gaur & Gaur (2006) and Pallant (2010) Catell's scree test plots the eigenvalues on a graph and determines were the graph changes direction. Factors before the change in direction are retained as they explain the most variance (*ibid*).

11.3.1.3 Factor rotation and interpretation.

In order to assist in the interpretation of the data, the factors are rotated so that the underlying solution is not changed, namely their communalities and the eigenvalues are unchanged but merely presented in a manner that is easier to interpret. There are two types of rotation methods, orthogonal (uncorrelated factors) and oblique (correlated factors) (Gaur & Gaur, 2006; Hair, *et al.*, 2010; Pallant, 2010). Maximum likelihood (ML) with Promax rotation (oblique rotation method) as suggested by Brown (2006) was used in this study as a method of factor extraction in order to determine the dimensionality of the data using SPSS Version 21.

11.3.2 Analysis of the six drivers

11.3.2.1 Legal Aspects

In order to determine the strength of the item intercorrelations, the KMO for the legal aspects was 0.871 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.21. These tests confirmed that the data could be factor analysed. Multicollinearity occurs when the independent/predictor variables are highly correlated (Ho, 2006). Bryman & Cramer (2005) regard multicollinearity as a problem because it means that the regression coefficients may be unstable. In this subscale the intercorrelation values <0.90 suggest no multicollinerity indicating that the construct attained discriminant validity.

Table 11.21. KMO and Bartlett's test for Legal aspects

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.871
Bartlett's Test of Sphericity	Approx. Chi-Square	1265.915
	df	15
	Sig.	.000

Communalities explain the variance in each item and can be used to improve or refine a scale. Low values (< 0.30) could indicate that the item does not fit well with the other items in its component therefore removing items with low communality values tends to increase the total variance explained (Pallant, 2010). SPSS issues a warning when communality values are excessively high (values may be very close 0.999 or equal to one) because the assumption is that no single item can reflect more than 90% of true variance in the social and behavioural sciences. Table 11.22 reflects the communalities for the legal aspects. All of the values were within acceptable range.

Table 11.22. Communalities for legal aspects.

Legal Aspects	Initial	Extraction
Implement a HIV and AIDS policy	.336	.290
Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	.542	.489
Protect the employees right to privacy about their HIV status at work	.608	.632
Reduce the risk of occupational exposure to HIV	.591	.588
Maintain the right to certain basic standards of employment, including 6 weeks of paid sick leave over a 3-year period	.799	.861
Prohibit mandatory pre- and post-employment HIV testing, unless we have applied to the Labour Court for authorisation	.784	.847

The Kaisers Gutmann rule of thumb criteria (Table 11.21) and the Catell's scree test (Figure 11.1) were used to evaluate the dimensionality of the sub-dimension. Table 11.23 shows the emergence of a primary factor with an eigenvalue of 4.091, which explained 68% of the variance. Catell's scree test indicated one node above the elbow, suggesting a unidimensional solution. Only one factor was extracted and therefore there was no need for the solution to be rotated. The solution was therefore considered unidimensional (assumes all items in the scale are a function of a single underlying trait) and therefore convergent and discriminant validity was achieved (Kline, 2011).

Table 11.23. Initial Eigenvalues for Legal aspects

	Initial Eigenvalues		
Factor	Total	% of Variance	Cumulative %
1	4.091	68.191	68.191
2	.685	11.411	79.601
3	.479	7.976	87.577
4	.334	5.559	93.136
5	.287	4.786	97.922
6	.125	2.078	100.000

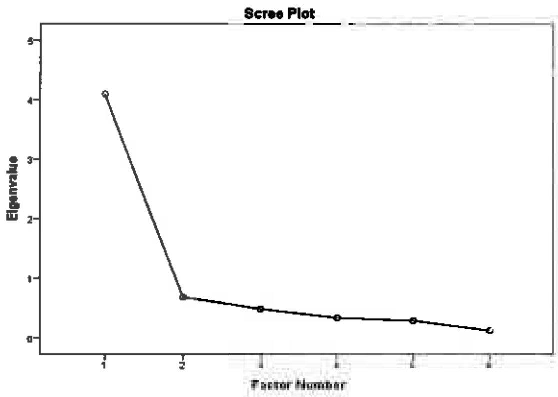


Figure 11.1. Scree plot for Legal aspects.

11.3.2.2 Social elements

The KMO for the social elements was 0.716 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.24. These tests confirmed that the data could be factor analysed. Table 11.25 reflects the communalities for the social aspects.

Table 11.24. KMO and Bartlett's test for Social elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.716
Bartlett's Test of Sphericity	Approx. Chi-Square	662.621
	df	6
	Sig.	.000

Table 11.25. Communalities for social aspects.

	Initial	Extraction
Implement HIV and AIDS management strategies due to pressure from Trade unions	.641	.712
Implement HIV and AIDS management strategies because of corporate social responsibility	.655	.783
Positively engage with surrounding communities	.488	.372
Find alternate external support (e.g. government, funding agencies) to ensure effective strategies are put in place	.598	.557

A primary factor with an eigenvalue of 2.817 emerged as showed in Table 11.26, which explained 70% of the variance. The Catell's scree test in Figure 11.2 confirmed this with a change in direction after the first factor. Only one factor was extracted and therefore there was no need for the solution to be rotated. The solution was therefore considered unidimensional and sufficient evidence of convergent validity was provided for this construct.

Table 11.26. Initial Eigenvalues for Social elements

	Initial Eigenvalues		
Factor	Total	% of Variance	Cumulative %
1	2.817	70.427	70.427
2	.679	16.985	87.412
3	.304	7.588	95.000
4	.200	5.000	100.000

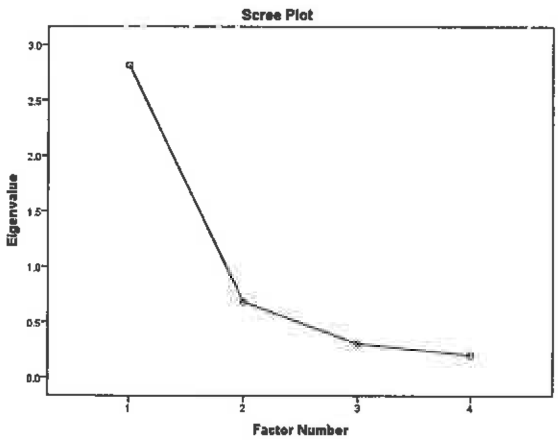


Figure 11.2. Scree plot for Social elements.

11.3.2.3 Business case elements

The KMO for the business case elements was 0.652 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.27. These tests confirmed that the data was factor analysable. The KMO was less than the desired 0.70 and when the commonalities were analysed (Table 11.28), items B1.3.6, B1.3.16 and B1.3.18 emerged as problematic due to the high commonalities. The resulting solution was then interpreted with caution.

Table 11.27. KMO and Bartlett's test for Business case elements

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.652
Bartlett's Test of Sphericity	Approx. Chi-Square	3203.581
	df	153
	Sig.	0.000

Table 11.28. Communalities for all Business case elements

Communalities	Initial	Extraction
B1.3.1. Provides awareness programmes	.459	.425
B1.3.2. Conducts voluntary counselling and testing	.609	**.620**
B1.3.3. Implements wellness programmes	.768	**.826**
B1.3.4. Distributes male/female condoms	.769	.811
B1.3.5. Provides antiretroviral therapy and/or referral to external health care providers	.842	.807
B1.3.6. Provides assistance with combating Tuberculosis and sexually transmitted infections (STI)	.849	**.999**
B1.3.7. Engages in community outreach programmes	.609	**.577**
B1.3.8. Conducts a risk and impact assessment	.776	**.848**
B1.3.9. Conducts a needs and resource assessment	.720	**.769**
B1.3.10. Develops, implements, monitors and evaluates the HIV and AIDS policy based on a strategic plan	.422	**.343**
B1.3.11. Appoints active peer educators	.636	**.591**
B1.3.12. Monitors labour absenteeism and turnover	.746	**.894**
B1.3.13. Improves the morale of employees	.647	**.582**
B1.3.14. Address stigma and discrimination	.335	.136
B1.3.15. Conducts an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis.	.351	.263
B1.3.16. Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	.379	**.999**
B1.3.17. Accommodates the needs of infected persons	.641	.587
B1.3.18. Promotes a safe working environment	.619	**.999**

Note: High communalities in boldface.

Six factors emerged with eigenvalues greater than 1 as showed in Table 11.29, which explained 75% of the variance. This was confirmed by the Catell's scree test in Figure 11.3. These results suggest that this subscale might be multidimensional.

Table 11.29. Initial Eigenvalues for all Business case elements

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.503	25.018	25.018	1.878	10.434	10.434	3.431
2	2.637	14.650	39.668	1.841	10.228	20.662	2.784
3	2.100	11.665	51.333	1.516	8.423	29.085	2.692
4	1.741	9.672	61.005	3.645	20.249	49.334	1.899
5	1.417	7.873	68.878	1.761	9.782	59.115	2.000
6	1.106	6.147	75.024	1.435	7.974	67.090	1.590
7	.913	5.070	80.094				
8	.837	4.652	84.746				
9	.493	2.737	87.483				
10	.411	2.286	89.768				
11	.387	2.151	91.919				

12	.368	2.046	93.965				
13	.305	1.697	95.663				
14	.267	1.486	97.149				
15	.186	1.031	98.179				
16	.153	.847	99.027				
17	.104	.577	99.603				
18	.071	.397	100.000				

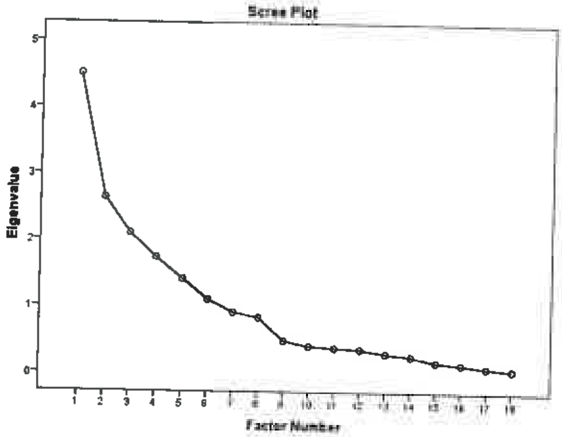


Figure 11.3. Scree plot for Business case elements.

In order to arrive at a succinct and clear factor solution of the construct, item B1.3.6 (*Provides assistance with combating Tuberculosis and sexually transmitted infections (STI)*) was deleted and the EFA repeated. The results of which are depicted in Tables 11.30, 11.31 and 11.32. The KMO for the business case elements after the deletion of item B1.3.6 was 0.679 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 30. There was a slight improvement in the KMO but it was still less than the desired 0.70 and when the commonalities were analysed (Table 31), items B1.3.5, B1.3.11, B1.3.13 and B1.3.18 emerged as problematic due to the low/high commonalities. The resulting solution was then interpreted with caution.

Table 11.30. KMO and Bartlett's test for Business case elements after the deletion of factor B1.3.6

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.679
Bartlett's Test of Sphericity	Approx. Chi-Square	2633.656
	df	136
	Sig.	0.000

Table 11.31. Communalities for Business case elements after the deletion of factor B1.3.6

Communalities	Initial	Extraction
B1.3.1. Provides awareness programmes	.454	.421
B1.3.2. Conducts voluntary counselling and testing	.608	.629
B1.3.3. Implements wellness programmes	.764	.862
B1.3.4. Distributes male/female condoms	.739	.788
B1.3.5. Provides antiretroviral therapy and/or referral to external health care providers	.128	**.037**
B1.3.7. Engages in community outreach programmes	.583	.565
B1.3.8. Conducts a risk and impact assessment	.775	.883
B1.3.9. Conducts a needs and resource assessment	.720	.750
B1.3.10. Develops, implements, monitors and evaluates the HIV and AIDS policy based on a strategic plan	.413	.344
B1.3.11. Appoints active peer educators	.636	**.999**
B1.3.12. Monitors labour absenteeism and turnover	.741	.680
B1.3.13. Improves the morale of employees	.643	**.999**
B1.3.14. Address stigma and discrimination	.335	.203
B1.3.15. Conducts an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis.	.333	.343
B1.3.16. Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes	.371	.805
B1.3.17. Accommodates the needs of infected persons	.636	.593
B1.3.18. Promotes a safe working environment	.616	**.999**

Note: Low/High communalities in boldface.

Table 11.32. Initial Eigenvalues – Business elements after the deletion of factor B1.3.6

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.483	26.372	26.372	2.980	17.527	17.527	3.451
2	2.607	15.336	41.708	1.700	10.003	27.530	2.790
3	1.968	11.577	53.285	.671	3.944	31.474	2.544
4	1.432	8.421	61.706	2.780	16.353	47.827	2.020
5	1.121	6.596	68.302	1.839	10.815	58.643	1.493
6	1.010	5.940	74.243	.931	5.478	64.121	2.138
7	.898	5.283	79.526				
8	.837	4.921	84.447				
9	.491	2.889	87.336				
10	.409	2.408	89.744				
11	.385	2.265	92.009				
12	.367	2.161	94.169				
13	.299	1.761	95.931				
14	.257	1.513	97.444				
15	.184	1.084	98.527				
16	.150	.880	99.408				
17	.101	.592	100.000				

Table 11.32 shows the six factors that emerged with eigenvalues greater than 1, which explained 74% of the variance. These results suggest that this subscale might be multidimensional. Therefore items B1.3.5, B1.3.11, B1.3.13 and B1.3.18 were deleted and the analysis rerun. The KMO for the business case elements after the deletion of items B1.3.5, B1.3.11, B1.3.13 and B1.3.18 was 0.759 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). There was a vast improvement in the KMO value but when the commonalities were analysed, items B1.3.8 and B1.3.16 emerged as problematic due to the high

commonalities (0.948 & 0.999 respectively). Four factors emerged with eigenvalues greater than 1, which explained 68% of the variance.

Therefore items B1.3.8 and B1.3.16 were deleted as high communalities can make the solution unstable. The analysis was rerun the tables for which can be found in Appendix H. The KMO for the business case elements after the deletion of items B1.3.8 and B1.3.16 was 0.780 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). There was an improvement in the KMO value but item B1.3.10 was cross-loading. Three factors emerged with eigenvalues greater than 1, which explained 60% of the variance. Item B1.3.10 had to be deleted to the cross-loading.

Therefore item B1.3.10 was deleted and the analysis rerun. The KMO for the business case elements after the deletion of item B1.3.10 was 0.782 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). There was an improvement in the KMO value but items B1.3.3 and B1.3.9 emerged as problematic due to the high commonalities (0.903 & 0.967 respectively) (refer to Appendix H). Three factors emerged with eigenvalues greater than 1, which explained 62% of the variance.

Items B1.3.3 and B1.3.9 were deleted and the analysis rerun. The KMO for the business case elements after the deletion of items B1.3.3 and B1.3.9 was 0.770 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). However items B1.3.15 emerged as problematic due to the high commonalities (0.999). Two factors emerged with eigenvalues greater than 1, which explained 50% of the variance. The tables for KMO and Bartlett's Test, communalities and eigenvalues for all these deletions can be found in Appendix H.

Item B1.3.15 was deleted and the analysis rerun. The KMO for the business case elements after the deletion of items B1.3.15 was 0.798 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as indicated in Table 11.33. There were no high communalities however item B1.3.7 showed a low communality (Table 11.34), but the researcher decided not to delete any further items, as the solution stabilised (SPSS did not issue any warnings based on singularity of the matrix or high communality values). One factor emerged with eigenvalues greater than 1 (Table 11.35), which explained 40% of the variance. This was confirmed by the scree plot in Figure 11.4. The solution did not need to be rotated as only one factor was extracted. The solution was therefore considered unidimensional and of convergent validity achieved.

Eleven items were lost in this subscale due to the content overlap of certain items and high communality values. Typically this is due to items that are too easy to agree or disagree with. For example a majority of the firms disagreed with items B1.3.5 and B1.3.6; they did not want to provide antiretroviral therapy and/or referral to external health care providers (item B1.3.5) or provide assistance with combating Tuberculosis and sexually transmitted infections (STI) (item B1.3.6). Although there was a loss of quite a few items, the final scale is more robust and identifies key actions firms will be willing to implement.

Table 11.33. KMO and Bartlett's test for Business case elements after the deletion of various items.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.798
Bartlett's Test of Sphericity	Approx. Chi-Square	467.027
	df	21
	Sig.	.000

Table 11.34. Communalities for Business case elements after the deletion of various items.

Communalities	Initial	Extraction
B1.3.1. Provides awareness programmes	.388	.466
B1.3.2. Conducts voluntary counselling and testing	.496	.615
B1.3.4. Distributes male/female condoms	.545	.719
B1.3.7. Engages in community outreach programmes	.077	.088
B1.3.12. Monitors labour absenteeism and turnover	.105	.090
B1.3.14. Address stigma and discrimination	.117	.103
B1.3.17. Accommodates the needs of infected persons	.171	.190

Table 11.35. Eigenvalues for Business elements - final outcome

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.785	39.782	39.782	2.269	32.417	32.417
2	.998	14.257	54.038			
3	.906	12.948	66.986			
4	.823	11.754	78.740			
5	.692	9.886	88.625			
6	.477	6.821	95.446			
7	.319	4.554	100.000			

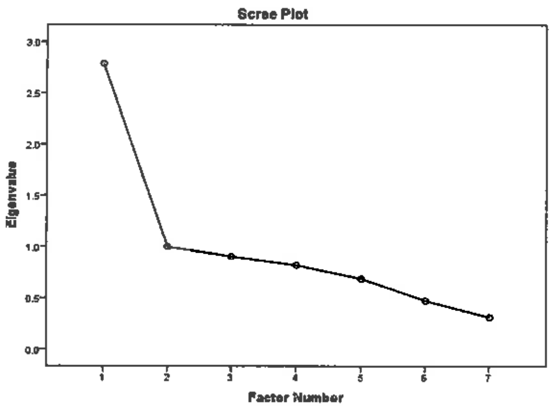


Figure 11.4. Scree plot for Business case elements - final outcome.

11.3.2.4 Voluntary regulation elements

The KMO for the voluntary regulation elements was 0.681 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.36. These tests confirmed that the data could be factor analysed. The KMO was less than the desired 0.70 and when the commonalities were analysed (Table 11.37), item B1.4.10 emerged as problematic due to the high commonality. The resulting solution should be interpreted with caution. This subscale therefore required rotation which was carried out by the use of Promax with Kaiser Normalization.

Table 11.36. KMO and Bartlett's test for voluntary regulation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.681
Bartlett's Test of Sphericity	Approx. Chi-Square	1614.821
	df	78
	Sig.	.000

Table 11.37. Communalities for voluntary regulation

Communalities	Initial	Extraction
B1.4.1. Provides comprehensive care and treatment for people living with HIV and AIDS	.534	.581
B1.4.2. Develops, implements, monitors and evaluates the HIV and AIDS policy	.649	.798
B1.4.3. Promotes gender equality	.691	.780
B1.4.4. Promotes non-discrimination	.533	.742
B1.4.5. Protects the human rights and dignity of people living with HIV and AIDS	.477	.585
B1.4.6. Provides HIV and AIDS awareness programmes	.550	.636
B1.4.7. Promotes condom distribution and use	.532	.647
B1.4.8. Provides access to counselling for people affected by HIV and AIDS	.367	.362
B1.4.9. Provides education and training on HIV and AIDS	.398	.336
B1.4.10. Encourages treatment of Sexually transmitted infections (STIs), Tuberculosis (TB) and HIV & AIDS	.355	**.959**
B1.4.11. Provides a 'wellness' programme for employees	.415	.390
B1.4.12. Contractually commits construction firms to implement HIV and AIDS programmes	.554	.889
B1.4.13. Benchmarks HIV and AIDS organisational practices against industry norms	.498	.529

Note: High communalities in boldface.

Five factors emerged with eigenvalues greater than 1 as showed in Table 11.38, which explained 76% of the variance. This was confirmed by the Catell's scree test in Figure 11.5. These results suggest that this subscale might be multidimensional.

Table 11.38. Initial Eigenvalues for voluntary regulation

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.457	26.590	26.590	1.742	13.400	13.400	2.345
2	2.622	20.167	46.757	2.439	18.761	32.162	2.393
3	1.550	11.926	58.683	1.843	14.179	46.341	1.879
4	1.191	9.159	67.843	1.560	11.997	58.338	1.698
5	1.018	7.834	75.677	.649	4.994	63.332	1.907
6	.745	5.732	81.409				
7	.543	4.174	85.583				
8	.438	3.368	88.951				
9	.374	2.880	91.831				
10	.363	2.789	94.620				
11	.283	2.178	96.798				
12	.238	1.832	98.630				
13	.178	1.370	100.000				

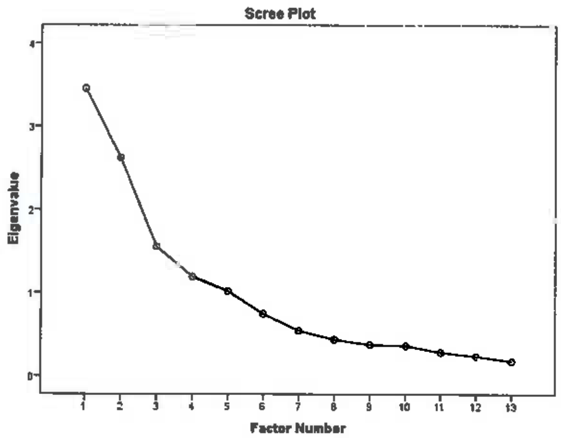


Figure 11.5. Scree plot for voluntary regulation.

In order to correct the multidimensionality of this subscale, item B1.4.10 was deleted and the EFA repeated. The results of which are depicted in Appendix H. The KMO for the voluntary regulation after the deletion of item B1.4.10 was 0. 693 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). There was a slight improvement in the KMO and when the commonalities were analysed, however item B1.4.12 emerged as problematic due to a high commonality (0.893). Four factors emerged with eigenvalues greater than 1, which explained 71% of the variance.

Therefore item B1.4.12 was deleted and the analysis rerun. The KMO after the deletion of item B1.4.12 was 0.699 and the Bartlett's test of sphericity was achieved with a significance of (p < 0.00). There was an improvement in the KMO value but item B1.4.11 emerged as problematic due to a high commonality (0.999). Four factors emerged with eigenvalues greater than 1, which explained 71% of the variance.

Item B1.4.11 was deleted and the analysis rerun. The KMO after the deletion of item B1.4.11 was 0.705 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$). There was an improvement in the KMO value but items B1.4.13 emerged as problematic due to a very low commonality (0.067). Three factors emerged with eigenvalues greater than 1, which explained 64% of the variance.

After the deletion of B1.4.13 the KMO was 0.706 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as illustrated in Table 11.39. The communalities all stabilised as depicted in Table 11.40.

Table 11.39. KMO and Bartlett's test for voluntary regulation, final outcome

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.706
Bartlett's Test of Sphericity	Approx. Chi-Square	1096.871
	df	36
	Sig.	.000

Table 11.40. Communalities for voluntary regulation

Communalities	Initial	Extraction
B1.4.1. Provides comprehensive care and treatment for people living with HIV and AIDS	.478	.368
B1.4.2. Develops, implements, monitors and evaluates the HIV and AIDS policy	.623	.544
B1.4.3. Promotes gender equality	.685	.912
B1.4.4. Promotes non-discrimination	.511	.442
B1.4.5. Protects the human rights and dignity of people living with HIV and AIDS	.471	.427
B1.4.6. Provides HIV and AIDS awareness programmes	.534	.659
B1.4.7. Promotes condom distribution and use	.506	.590
B1.4.8. Provides access to counselling for people affected by HIV and AIDS	.235	.200
B1.4.9. Provides education and training on HIV and AIDS	.304	.282

Two factors emerged with eigenvalues greater than 1 as showed in Table 11.41, which explained 59% of the variance. This was confirmed by the Catell's scree test in Figure 11.6. These results suggest that this subscale is multidimensional. The pattern matrix is depicted in table 11.42.

Table 11.41. Initial Eigenvalues for voluntary regulation - final outcome

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.221	35.791	35.791	2.459	27.326	27.326	2.435
2	2.105	23.390	59.181	1.964	21.827	49.153	2.189
3	.971	10.790	69.971				
4	.825	9.165	79.136				
5	.621	6.896	86.032				
6	.441	4.898	90.930				
7	.348	3.869	94.798				
8	.275	3.056	97.854				
9	.193	2.146	100.000				

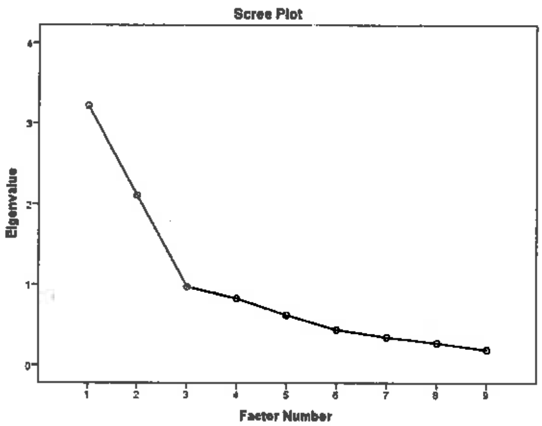


Figure 11.6. Scree plot for voluntary regulation - final outcome.

The substantive definitions/identities of the two sub-scales can be inferred from the rotated salient factor loadings which load on each of the two factors. Table 11.42 indicates the pattern matrix for the subscale voluntary regulation. Factor 1 consists of items B1.4.1, B1.4.2, B1.4.3 and B1.4.4. Factor 2 comprises items B1.4.5, B1.4.6, B1.4.7, B1.4.8 and B1.4.9. Factor 1 which consists mostly of procedural items will now be referred to as voluntary procedures. Factor 2 will now be referred to as voluntary prevention and treatment.

Table 11.42. Pattern matrix for voluntary regulation

Pattern Matrix	Factor 1	Factor 2
B1.4.1. Provides comprehensive care and treatment for people living with HIV and AIDS	.594	
B1.4.2. Develops, implements, monitors and evaluates the HIV and AIDS policy	.736	
B1.4.3. Promotes gender equality	.966	
B1.4.4. Promotes non-discrimination	.633	
B1.4.5. Protects the human rights and dignity of people living with HIV and AIDS		.641
B1.4.6. Provides HIV and AIDS awareness programmes		.827
B1.4.7. Promotes condom distribution and use		.764
B1.4.8. Provides access to counselling for people affected by HIV and AIDS		.412
B1.4.9. Provides education and training on HIV and AIDS		.441

Extraction Method: Maximum Likelihood. Rotation Method: Promax with Kaiser Normalization.

11.3.2.5 Visibility of the disease

The KMO for the visibility of the disease was 0.797 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.43. These tests confirmed that the data could be factor analysed. Table 11.44 indicates the communalities which were all acceptable.

Table 11.43. KMO and Bartlett's test for the visibility of the disease.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.797
Bartlett's Test of Sphericity	Approx. Chi-Square	1082.495
	df	15
	Sig.	.000

Table 11.44. Communalities for visibility of the disease.

Communalities	Initial	Extraction
B1.5.1. Create a supportive, safe and healthy work environment	.575	.573
B1.5.2. Accommodate the needs of sick employees	.629	.549
B1.5.3. Encourages open communication between management and employees	.505	.398
B1.5.4. Involves people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	.440	.412
B1.5.5. Promotes confidentiality and privacy in the workplace	.726	.688
B1.5.6. Encourages employees to test for HIV	.710	.692

Table 11.45 shows the emergence of a primary factor with an eigenvalue of 3.771, which explained 63% of the variance. The Catell's scree test in Figure 7 confirmed this with a change in direction after the first factor. Only one factor was extracted and therefore there was no need for the solution to be rotated. The solution was therefore considered unidimensional and sufficient evidence of convergent validity was provided for this construct.

Table 11.45. Initial Eigenvalues for visibility of the disease.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.771	62.848	62.848	3.313	55.214	55.214
2	.834	13.899	76.747			
3	.600	9.999	86.746			
4	.356	5.941	92.687			
5	.285	4.749	97.436			
6	.154	2.564	100.000			

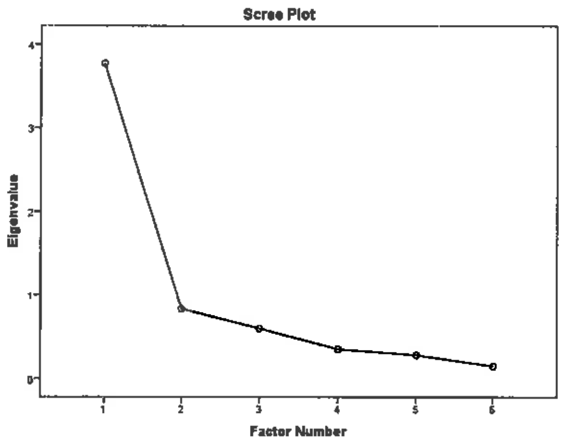


Figure 11.7. Scree plot for visibility of the disease.

11.3.2.6 Internal agents

The KMO for the internal agents was 0.690 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as depicted in Table 11.46. Analysis of the commonalities (Table 11.47) revealed that item B1.6.7 emerged as problematic due to a high commonality.

Table 11.46. KMO and Bartlett's test for internal agents.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.690
Bartlett's Test of Sphericity	Approx. Chi-Square	1992.239
	df	36
	Sig.	0.000

Table 11.47. Communalities for internal agents.

Communalities	Initial	Extraction
B1.6.1. Encourage support of Senior management for HIV and AIDS initiatives	.749	.795
B1.6.2. Promote the support of Middle or line management for HIV and AIDS initiatives	.793	.904
B1.6.3. Promote the support of Peer educators for HIV and AIDS initiatives	.669	.604
B1.6.4. Appoint Counsellors for HIV and AIDS initiatives	.799	.916
B1.6.5. Appoint Medical personnel for HIV and AIDS initiatives	.781	.816
B1.6.6. Promote the support of CEO/president for HIV and AIDS initiatives	.738	.700
B1.6.7. Promote support of Staff members for HIV and AIDS initiatives	.732	**.999**
B1.6.8. Promote support of Unions representatives for HIV and AIDS initiatives	.511	**.528**
B1.6.9. Promote support of Human resource manager/s for HIV and AIDS initiatives	.554	.435

Note: High communalities in boldface.

Three factors emerged with eigenvalues greater than 1 as showed in Table 11.48, which explained 82% of the variance. This was confirmed by the Catell's scree test in Figure 11.8. These results suggest that this subscale might be multidimensional. This subscale was rotated using Promax with Kaiser Normalization.

Table 11.48. Initial Eigenvalues for internal agents.

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.749	41.657	41.657	2.367	26.304	26.304	3.128
2	2.419	26.879	68.536	2.280	25.330	51.633	2.312
3	1.184	13.156	81.693	2.051	22.789	74.422	2.401
4	.565	6.274	87.967				
5	.392	4.352	92.319				
6	.292	3.240	95.559				
7	.177	1.966	97.525				
8	.126	1.402	98.928				
9	.096	1.072	100.000				

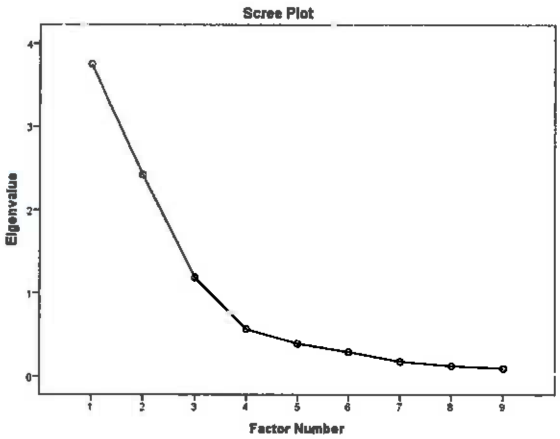


Figure 11.8. Scree plot for internal agents.

After the deletion of B1.6.7 the KMO was 0.718 and the Bartlett's test of sphericity was achieved with a significance of ($p < 0.00$) as illustrated in Table 11.49. The communalities all stabilised as depicted in Table 11.50.

Table 11.49. KMO and Bartlett's test for internal agents final outcome.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.718
Bartlett's Test of Sphericity	Approx. Chi-Square	1590.905
	df	28
	Sig.	0.000

Table 11.50. Communalities for internal agents.

Communalities	Initial	Extraction
B1.6.1. Encourage support of Senior management for HIV and AIDS initiatives	.746	.799
B1.6.2. Promote the support of Middle or line management for HIV and AIDS initiatives	.793	.885
B1.6.3. Promote the support of Peer educators for HIV and AIDS initiatives	.669	.601
B1.6.4. Appoint Counsellors for HIV and AIDS initiatives	.791	.894
B1.6.5. Appoint Medical personnel for HIV and AIDS initiatives	.776	.834
B1.6.6. Promote the support of CEO/president for HIV and AIDS initiatives	.257	.196
B1.6.8. Promote support of Unions representatives for HIV and AIDS initiatives	.511	.533
B1.6.9. Promote support of Human resource manager/s for HIV and AIDS initiatives	.516	.413

Two factors emerged with eigenvalues greater than 1 as showed in Table 11.51, which explained 72% of the variance. This was confirmed by the Catell's scree test in Figure 11.9. These results suggest that this subscale is multidimensional. The pattern matrix is depicted in table 11.52.

Table 11.51. Initial Eigenvalues for internal agents final outcome

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.355	41.942	41.942	2.782	34.780	34.780	2.909
2	2.412	30.148	72.090	2.373	29.657	64.437	2.296
3	.757	9.460	81.550				
4	.556	6.946	88.496				
5	.388	4.855	93.352				
6	.291	3.635	96.987				
7	.127	1.586	98.573				
8	.114	1.427	100.000				

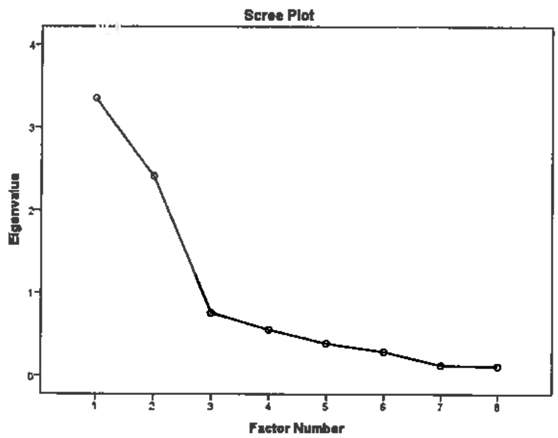


Figure 11.9. Scree plot for internal agents, final outcome.

The substantive definitions/identities of the two sub-scales can be inferred from the rotated salient factor loadings which load on each of the two factors. Table 11.52 indicates the pattern matrix for the subscale internal agents. Factor 1 consists of items B1.6.1, B1.6.2, B1.6.3, B1.6.6 and B1.6.9. Factor 2 comprises items B1.6.4, B1.4.5 and B1.6.8. Factor 1 which consists mostly of people who work within the company will now be referred to as internal agents with authority. Factor **2** will now be referred to as external influences.

Table 11.52. Pattern matrix for internal agents.

Pattern Matrix	Factor	
	1	2
B1.6.1. Encourage support of Senior management for HIV and AIDS initiatives	.898	
B1.6.2. Promote the support of Middle or line management for HIV and AIDS initiatives	.939	
B1.6.3. Promote the support of Peer educators for HIV and AIDS initiatives	.773	
B1.6.4. Appoint Counsellors for HIV and AIDS initiatives		.944
B1.6.5. Appoint Medical personnel for HIV and AIDS initiatives		.908
B1.6.6. Promote the support of CEO/president for HIV and AIDS initiatives	.445	
B1.6.8. Promote support of Unions representatives for HIV and AIDS initiatives		.734
B1.6.9. Promote support of Human resource manager/s for HIV and AIDS initiatives	.631	

Extraction Method: Maximum Likelihood. Rotation Method: Promax with Kaiser Normalization.

The next section describes the reliability analysis.

11.4 Reliability analysis

Reliability concerns the degree to which the scores are free from random measurement error (Kline, 2011). Reliability analysis was conducted after the EFA because reliability analysis presumes unidimensional scales and therefore reliability analysis was only being conducted on those subscales which have been shown to be unidimensional. The reliability of the scales in this study was checked for internal consistency with the use of Cronbach's alpha, which measure the degree to which responses are consistent across all items within a single measure. The Cronbach's alpha coefficient with an accepted cut-off criteria is 0.70 (de Vaus, 2002; Gaur & Gaur, 2006; Hair, *et al.*, 2010; Kline, 2011; Pallant, 2010; Schumacker & Lomax, 2004) was used in this regard.

Table 11.53. Reliability for drivers

Subscales	Number of Items	Cronbach's Alpha
Legal aspects	6	.899
Social elements	4	.857
Business case elements	7	.725
Voluntary regulation		
Voluntary procedures	4	.821
Voluntary prevention and treatment	5	.756
Visibility of the disease	6	.873
Internal agents		
Internal agents with authority	5	.861
External agents	3	.894

Table 11.53 indicates that all the subscales exceeded the minimum Cronbach coefficient alpha of 0.70. In fact 6 subscales had alpha coefficients greater than 0.80. The subscale legal aspects

had the highest (0.899) Cronbach alpha coefficient. The Cronbach alpha was greater than 0.70 showing acceptable internal reliability.

In order to further explore the reliability of the drivers, the corrected item-total correlation and the Cronbach alpha if items were deleted was also considered. The corrected item-total correlation should be greater than the suggested cut-off value of 0.30 (Pallant, 2010) as lower values indicate the item is measuring something different from the scale as a whole. The majority of corrected item-total correlation values were greater than the suggested cut-off value of 0.30 indicating that the items were good measures of the subscale and no items needed to be deleted (Table 11.54). This also provided sufficient evidence that the items in each subscale were internally consistent. Item B1.3.7, B1.3.12 and B1.3.14 indicated values marginally less than 0.30.

Table 11.54. Item-total statistics for the drivers.

Subscales		Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Legal aspects	B1.1.1. Implement a HIV and AIDS policy	.547	.914
	B1.1.2. Ensure that there is no unfair discrimination against employees on the basis of their HIV status.	.720	.882
	B1.1.3. Protect the employees right to privacy about their HIV status at work	.769	.875
	B1.1.4. Reduce the risk of occupational exposure to HIV	.729	.881
	B1.1.5. Maintain the right to certain basic standards of employment, including 6 weeks of paid sick leave over a 3-year period	.821	.867
	B1.1.6. Prohibit mandatory pre- and post-employment HIV testing, unless we have applied to the Labour Court for authorisation	.823	.866
Social elements	B1.2.1. Implement HIV and AIDS management strategies due to pressure from Trade unions	.715	.814
	B1.2.2. Implement HIV and AIDS management strategies because of corporate social responsibility	.769	.789
	B1.2.3. Positively engage with surrounding communities	.597	.859
	B1.2.4. Find alternate external support (e.g. government, funding agencies) to ensure effective strategies are put in place	.745	.804
Business Case	B1.3.1. Provides awareness programmes	.565	.667
	B1.3.2. Conducts voluntary counselling and testing	.637	.637
	B1.3.4. Distributes male/female condoms	.669	.632
	B1.3.7. Engages in community outreach programmes	.265	.732
	B1.3.12. Monitors labour absenteeism and turnover	.289	.726
	B1.3.14. Address stigma and discrimination	.299	.722
	B1.3.17. Accommodates the needs of infected persons	.369	.714
Voluntary regulation – Factor 1	B1.4.1. Provides comprehensive care and treatment for people living with HIV and AIDS	.601	.807
	B1.4.2. Develops, implements, monitors and evaluates the HIV and AIDS policy	.733	.736
	B1.4.3. Promotes gender equality	.776	.716
	B1.4.4. Promotes non-discrimination	.508	.831
Voluntary regulation – Factor 2	B1.4.5. Protects the human rights and dignity of people living with HIV and AIDS	.534	.708
	B1.4.6. Provides HIV and AIDS awareness programmes	.574	.696
	B1.4.7. Promotes condom distribution and use	.650	.671
	B1.4.8. Provides access to counselling for people affected by HIV and AIDS	.416	.760
	B1.4.9. Provides education and training on HIV and AIDS	.482	.727
Visibility of the Disease	B1.5.1. Create a supportive, safe and healthy work environment	.688	.850
	B1.5.2. Accommodate the needs of sick employees	.748	.840
	B1.5.3. Encourages open communication between management and employees	.634	.858

	B1.5.4. Involves people living with HIV and AIDS to help in reducing stigma and discrimination in organisations	.619	.871
	B1.5.5. Promotes confidentiality and privacy in the workplace	.700	.847
	B1.5.6. Encourages employees to test for HIV	.730	.842
Internal Agents - Factor 1	B1.6.1. Encourage support of Senior management for HIV and AIDS initiatives	.773	.807
	B1.6.2. Promote the support of Middle or line management for HIV and AIDS initiatives	.802	.798
	B1.6.3. Promote the support of Peer educators for HIV and AIDS initiatives	.765	.812
	B1.6.6. Promote the support of CEO/president for HIV and AIDS initiatives	.440	.890
	B1.6.9. Promote support of Human resource manager/s for HIV and AIDS initiatives	.647	.841
Internal Agents - Factor 2	B1.6.4. Appoint Counsellors for HIV and AIDS initiatives	.848	.800
	B1.6.5. Appoint Medical personnel for HIV and AIDS initiatives	.835	.812
	B1.6.8. Promote support of Unions representatives for HIV and AIDS initiatives	.700	.926

Having discussed the Cronbach's alpha, correlations between items within facts and correlations between factors are considered next.

Correlations indicate both the strength and the direction of the relationship between a pair of variables (Bryman & Cramer, 2005) and ranges between -1 to +1. The direction of the relationships is indicated by the positive and negative signs while the strength of the relationship is indicated by the magnitude of the value. Correlation does not necessarily indicate causation (Leedy & Ormrod, 2010; Norusis, 2008). According to Pallant (2010) correlation coefficients should be > 0.30.

Correlation values between the six items for legal aspects were high and therefore confirmed convergent validity. Table 11.55 indicates the correlation values between the 6 items of the legal driver indicated that the factors were related to each other. The correlations values ranged from 0.383 to 0.862 for items B1.1.6 and B1.1.5 respectively (above the 0.30 cut-off). According to Kline (2011) correlations values < 0.90 is indicative of discriminant validity. Therefore this scale meets the requirement for discriminant validity. This construct therefore satisfied the internal reliability criteria and the construct validity criteria. The Cronbach's alpha value was above the minimum value of 0.70 (Table 11.55) and the convergent validity characterised by high correlation values, magnitude, sign and statistical significance of parameter coefficients were found to be satisfactory.

Table 11.55. Correlations for legal aspects.

Correlations						
	B1.1.1	**B1.1.2**	**B1.1.3**	**B1.1.4**	**B1.1.5**	**B1.1.6**
B1.1.1	1.000					
B1.1.2	0.508	1.000				
B1.1.3	0.502	0.608	1.000			
B1.1.4	0.383	0.654	0.616	1.000		
B1.1.5	0.445	0.594	0.723	0.695	1.000	
B1.1.6	0.482	0.619	0.712	0.684	0.862	1.000

The correlation values in Table 11.56 indicates that all 4 items of the social aspects were related to each other. The highest correlation was between item B1.2.1 and B1.2.2. Discriminant validity was achieved as the correlations were < 0.90. This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.56. Correlations for social aspects.

	Correlations			
	B1.1.1	**B1.1.2**	**B1.1.3**	**B1.1.4**
B1.1.1	1.000			
B1.1.2	0.775	1.000		
B1.1.3	0.410	0.514	1.000	
B1.1.4	0.613	0.622	0.675	1.000

Even though the model fit indices showed good fit Table 11.57 shows only the correlation values for items B1.3.1, B1.3.2 and B1.3.4 were correlated. The other items indicate very low correlation. This construct therefore satisfied the internal reliability criteria but the problem with low correlations was noted.

Table 11.57. Correlations for business case elements.

	Correlations						
	B1.3.1	**B1.3.2**	**B1.3.4**	**B1.3.7**	**B1.3.12**	**B1.3.14**	**B1.3.17**
B1.3.1	1.000						
B1.3.2	0.524	1.000					
B1.3.4	0.584	0.667	1.000				
B1.3.7	0.201	0.232	0.235	1.000			
B1.3.12	0.162	0.267	0.235	0.069	1.000		
B1.3.14	0.254	0.278	0.241	0.118	0.228	1.000	
B1.3.17	0.294	0.310	0.386	0.149	0.159	0.076	1.000

Even though the model fit indices showed poor fit Table 11.58 shows the items are correlated and < 0.90. Therefore this scale meets the requirement for discriminant validity. This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.58. Correlations for business case elements.

	Correlations			
	B1.4.1	**B1.4.2**	**B1.4.3**	**B1.4.4**
B1.4.1	1.000			
B1.4.2	0.652	1.000		
B1.4.3	0.546	0.692	1.000	
B1.4.4	0.301	0.399	0.630	1.000

Table 11.59 shows the correlation values for voluntary regulation – Factor 2 (voluntary prevention and treatment). The correlations values ranged from 0.366 to 0.621 for items B1.4.9 and B1.4.7 respectively. Therefore this scale meets the requirement for discriminant validity.

This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.59. Correlations for voluntary regulation – Factor 2 (voluntary prevention and treatment).

Correlations					
	B1.4.5	B1.4.6	B1.4.7	B1.4.8	B1.4.9
B1.4.5	1.000				
B1.4.6	0.526	1.000			
B1.4.7	0.425	0.621	1.000		
B1.4.8	0.247	0.256	0.390	1.000	
B1.4.9	0.358	0.264	0.402	0.366	1.000

The correlation values as shown in Table 11.60 between the factors for the visibility of the disease indicated that the items were correlated. The correlations values ranged from 0.460 to 0.801 for items B1.5.5 and B1.5.6 respectively. Therefore this scale meets the requirement for discriminant validity. This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.60. Correlations for visibility of the disease.

Correlations						
	B1.5.1	B1.5.2	B1.5.3	B1.5.4	B1.5.5	B1.5.6
B1.5.1	1.000					
B1.5.2	0.628	1.000				
B1.5.3	0.526	0.691	1.000			
B1.5.4	0.406	0.574	0.691	1.000		
B1.5.5	0.669	0.503	0.408	0.460	1.000	
B1.5.6	0.552	0.545	0.412	0.566	0.801	1.000

The correlation values indicated in Table 11.61 between the internal agents - factor 1 (internal agents with authority) indicated that the items were correlated. The correlations values ranged from 0.317 to 0.849 for items B1.6.8 and B1.6.2 respectively. Therefore this scale meets the requirement for discriminant validity. This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.61. Correlations for internal agents - factor 1 (internal agents with authority).

Correlations					
	B1.6.1	B1.6.2	B1.6.3	B1.6.6	B1.6.8
B1.6.1	1.000				
B1.6.2	0.849	1.000			
B1.6.3	0.621	0.715	1.000		
B1.6.6	0.378	0.375	0.369	1.000	
B1.6.8	0.539	0.531	0.658	0.317	1.000

Table 11.62 indicates that all the items for internal agents - factor 2 (external influences) are highly correlated. Therefore this scale meets the requirement for discriminant validity. This construct therefore satisfied the internal reliability criteria and the construct validity criteria.

Table 11.62. Correlations for internal agents - factor 2 (external influences).

Correlations			
	B1.6.4	**B1.6.5**	**B1.6.8**
B1.6.4	1.000		
B1.6.5	0.857	1.000	
B1.6.8	0.689	0.672	1.000

Given that the subscales are not mutually exclusive and that they all relate to the driver of HIV and AIDS management there were correlations between the subscales. The latent factor correlation for the total model is presented in Table 11.63. The next section presents the results of confirmatory factor analysis.

Table 11.63. Correlations for the total model.

Correlations															
	B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7	Fac B1.1	Fac B1.2	Fac B1.3	Fac B1.4 F1	Fac B1.4 F2	Fac B1.5	Fac B1.6 F1	Fac B1.6 F2
B3.1	1.000														
B3.2	0.761	1.000													
B3.3	-0.025	-0.026	1.000												
B3.4	0.565	0.448	-0.071	1.000											
B3.5	0.025	0.025	0.763	0.030	1.000										
B3.6	-0.075	-0.111	0.559	-0.073	0.782	1.000									
B3.7	-0.075	-0.090	0.558	-0.171	0.679	0.772	1.000								
Fac B1.1	-0.006	-0.166	0.288	-0.090	0.249	0.255	0.325	1.000							
Fac B1.2	-0.036	-0.071	-0.339	-0.050	-0.380	-0.347	-0.335	-0.113	1.000						
Fac B1.3	-0.061	-0.103	0.369	-0.127	0.335	0.326	0.316	0.395	-0.110	1.000					
Fac B1.4 F1	0.016	0.026	0.314	-0.054	0.298	0.305	0.330	0.411	-0.069	0.483	1.000				
c B1.4 F2	-0.051	-0.034	-0.041	-0.087	-0.074	-0.045	-0.044	0.054	0.216	0.141	0.146	1.000			
Fac B1.5	-0.115	-0.142	0.249	-0.099	0.221	0.293	0.299	0.305	0.070	0.506	0.592	0.145	1.000		
Fac B1.6 F1	0.017	-0.005	0.258	0.010	0.217	0.268	0.216	0.351	-0.073	0.308	0.422	0.149	0.390	1.000	
Fac B1.6 F2	0.021	-0.008	0.250	-0.056	0.208	0.259	0.295	0.408	-0.092	0.300	0.429	0.122	0.381	0.960	1.000

11.5 Confirmatory factor analysis (CFA)

CFA is usually conducted after the EFA and as the starting point in the path/SEM analysis. CFA tests a range of hypotheses about the variables. The CFA allows the researcher to assess how well the data fits the proposed theoretical model by providing information on individual variables and fit indices (Hair, *et al.*, 2010; Schumacker & Lomax, 2004). CFA was conducted using Mplus version 7.11. This study considered a number of fit indices, namely Satorra Bentler chi-square, Root-Mean-Square-Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and the Standardised Root Mean Square Residual (SRMR) index all of which is discussed in Chapter 7. Theory suggests various cut-off ranges which are depicted in Table 11.64.

A. Model Fit

Table 11.64. Cut-off ranges for model fit indices.

Model Fit index	Acceptable threshold / cut-off score/range	Interpretation	References
Absolute fit index			
Chi-square test (x^2 *test)*	Low x^2 relative *df* with an insignificant *p*- value (p>0.05)		Hooper *et al.* (2008); Hsu *et al.* (2012); Kline (2011); Schreiber, *et al.* (2006).
Root-Mean-Square-Error of Approximation (RMSEA)	Values <0.05 Values > 0.06 - 0.08 Values > 0.08 - 0.09 Values > 0.10	Good fit Acceptable fit Mediocre fit Poor fit	Brown (2006); Hoe (2008); Hooper *et al.* (2008); Hsu *et al,* (2012); Hu & Bentler (1999); Schreiber, *et al.* (2006); Schumacker & Lomax (2004).
Standardised Root Mean Square Residual (SRMR)	< 0.05 >0.05 - ≤ 0.08 >0.10	Good fit Acceptable fit	Hooper *et al.* (2008); Hsu *et al.* (2012); Hu & Bentler (1999); Kline (2011); Schreiber, *et al.* (2006).
Incremental fit indices			
Bentler Comparative Fit Index (CFI)	≥ 0.95 0.90-0.95 0 1	Good fit Acceptable fit No fit Perfect fit	Brown (2006); Hooper *et al.* (2008); Hsu *et al.* (2012); Hu & Bentler (1999); Schreiber, *et al.* (2006) ; Schumacker & Lomax (2004).
Tucker-Lewis Index (TLI)	> 0.95 0.90-0.95 0 1	Good fit Acceptable fit No fit Perfect fit	Brown (2006); Hu & Bentler (1999); Hsu *et al.* (2012); Schreiber, *et al.* (2006); Schumacker & Lomax (2004).

No cut-off value was provided for the chi-square values as this fit statistic varies according to the design complexity of the model, the sample size and the amount of data and therefore cannot be interpreted in isolation. The results of the model fit and its interpretation will be presented for each driver in order to assess model fit for the dependent variables.

B. Model parameters

Factor loadings are used to consider model parameters. The direction of association between the observed variable and the latent factor as well as the size of the item (Hoyle, 2011) can be determined by using unstandardised and standardised factor loadings. Unstandardised factor loadings indicate the relationships between the manifest variables and latent variables (Diamantopoulos & Siguaw, 2000). Unstandardised factor loadings should always be used in conjunction with standardised factor loadings. According to (Schumacker & Lomax, 2004) the standardised factor loadings are useful in determining the importance one variable has to other variables and is easier to interpret. In order to aid in the interpretation of the results the researcher focused on the standardised factor loadings and adopted a normative factor loading of 0.50 as indicated by Hair, *et al.* (2010) meaning that only standardised factor loadings > 0.50 were considered suitable. Hair, *et al.* (2010) and Chinda, & Mohamed (2008) believe that variables were greater than 0.50 indicate reasonably good convergent and construct validity of the model.

The standardised residual variances and R-Square (R^2) values and their significance levels (*p* values) were considered. The standardised residual variances showed the amount of error not as a result of the hypothesised factor for each item (Schumacker & Lomax, 2004) and therefore smaller values are favoured. The R^2 value shows the true variance in the item as explained by the latent factor and therefore larger values (preferably > 0.25) are preferred (Kline, 2011).

In order to interpret and discuss model parameters the researcher had to first explore model fit of each driver. It can be argued by some that one should not continue with the reflection of model parameters because of the poor model fit identifies in certain subscales. But the selection of fit indices is a controversial issue as highlighted by Bollen (2011). The absence of an unequivocal answer means that it is often up to the researcher to make a decision regarding model fit and whether to proceed or not. Due to the exploratory nature of this research and the mixed evidence in certain fit indices, the researcher decided to continue with investigations and noted the problems with regard to these specific subscales and interpreted them with a degree of caution.

11.5.1 Legal aspects

The fit indices for the legal aspects are presented in Table 11.65.

Table 11.65. Goodness of fit values for legal aspects.

Test of Model Fit									
Satorra Bentler chi-square				*RMSEA*			CFI	TLI	SRMR
Value	*Degrees of freedom*	*p value*	*Scaling correction factor for MLR*	*Estimate*	RMSEA p value (<= 0.05)	90% CI			
19.668	9	0.020	3.577	0.062	0.260	(0.023 0.100)	0.963	0.939	0.042

As shown in Table 11.65, the RMSEA = 0.062, p = 0.260, 90% CI (0.023, 0.100) indicates that the theoretical model of Legal Aspects fitted the empirically data satisfactorily. The CFI (0.963) was indicative of good fit and TLI (0.939) suggested acceptable fit. The SRMR (0.042) value further provided evidence of good model fit to the data. When considering the construct validity of the subscale, legal aspects all parameters were strong and statistically significant.

In order to further evaluate the adequacy of the proposed model, model parameters are discussed next. Table 11.66 shows the model parameters for the driver – legal aspects.

Table 11.66. Model parameters for legal aspects.

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.1.1	0.270	0.000	0.534	0.000	0.715	0.000	0.285	0.003
B1.1.2	0.303	0.000	0.702	0.000	0.507	0.000	0.493	0.000
B1.1.3	0.332	0.000	0.795	0.000	0.367	0.000	0.633	0.000
B1.1.4	0.310	0.000	0.767	0.000	0.412	0.000	0.588	0.000
B1.1.5	0.385	0.000	0.915	0.000	0.162	0.000	0.838	0.000
B1.1.6	0.384	0.000	0.918	0.000	0.157	0.000	0.843	0.000

Table11.66 indicates that all unstandardised loadings were statistically significant and ranged from 0.270 and 0.385. The standardised factor loadings ranged between 0.534 and 0.918 and therefore exceeded the cut-off 0.5 and were acceptable. All the factor loading were statistically significant (p P< what 0.00 or 0.05). The R-Square values ranged between 0.285 and 0.843 which was above the preferred cut-off level.

Taken together, the fit and standardised model parameters suggest that the CFA model for Legal aspects fits the empirical data well. For this reason it is permissible to use the subscale in its current refined format to construct the greater structural model of interest. Furthermore, it seems permissible to construct item parcels from 6 items contained in the legal scale.

11.5.2 Social aspects

Table 11.67. Goodness of fit values for social aspects.

Test of Model Fit									
Satorra Bentler chi-square				*RMSEA*			CFI	TLI	SRMR
Value	*Degrees of freedom*	*p value*	*Scaling correction factor for MLR*	*Estimate*	RMSEA p value (<= 0.05)	90% CI			
55.391	2	0.000	1.577	0.294	0.000	(0.231 0.364)	0.868	0.603	0.067

Table 11.67 indicates the RMSEA = 0.294, p = 0.000, 90% CI (0.231, 0.364) and as per the applied cut-off criteria, was indicative of poor model fit. The CFI was 0.868 and the TLI was 0.603 were both below the accepted levels of fit. The SRMR was 0.067 which indicated acceptable fit. Based on these fit indices, the subscale social aspects was indicative of a poor model fit. Due to the lack of construct validity, any interpretations based on the social aspect scale needs to be interpreted with caution.

The model parameters for the driver – social aspects are presented in Table 11.68.

Table 11.67. Model parameters for social aspects.

Item	Unstandardised `factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.2.1	0.751	0.000	0.841	0.000	0.293	0.000	0.707	0.000
B1.2.2	0.788	0.000	0.884	0.000	0.219	0.000	0.781	0.000
B1.2.3	0.443	0.000	0.607	0.000	0.632	0.000	0.368	0.000
B1.2.4	0.559	0.000	0.749	0.000	0.438	0.000	0.562	0.000

Table 11.68 indicated that the unstandardised loadings ranged from 0.443 to 0.788. The standardised factor loadings were well above the cut-off criteria of 0.5 (ranged between 0.607 and 0.884) and therefore were acceptable. Statistical significance was found for all the standardised residual variances. The R-Square values ranged from 0.368 and 0.781 which was above the preferred cut-off level, thus indicating acceptable reliability.

Even though the fit indices indicated poor fit, the standardised model parameters indicated good fit. Taken together, the CFA model for social aspects was used in its current refined format to construct the greater structural model of interest.

11.5.3 Business case elements

Table 11.69. Goodness of fit values for business case elements.

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	Degrees of freedom	p value	Scaling correction factor for MLR	Estimate	RMSEA p value (<=0.05)	90% CI			
14.001	14	0.450	1.173	0.000	0.918	(0.000 0.055)	1.00	1.000	0.030

As indicated in Table 11.69, the RMSEA = 0.000, p = 0.918, 90% CI (0.000, 0.055) indicates that the theoretical model of business case elements fitted the empirically data satisfactorily. The CFI (1.00) and TLI (1.00) were indicative of good fit. The SRMR (0.030) value further provided evidence of good model fit to the data.

Table 11.70 indicates the model parameters for the driver – business case elements.

Table 11.70. Model parameters for business case elements.

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	Estimate	Estimate	p-value	Estimate	p-value
B1.3.1	0.333	0.000	0.681	0.000	0.537	0.000	0.463	0.000
B1.3.2	0.495	0.000	0.783	0.000	0.386	0.000	0.614	0.000
B1.3.4	0.497	0.000	0.849	0.000	0.279	0.000	0.721	0.000
B1.3.7	0.159	0.000	**0.289**	0.000	**0.916**	0.000	**0.084**	0.000
B1.3.12	0.158	0.000	**0.301**	0.000	**0.909**	0.000	**0.091**	0.000
B1.3.14	0.159	0.000	**0.325**	0.000	**0.894**	0.000	**0.106**	0.000
B1.3.17	0.283	0.000	**0.431**	0.000	**0.814**	0.000	**0.186**	0.000

Note. Items below the cut-off criteria are in bold.

The unstandardised loadings in Table 11.70 ranged from 0.159 to 0.497. The standardised factor loadings in general were above the cut-off 0.5 and ranged between 0.681 and 0.848 with the exception of items B1.3.7 (*Engages in community outreach programmes*), B1.3.12 (*Monitors labour absenteeism and turnover*), B1.3.14 (*Address stigma and discrimination*) and B1.3.17 (*Accommodates the needs of infected persons*). Standardised residual variances were statistical significant with a concerning high values for item B1.3.7 (0.916), B1.3.12 (0.909), B1.3.14 (0.894) and B1.3.17 (0.814). The R-Square values were above the 0.25 except for B1.3.7, B1.3.12, B1.3.14 and B1.3.17. Clearly these four items were problematic and will be carefully considered in section 11.8, model refinement.

11.5.4 Voluntary regulation – Factor 1 (voluntary procedures)

Table 11.71. Goodness of fit values for voluntary regulation – Factor 1 (voluntary procedures).

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	Degrees of freedom	p value	Scaling correction factor for MLR	Estimate	RMSEA p value (< = 0.05)	90% CI			
113.942	2	0.000	0.5281	0.426	0.000	0.362 0.495	0.590	-0.231	0.057

As is evident in Table 11.71, the RMSEA = 0.426, p = 0.900, 90% CI (0.362, 0.495) indicates that the theoretical model of voluntary regulation – factor 1 (voluntary procedures) did not fit the empirical data satisfactorily. The CFI (0.590) and TLI (-0.231) suggested poor model fit. The SRMR (0.057) provided evidence of acceptable model fit to the data. Based on the presented indices, mixed evidence was found in terms of model fit on the subscale voluntary regulatory factor 1 (voluntary procedures). The CFI and TLI values highlighted potential problems in terms of construct validity of this subscale. The negative TLI value was of concern as it typically indicates that the model is unstable. The RMSEA is also very high.

Table 11.72 shows the model parameters for voluntary regulation factor 1 (voluntary procedures).

Table 11.72. Model parameters for voluntary regulation factor 1 (voluntary procedures).

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	Estimate	Estimate	p-value	Estimate	p-value
B1.4.1	0.419	0.000	0.652	0.000	0.575	0.000	0.425	0.000
B1.4.2	0.399	0.000	0.787	0.000	0.380	0.000	0.620	0.000
B1.4.3	0.454	0.000	0.896	0.000	0.197	0.000	0.803	0.000
B1.4.4	0.309	0.000	0.626	0.000	0.608	0.000	0.392	0.000

Table 11.72 indicates that all unstandardised loadings ranged from 0.3090 to 0.454. The standardised factor loadings ranged between 0.652 and 0.896 and therefore exceeded the cut-off 0.5 and were acceptable. Statistical significance was found for all the standardised residual variances. The R-Square values ranged from 0.392 and 0.803 which was above the preferred cut-off level. This subscale had no problematic items but due to the unstable model fit this factor needed to be removed from the model.

11.5.5 Voluntary regulation – Factor 2 (voluntary prevention and treatment)

Table 11.73. Goodness of fit values for voluntary regulation – Factor 2 (voluntary prevention and treatment).

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	*Degrees of freedom*	*p value*	*Scaling correction factor for MLR*	*Estimate*	RMSEA p value (<= 0.05)	90% CI			
31.417	5.000	0.000	1.367	0.131	0.001	0.089 0.177	0.895	0.789	0.052

As indicated in Table 11.73, the RMSEA = 0.131, p = 0.001, 90% CI (0.089, 0.177) did not indicate a good fit as per the cut-off criteria. The CFI (0.895) and TLI (0.789) were both indicative of poor fit as per the cut-off values. The SRMR (0.052) provided evidence of acceptable model fit to the data. Based on the indices this subscale voluntary regulation factor 2 (voluntary prevention and treatment) presented mixed evidence in terms of model fit. It was noted with concern that the model failed to display the desired levels of fit across most of the indices.

Model parameters for voluntary regulation factor 2 (voluntary prevention and treatment) are depicted in Table 11.74.

Table 11.74. Model parameters for voluntary regulation factor 2 (voluntary prevention and treatment).

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.4.5	0.315	0.000	0.610	0.000	0.628	0.000	0.372	0.000
B1.4.6	0.352	0.000	0.752	0.000	0.435	0.000	0.565	0.000
B1.4.7	0.366	0.000	0.800	0.000	0.360	0.000	0.640	0.000
B1.4.8	0.264	0.000	**0.448**	0.000	**0.799**	0.000	**0.201**	0.000
B1.4.9	0.236	0.000	**0.485**	0.000	**0.764**	0.000	**0.236**	0.000

Note. Items below the cut-off criteria are in bold.

Table 11.74 indicates that all unstandardised loadings ranged from 0.236 to 0.366. The standardised factor loadings for 3 items were above the cut-off 0.5 and ranged between 0.610 and 0.800. Items B1.4.8 (*Provides access to counselling for people affected by HIV and AIDS*) and B1.4.9 (*Provides education and training on HIV and AIDS*) displayed standardised factor loadings > 0.50. Standardised residual variances were statistical significant, item B1.4.8 and B1.4.9 however had a standardised residual variance of 0.799 and 0.764 respectively. With the exception of items B1.4.8 and B1.4.9 the R-Square values were above the 0.25. The low amount of common variance highlighted by items B1.4.8 and B1.4.9 indicates that it may not be measuring the latent construct of voluntary prevention and treatment with the necessary levels of accuracy.

11.5.6 Visibility of the disease

Table 11.75. Goodness of fit values for visibility of the disease.

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	Degrees of freedom	p value	Scaling correction factor for MLR	Estimate	RMSEA p value (< = 0.05)	90% CI			
119.920	9	0.000	1.887	0.200	0.000	0.169 0.233	0.780	0.633	0.075

Table 11.75, the RMSEA = 0.200, $p = 0.000$, 90% CI (0.169, 0.233) indicated a poor fit as per the cut-off criteria. The CFI (0.780) and TLI (0.633) were both indicative of poor model fit. The SRMR (0.075) was indicative of acceptable model fit to the data. Based on the indices this subscale visibility of the disease presented mixed evidence in terms of model fit. The model failed to display the desired levels of fit across the bulk of indices.

Table 11.76 indicates the model parameters for the driver – visibility of the disease.

Table 11.76. Model parameters for the visibility of the disease.

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.5.1	0.377	0.000	0.756	0.000	0.428	0.000	0.572	0.000
B1.5.2	0.378	0.000	0.742	0.000	0.450	0.000	0.550	0.000
B1.5.3	0.342	0.000	0.632	0.000	0.601	0.000	0.399	0.000
B1.5.4	0.472	0.000	0.649	0.000	0.578	0.000	0.422	0.000
B1.5.5	0.442	0.000	0.826	0.000	0.317	0.000	0.683	0.000
B1.5.6	0.425	0.000	0.824	0.000	0.321	0.000	0.679	0.000

As is evident in Table 11.76 all unstandardised loadings were statistically significant. The standardised factor loadings ranged between 0.632 and 0.826 and therefore exceeded the cut-off criteria of 0.5 and were acceptable. Statistical significance was found for all the standardised residual variances. The R-Square values ranged from 0.399 and 0.683 which was above the preferred cut-off level. There were no problematic items identified in this subscale.

Considering both the model fit and model parameters together, it seems like the visibility of the disease sub-scale did not fit the empirical data adequately. The high RMSEA and low CFI and TLI values were particularly cumbersome. What's more none of the standardised factor loadings were problematic in terms of magnitude. This makes model refinement via deletion of items counterintuitive. However, this particular sub-scale is considered to be very important for the measurement of HIV and AIDS perceptions in the workplace and for this reason it was decided to retain the sub-scale, however it should be acknowledged that all empirical linkages with the scale should be interpreted with caution due to the lack of construct validity.

11.5.7 Internal agents - factor 1 (internal agents with authority)

Table 11.77. Goodness of fit values for internal agents - factor 1 (internal agents with authority)

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	*Degrees of freedom*	*p value*	*Scaling correction factor for MLR*	*Estimate*	RMSEA p value (<= 0.05)	90% CI			
62.728	5	0.000	1.2137	0.194	0.000	0.153 0.238	0.823	0.646	0.050

As shown in Table 11.77, the RMSEA = 0.194, p = 0.000, 90% CI (0.153, 0.238) indicates that the theoretical model of internal agents - factor 2 (external influences) did not satisfactorily fit the empirical data. The CFI (0.823) and TLI (0.646) were indicative of poor fit. The SRMR (0.050) value further provided evidence of good model fit to the data. Based on the indices this subscale internal agents factor 1 (internal agents with authority) presented mixed evidence in terms of model fit.

The model parameters for the driver internal agents factor 1 (internal agents with authority) are presented in Table 11.78.

Table 11.78. Model parameters for internal agents - factor 1 (internal agents with authority).

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.6.1	0.484	0.000	0.890	0.000	0.208	0.000	0.792	0.000
B1.6.2	0.563	0.000	0.941	0.000	0.114	0.012	0.886	0.000
B1.6.3	0.378	0.000	0.758	0.000	0.426	0.000	0.574	0.000
B1.6.6	0.222	0.000	**0.420**	0.000	**0.824**	0.000	**0.176**	0.002
B1.6.9	0.286	0.000	0.611	0.000	0.627	0.000	0.373	0.000

Table 11.78 indicates that the unstandardised factor loadings ranged from 0.222 to 0.563. The standardised factor loadings exceeded the cut-off criteria of 0.5 and were acceptable for all items except B1.6.6 (*Promote the support of CEO/president for HIV and AIDS initiatives*). Statistical significance was found for all the standardised residual variances except B1.6.6. The R-Square values ranged from 0.176 and 0.886. All items except B1.6.6 where above the preferred cut-off level. It can therefore be seen that item B1.6.6 was a problematic item in this subscale.

11.5.8 Internal agents – factor 2 (external influences).

Table 11.79. Goodness of fit values for internal agents - factor 2 (external influences).

Test of Model Fit									
Satorra Bentler chi-square				*RMSEA*			CFI	TLI	SRMR
Value	*Degrees of freedom*	*p value*	*Scaling correction factor for MLR*	*Estimate*	RMSEA p value (<= 0.05)	90% CI			
0.000	0	0.000	1.000	0.000	0.000	(0.000 0.000)	1.000	1.000	0.000

As shown in Table 11.79, the RMSEA = 0.000, p = 0.000, 90% CI (0.000, 0.000) indicates that the theoretical model of internal agents - factor 2 (external influences) fitted the empirically data satisfactorily. The CFI (1.000) and TLI (1.000) and SRMR (0.000) value further provided evidence of good model fit to the data. Based on the presented fit indices empirical support was found for the construct validity and acceptable fit of the subscale internal agents factor 2 (external influences).

Table 11.80 includes the model parameters for internal agents factor 2 (external influences).

Table 11.80. Model parameters for internal agents factor 2 (external influences).

Item	Unstandardised factor loadings		Standardised factor loadings		Standardised residual variance		R^2	
	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
B1.6.4	0.735	0.000	0.937	0.000	0.122	0.000	0.878	0.000
B1.6.5	0.708	0.000	0.914	0.000	0.164	0.000	0.836	0.000
B1.6.8	0.571	0.000	0.735	0.000	0.459	0.000	0.541	0.000

As depicted in Table 11.80 all unstandardised loadings were significant. The standardised factor loadings ranged between 0.735 and 0.937 and therefore well exceeded the cut-off criteria of 0.5 and were acceptable. Statistical significance was found for all the standardised residual variances. The R-Square values ranged from 0.541 and 0.878 which was above the preferred cut-off level. No problematic items were therefore identified in this subscale.

Based on the statistics presented, good model fit was found for the legal aspects, a business case elements (although four items appeared problematic due to low standardised factor loadings) and internal agents factor 2 (external influences). Poor model fit was noted for social aspects, voluntary regulations factor 1 (voluntary procedures), voluntary regulations factor 2 (voluntary prevention and treatment) and visibility of the disease and internal agents factor 1 (internal agents with authority).

11.6 Model refinement

Based on the findings and outcome of the model parameter analysis, the researcher decided to the delete a number of items in order to refine the measurement model further based on the CFA results. The following items were removed from the subscales:

- **Business case elements**: Items B1.3.7 (*Engages in community outreach programmes*), B1.3.12 (*Monitors labour absenteeism and turnover*), B1.3.14 (*Address stigma and discrimination*) and B1.3.17 (*Accommodates the needs of infected persons*).

- **Voluntary regulation factor 1 (voluntary procedures):** this entire subscale was deleted to due to poor model fit that could result in model instability.

- **Voluntary regulation factor 2 (voluntary prevention and treatment):** Items B1.4.8 (*Provides access to counselling for people affected by HIV and AIDS*) and B1.4.9 (*Provides education and training on HIV and AIDS*).

- **Internal agents factor 1 (internal agents with authority):** Item B1.6.6 (*Promote the support of CEO/president for HIV and AIDS initiatives*).

On completion of these refinements, the total path model was tested by considering the overall model fit, model parameters and hypothesis testing of the drivers.

11.7 The structural model

This section focuses on the discussion of the model fit and model parameters and theorised hypotheses for the proposed theoretical path model.

11.7.1 Proposed path model

A number of research hypotheses (H_1 to H_{30}) were formulated in line with literature and the research objectives between the drivers and dependent variables. After model refinement there were 35 hypotheses (H_1 to H_{30}) which formed the basis of the proposed theoretical path model as indicated in Figure 11.10.

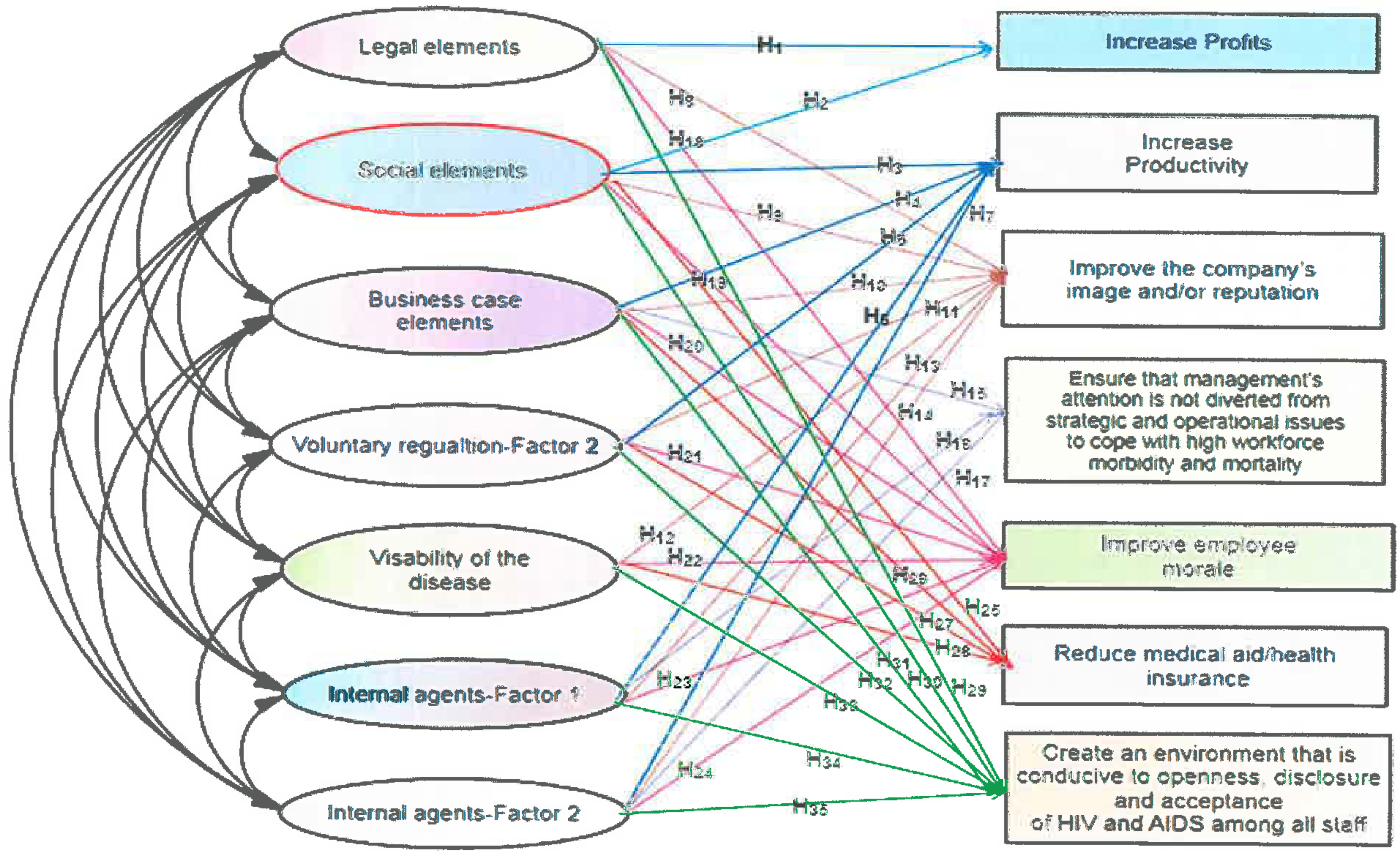


Figure 11.10. The proposed theoretical SEM model.

Results from the measurement models indicated that the models worked well and it was therefore feasible to test the full latent variable model. In the full structural model, the drivers were analysed as a seven factor model with single indicator parcels representing each of the latent constructs. This approach was adopted for ease of analysis of the full structural model and enabled a much clearer presentation of the full structural model. The advantages of using parcelling were highlighted in chapter 7 (cf. par. 7.8.1 (e)). All indicator variables defining the drivers were maintained. The analysis presented in the current study a confirmatory analysis and therefore recommendations were based on whether the postulated priori model fit the sample data or not.

Figure 10 illustrates the 40 hypothesised relationships between the drivers and the various dependent variables. The model theorises a direct positive relationship between the following observed and independent variables.

Observed variable 1 - **increase in profits**

H_1: A positive relationship is predicted between *Legal requirements* and increase in profits

H_2: A positive relationship is predicted between *Social aspects* and increase in profits.

Observed variable 2 – **increase productivity**

H_3: A positive relationship is predicted between *Social aspects* and increase productivity.

H_4: A positive relationship is predicted between *Business case elements* and increase productivity.

H_5: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and increase productivity.

H_6: A positive relationship is predicted between *Internal agents Factor 1 - internal agents* with authority and increase productivity.

H_7: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and increase productivity.

Observed variable 3 - **Improve the company's image and/or reputation**

H_8: A positive relationship is predicted between *Legal requirements* and improve the company's image and/or reputation.

H_9: A positive relationship is predicted between *Social aspects* and improve the company's image and/or reputation.

H_{10}: A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation.

H_{11}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention and treatment* and improve the company's image and/or reputation.

H_{12}: A positive relationship is predicted between *Visibility of the disease* and improve the company's image and/or reputation.

H_{13}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve the company's image and/or reputation.

H_{14}: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and improve the company's image and/or reputation.

Observed variable 4 – **ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality**

H_{15}: A positive relationship is predicted between *Business case elements* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

H_{16}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

H_{17}: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

Observed variable 5 – **improve employee morale**

H_{18}: A positive relationship is predicted between *Legal requirements* and improve employee morale.

H_{19}: A positive relationship is predicted between *Social aspects* and improve employee morale.

H_{20}: A positive relationship is predicted between *Business case elements* and improve employee morale.

H_{21}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and improve employee morale

H_{22}: A positive relationship is predicted between *Visibility of the disease* and improve employee morale.

H_{23}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve employee morale.

H_{24}: A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and improve employee morale.

Observed variable 6 – **reduce medical aid/health insurance**

H_{25}: A positive relationship is predicted between *Social aspects* and reduce medical aid/health insurance.

H_{26}: A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance.

H_{27}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and reduce medical aid/health insurance.

H_{28}: A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance.

Observed variable 7 - **create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff**

H_{29}: A positive relationship is predicted between *Legal requirements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{30}: A positive relationship is predicted between *Social aspects* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{31}: A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{32}: A positive relationship is predicted between V*oluntary regulation Factor 2 - voluntary prevention* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{33}: A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{34}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents* with authority and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

H_{35}: A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

11.7.2 Model fit

Before the hypotheses were tested, the goodness of fit indices was examined to establish if the data fit the hypothesized model. The standardised residual and goodness of fit analysis was used to consider model fit. Table 88 illustrates the total model fit statistics for the path model.

Table 11.81. Goodness of fit values for the total endogenous measurement model.

Test of Model Fit									
Satorra Bentler chi-square				RMSEA			CFI	TLI	SRMR
Value	Degrees of freedom	p value	Scaling correction factor for MLR	Estimate	RMSEA p value (< = 0.05)	90% CI			
18.642	14	0.179	1.229	0.033	0.756	0.000 0.068	0.995	0.974	0.036

As shown in Table 81, the RMSEA = 0.033, p = 0.756, 90% CI (0.000, 0.068). This was indicative of good fit as per the applied cut-off criteria. The SRMR value of 0.036 also indicated good fit. The CFI (0.995) and TLI (0.974) were also indicative of good fit. Based on the presented fit indices empirical support was found for the validity of the proposed model. The Satorra Bentler chi-square and RMSEA fit indices in Table 88 were used to accept or reject the null hypotheses of exact and close fit:

H_0: The data fit the proposed model precisely.

Given the p-value generated for the Satorra-Bentler chi-square non-significant (p = 0.134); the null hypothesis of exact fit could not be rejected. The model therefore fit the data precisely. Since the null hypotheses of close fit could not be rejected, there is no need to interpret the alternative hypotheses (**H_A:** The data fit the proposed model closely).

The results of the model parameters for the proposed path model are presented next.

11.7.3 Model parameters and Hypothesis testing

Based on the standardised factor loadings it was possible to confirm or reject the hypotheses between the independent and dependent variables. According to Pallant (2010) the practical significance (size and direction of the relationship) and the statistical significance (significance level achieved) should be considered. Hypotheses were therefore judged according to three criteria:

1. Direction of relationship (i.e. sign)
2. Statistical significance
3. Magnitude of model parameter

Table 82 indicates the standardised and unstandardised factor loading for the total path model. A total of 18 of the 35 (51%) path coefficients were statistically significant ($p < 0.05$). However only 10 (28.57%) path coefficients were supported all three criteria specified above.

Table 11.82. Standardised and unstandardised factor loading for the total path model.

Hypothesis		Unstandardised factor loadings		Standardised factor loadings	
		Estimate	p-value	Estimate	p-value
H_1:	A positive relationship is predicted between *Legal requirements* and increase in profits.	0.105	0.135	0.063	0.134
H_2:	A positive relationship is predicted between *Social aspects* and increase in profits	0.015	0.704	0.016	0.703
H_3:	A positive relationship is predicted between *Social aspects* and increase productivity	-0.049	0.283	-0.047	0.280
H_4:	A positive relationship is predicted between *Business case elements* and increase productivity	-0.074	0.207	-0.051	0.197
H_5:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and increase productivity	0.043	0.475	0.024	0.471
H_6:	A positive relationship is predicted between Internal agents Factor 1 - internal agents with	0.114	0.642	0.068	0.642
H_7:	A positive relationship is predicted between Internal agents Factor 2 - External influences and increase productivity	-0.090	0.692	-0.057	0.689
H_8:	A positive relationship is predicted between *Legal requirements* and improve the company's image and/or reputation	0.212	0.059	0.095	**0.048**
H_9:	A positive relationship is predicted between *Social aspects* and improve the company's image and/or reputation	-0.383	0.000	-0.306	**0.000**
H_{10}:	A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation	0.412	0.000	**0.233**	**0.000**
H_{11}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention and treatment* and improve the company's image and/or reputation	-0.096	0.300	-0.045	0.298
H_{12}:	A positive relationship is predicted between *Visibility of the disease* and improve the company's image and/or reputation	0.218	0.067	**0.111**	0.084
H_{13}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve the company's image and/or reputation	0.353	0.037	**0.174**	**0.021**
H_{14}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences* and improve the company's image and/or reputation	-0.247	0.029	0.129	**0.014**
H_{15}:	A positive relationship is predicted between *Business case elements* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	-0.113	0.059	-0.090	0.058
H_{16}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and ensure that management's attention is not diverted from strategic issues to cope with high workforce morbidity and mortality	1.205	0.000	**0.843**	**0.000**
H_{17}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	-1.126	0.000	-0.832	**0.000**
H_{18}:	A positive relationship is predicted between *Legal requirements* and improve employee morale	0.082	0.288	0.045	0.271
H_{19}:	A positive relationship is predicted between *Social aspects* and improve employee morale	-0.360	0.000	-0.351	**0.000**
H_{20}:	A positive relationship is predicted between *Business case elements* and improve employee morale	0.324	0.000	**0.225**	**0.000**
H_{21}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and improve employee morale	-0.083	0.316	-0.048	0.315
H_{22}:	A positive relationship is predicted between *Visibility of the disease* and improve employee morale	0.221	0.025	**0.138**	**0.029**
H_{23}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve employee morale	0.127	0.424	0.077	0.413

Hypothesis		Unstandardised factor loadings		Standardised factor loadings	
		Estimate	p-value	Estimate	p-value
H_{24}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and improve employee morale	-0.154	0.191	-0.098	0.160
H_{25}:	A positive relationship is predicted between *Social aspects* and reduce medical aid/health insurance	-0.285	0.000	-0.342	**0.000**
H_{26}:	A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance	0.205	0.007	**0.175**	**0.012**
H_{27}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and reduce medical aid/health insurance	-0.049	0.501	-0.035	0.506
H_{28}:	A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance	0.292	0.000	**0.224**	**0.000**
H_{29}:	A positive relationship is predicted between *Legal requirements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	0.079	0.427	0.043	0.429
H_{30}:	A positive relationship is predicted between *Social aspects* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	-0.325	0.000	-0.311	**0.000**
H_{31}:	A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	0.219	0.005	**0.149**	**0.007**
H_{32}:	A positive relationship is predicted between V*oluntary regulation Factor 2 - voluntary prevention* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	-0.027	0.745	-0.015	0.745
H_{33}:	A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	0.378	0.000	**0.231**	**0.000**
H_{34}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents* with authority and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.	-1.718	0.000	-1.019	**0.000**
H_{35}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	1.640	0.000	**1.027**	**0.000**

H_1: A positive relationship is predicted between *Legal requirements* and increase in profits.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis was therefore rejected.

H_2: A positive relationship is predicted between *Social aspects* and increase in profits

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_2 was therefore rejected.

H_3: A positive relationship is predicted between *Social aspects* and increase productivity

H_4: A positive relationship is predicted between *Business case elements* and increase productivity

H_5: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and increase productivity

H_6: A positive relationship is predicted between *Internal agents Factor 1 - internal agents* with and increase productivity

H_7: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and increase productivity

No empirical support was found for the proposed linkages for hypotheses H_3, H_4, H_5, H_6 and H_7 and an increase in productivity because the relationships were not statistically significant. These hypotheses were therefore rejected.

H_8: A positive relationship is predicted between *Legal requirements* and improve the company's image and/or reputation.

This hypothesis was statistically significant and therefore empirical support was found for the proposed linkage. The next step involved looking at the direction and magnitude of the relationship of the item. A positive relationship between legal requirements and the company's image and/or reputation was predicted and found, however the magnitude of the relationship was not strong enough. This relationship was therefore not validated and the hypothesis H_8 was rejected.

H_9: A positive relationship is predicted between *Social aspects* and improve the company's image and/or reputation.

The relationship was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship between social aspects and the company's image and/or reputation was predicted however a negative relationship was found with regard to H_9. This relationship was therefore not validated and the hypothesis H_9 was rejected.

H_{10}: A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation.

The relationship for hypothesis H_{10} was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship between business case elements and the company's image and/or reputation was predicted and was found. The magnitude of this relationship was 0.233. The hypothesis H_{10} could not be rejected.

H_{11}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention and treatment* and improve the company's image and/or reputation.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{11} was rejected.

H_{12}: A positive relationship is predicted between *Visibility of the disease* and improve the company's image and/or reputation.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{12} was rejected.

H_{13}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve the company's image and/or reputation.

The relationship for hypothesis H_{13} was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship between internal agents factor 1 – internal agents with authority and the company's image and/or reputation was predicted and was found. The magnitude of this relationship was 0.174. The hypothesis H_{13} could not be rejected.

H_{14}: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and improve the company's image and/or reputation.

A positive relationship was predicated between internal agents factor 2 - external influences and improve the company's image and/or reputation. A statistically significant yet negative relationship was empirically found. Thus hypothesis H_{14} was not considered to be empirically corroborated and therefore rejected.

H_{15}: A positive relationship is predicted between *Business case elements* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{15} was therefore rejected.

H_{16}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

The relationship for hypothesis H_{16} was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship was predicted and was found. The magnitude of this relationship was 0.843 was very strong. The hypothesis H_{16} could not be rejected.

H_{17}: A positive relationship is predicted between *Internal agents Factor 2 - External influences* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.

A positive relationship was predicated for H_{17} but a statistically significant yet negative relationship was empirically found. Therefore hypothesis H_{17} was rejected.

H_{18}: A positive relationship is predicted between ***Legal requirements*** and improve employee morale.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{18} was rejected.

H_{19}: A positive relationship is predicted between ***Social aspects*** and improve employee morale.

The relationship was statistically significant but a positive relationship was predicted however a negative relationship was found with regard to H_{19}. Hypothesis H_{19} was rejected.

H_{20}: A positive relationship is predicted between *Business case elements* and improve employee morale.

The relationship for hypothesis H_{20} was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship was predicted and found. The magnitude of this relationship was 0.225. Hypothesis H_{20} could not be rejected.

H_{21}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and improve employee morale

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{21} was rejected.

H_{22}: A positive relationship is predicted between *Visibility of the disease* and improve employee morale.

The relationship for hypothesis H_{22} was statistically significant and therefore empirical support was found for the proposed linkage. A positive relationship was predicted and found. Hypothesis H_{22} could not be rejected.

H_{23}: A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve employee morale.

There was no statistically significant relationship or empirical support for the proposed linkage, therefore hypothesis H_{23} was rejected.

H_{24}: A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and improve employee morale.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{24} was rejected.

H_{25}: A positive relationship is predicted between *Social aspects* and reduce medical aid/health insurance.

A statistically significant but negative relationship was found for the proposed linkage. Hypothesis H_{25} was rejected.

H_{26}: A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance.

A positive relationship was predicated and was empirically found for H_{26}. Therefore hypothesis H_{26} could not be rejected.

H_{27}: A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and reduce medical aid/health insurance.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{27} was rejected.

> **H_{28}:** A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance.

A positive relationship was predicated and was empirically found for H_{28}. Therefore hypothesis H_{28} could not be rejected.

> **H_{29}:** A positive relationship is predicted between *Legal requirements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{29} was rejected.

> **H_{30}:** A positive relationship is predicted between *Social aspects* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

A positive relationship was predicated and yet a statistically significant negative relationship was empirically found for H_{30}. Therefore hypothesis H_{30} was rejected.

> **H_{31}:** A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

A positive relationship was predicated a statistically significant relationship was found for hypothesis H_{31}. The hypothesis H_{31} could not be rejected.

> **H_{32}:** A positive relationship is predicted between V*oluntary regulation Factor 2 - voluntary prevention* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

Given that the relationship was not statistically significant, no empirical support was found for the proposed linkage. This hypothesis H_{32} was rejected.

H_{33}: A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

A positive relationship was predicated and empirically found for hypothesis H_{33}. Hypothesis H_{33} could not be rejected.

H_{34}: A positive relationship is predicted between *Internal agents Factor 1 - internal **agents*** with authority and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

A positive relationship was predicated and yet a statistically significant negative relationship was empirically found for H_{34}. Therefore hypothesis H_{34} was rejected.

H_{35}: A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

A positive relationship was predicated and empirically found for hypothesis H_{35}. The hypothesis H_{35} could not be rejected.

Table 83 summarises the findings from the analysis of the hypotheses.

Table 11.83. Summary of the hypotheses.

Observed variable		Hypothesis	Statistical significance	Direction of relationship	Magnitude	Overall conclusion	Hypothesis
Profit	H_1:	A positive relationship is predicted between *Legal requirements* and increase in profits	Non-significant	Positive	0.063	Not Supported	Rejected
	H_2:	A positive relationship is predicted between *Social aspects* and increase in profits	Non-significant	Positive	0.016	Not Supported	Rejected
Increase productivity	H_3:	A positive relationship is predicted between *Social aspects* and increase productivity	Non-significant	Negative	-0.047	Not Supported	Rejected
	H_4:	A positive relationship is predicted between *Business case elements* and increase productivity	Non-significant	Negative	-0.051	Not Supported	Rejected
	H_5:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and increase productivity	Non-significant	Positive	0.024	Not Supported	Rejected
	H_6:	A positive relationship is predicted between Internal agents Factor 1 - internal agents with	Non-significant	Positive	0.068	Not Supported	Rejected
	H_7:	A positive relationship is predicted between Internal agents Factor 2 - External influences and increase productivity	Non-significant	Negative	-0.057	Not Supported	Rejected
Improve the company's image and/or reputation	H_8:	A positive relationship is predicted between *Legal requirements* and improve the company's image and/or reputation	Significant	Positive	0.095	Not Supported	Rejected
	H_9:	A positive relationship is predicted between *Social aspects* and improve the company's image and/or reputation	Significant	Negative	-0.306	Not Supported	Rejected
	H_{10}:	A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation	Significant	Positive	0.233	**Supported**	**Could not be rejected**
	H_{11}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention and treatment* and improve the company's image and/or reputation	Non-significant	Negative	-0.045	Not Supported	Rejected
	H_{12}:	A positive relationship is predicted between *Visibility of the disease* and improve the company's image and/or reputation	Non-significant	Positive	0.111	Not Supported	Rejected
	H_{13}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve the company's image and/or reputation	Significant	Positive	0.174	**Supported**	**Could not be rejected**
	H_{14}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences* and improve the company's image and/or reputation	Significant	Negative	0.129	Not Supported	Rejected
Strategic and operational issues	H_{15}:	A positive relationship is predicted between *Business case elements* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	Non-significant	Negative	-0.090	Not Supported	Rejected
	H_{16}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	Significant	Positive	0.843	**Supported**	**Could not be rejected**
	H_{17}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	Significant	Negative	-0.832	Not Supported	Rejected

Observed variable		Hypothesis	Statistical significance	Direction of relationship	Magnitude	Overall conclusion	Hypothesis
Improve employee morale	H_{18}:	A positive relationship is predicted between *Legal requirements* and improve employee morale	Non-significant	Positive	0.271	Not Supported	Rejected
	H_{19}:	A positive relationship is predicted between *Social aspects* and improve employee morale	Significant	Negative	-0.351	Not Supported	Rejected
	H_{20}:	A positive relationship is predicted between *Business case elements* and improve employee morale	Significant	Positive	0.225	**Supported**	**Could not be rejected**
	H_{21}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and improve employee morale	Non-significant	Negative	-0.048	Not Supported	Rejected
	H_{22}:	A positive relationship is predicted between *Visibility of the disease* and improve employee morale	Significant	Positive	0.138	**Supported**	**Could not be rejected**
	H_{23}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve employee morale	Non-significant	Positive	0.077	Not Supported	Rejected
	H_{24}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and improve employee morale	Non-significant	Negative	-0.098	Not Supported	Rejected
Reduce medical aid/health insurance	H_{25}:	A positive relationship is predicted between *Social aspects* and reduce medical aid/health insurance	Significant	Negative	-0.342	Not Supported	Rejected
	H_{26}:	A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance	Significant	Positive	0.175	**Supported**	**Could not be rejected**
	H_{27}:	A positive relationship is predicted between *Voluntary regulation Factor 2 - voluntary prevention* and reduce medical aid/health insurance	Non-significant	Negative	-0.035	Not Supported	Rejected
	H_{28}:	A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance	Significant	Positive	0.224	**Supported**	**Could not be rejected**
Create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	H_{29}:	A positive relationship is predicted between *Legal requirements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Non-significant	Positive	0.043	Not Supported	Rejected
	H_{30}:	A positive relationship is predicted between *Social aspects* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Significant	Negative	-0.311	Not Supported	Rejected
	H_{31}:	A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Significant	Positive	0.149	**Supported**	**Could not be rejected**
	H_{32}:	A positive relationship is predicted between V*oluntary regulation Factor 2 - voluntary prevention* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Non-significant	Negative	-0.015	Not Supported	Rejected
	H_{33}:	A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Significant	Positive	0.231	**Supported**	**Could not be rejected**
	H_{34}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents* with authority and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.	Significant	Negative	-1.019	Not Supported	Rejected
	H_{35}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	Significant	Positive	1.027	**Supported**	**Could not be rejected**

Because some of the dependent variables in the model had more than one independent variable contributing to the reported variance, it was necessary to report on the R-square values (Table 84). The R^2 value shows the true variance in the item as explained by the latent factor and therefore larger values (preferably > 0.25) are preferred (Kline, 2005).

Table 11.84. R-square values for the total path model.

Observed variable	**R-Square**	
	Estimate	**p-value**
1. Increase in profits	0.005	0.401
2. Increase productivity	0.007	0.390
3. Improve the company's image and/or reputation	**0.264**	0.000
4. Ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality	0.063	0.091
5. Improve employee morale	**0.261**	0.000
6. Reduce medical aid/health insurance	**0.249**	0.000
7. Create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	**0.332**	0.000

Table 84 revealed statistically significant R^2 values for *3-Improve the company's image and/or reputation; 5-Improve employee morale; 6-Reduce medical aid/health insurance and 7-Create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.* Model R^2 values were not statistically significant for *1-Increase in profits; 2-Increase productivity and 4-Ensure that management's attention is not diverted from strategic and operational issues.*

11.8 Modification indices

The ultimate step in the path modelling process is the consideration of model modification in order to improve model fit. Given that the primary research objective was to evaluate the proposed theoretical model, model modification fell beyond the scope of this study and was therefore not engaged in. Kline (2011) argued that re-specification and modification of the model should be administered strictly based on theoretical evidence. In view of the argument the need to re-specify the structural model was not necessary.

11.9 Summary

This chapter discussed the results and analysis of the survey questionnaire. The descriptive statistics, EFA, reliability analysis and CFA were considered. Descriptive statistics in the form of the mean, median, mode and standard deviation were calculated using SPSS (version 21). The skewness and kurtosis were also calculated. The robust maximum likelihood was used to account for the non-normal data identified by the negatively skewed items.

The reliability analysis, EFA and CFA were used to assess the tenability of the measurement model. Kaiser-Myer-Olkin measure of sampling and Bartlett's test of sphercity was used to determine the suitability of the data for factor analysis. CFA was used to provide the goodness of fit statistics and the theoretical model was tested and evaluated for model fit using path modelling and the Mplus (version 7.11) software. Thirty five hypotheses were tested of which ten could not be rejected. Chapter 12 discusses and interprets the results of the model hypotheses.

CHAPTER 12

DISCUSSION OF FINAL MODEL

12.1 Introduction

This chapter discusses the findings from the structural model. The primary aim of this study was to identify drivers that could be used to develop and validate a model for the effective management of HIV and AIDS in the South African construction industry. The discussion and results therefore focus on the model fit and the hypotheses, which are discussed in relation to existing literature.

12.2 Descriptive data analysis

Section A of the questionnaire collected demographic information on the individual firms that participated in the survey. Most of the respondents were quantity surveyors, closely followed by project managers and human resource managers and the majority of the firms (68%) were general contractors from KwaZulu-Natal. Seventy three percent of the firms were regarded as small firms as they employed less than 100 employees. The majority of firms (85.48%) were registered in grades 2 to 6 of the CIDB register of contractors. The industry is still male dominated with firms employing between 80-99% male employees.

An overwhelming majority (79.7%) of the respondents reported that they did not have a HIV and AIDS policy or programme. The reasons given were, namely:

- cost;
- time constraints;
- lack of resources and
- HIV and AIDS is being considered a low business priority.

This finding also ties in with findings from Ala (2004); BAA (2007); BER/SABCOHA (2005); Bowen, *et al.* (2010a,b); Connelly & Rosen (2005a,b); Haacker (2004); Mahajan, *et al.* (2007); Rosen, Bii, Fox, Hamazakaza, Larson, Long & Simon (2006); Rosen, Feeley, Connelly & Simon (2006); Van Dyk (2008) and Weston, Churchyard, Mametja, McIntyre and Randera (2007). Due to most of the respondents being small firms, this finding is not surprising.

Sixty one percent of the respondents felt that HIV and AIDS had a moderate to high impact on the morale of the workforce. This finding could be attributed to the fact that they did not have a HIV and AIDS policy and therefore were not aware of the true extent or impact that HIV and AIDS was having on their workforce. This assumption was confirmed when 81% of the respondents did not believe that they had done enough to assist their employees in terms of HIV and AIDS.

Section B of the questionnaire determined the descriptive statistics (mean, median, mode and standard deviation) of the HIV and AIDS drivers. Skewness and kurtosis were also evaluated.

Section C of the questionnaire comprised five questions that collected general information on HIV and AIDS. The respondents regarded the most important steps for implementing a HIV and AIDS policy as

- development and implementation of a HIV and AIDS policy;
- development and implementation of an integrated HIV and AIDS programme; and
- monitoring, evaluation and review of HIV and AIDS workplace policies and programmes.

HIV and AIDS programmes were only presented in 7 of the 11 official languages in South Africa. Most programmes were presented in either English or isiZulu. Thirty two percent of the respondents used brochures/pamphlets/flyers to inform their staff about HIV and AIDS in their firms. The other commonly used interventions were induction programmes, posters and toolbox talks. Finally, 47.6% believed that there should be a compulsory, industry-wide initiative funded via levies which included education, testing and treatment programmes in order to assist them in implementing a HIV and AIDS programme. Thirty five percent also believe that the CIDB should assume a leadership role in order to provide unifying action.

12.3 Model fit hypothesis results

This section discusses the extent to which the proposed theoretical model fits the study data. Table 12.1 indicates the formulated hypotheses as well as the empirical findings in terms of significance and outcome.

Table1012.1 Final model fit results.

Hypothesis		Significance		Outcome
H_o	The data fit the proposed model precisely.	√	Chi-square	Hypothesis could not be rejected

Table 12.1 indicates that the Satorra-Bentler chi-square was non-significant ($p = 0.134$), the null hypothesis of perfect fit (hypothesis H_0) could not be rejected. The model therefore fit the data precisely.

12.4 Hypothesized relations in the proposed path model

This section discusses the hypothesized relationships (Hypotheses H_1 to H_{35}) between the drivers and the seven observed variables.

12.4.1 Legal driver

Having a workplace policy is the most effective action an organisation can take in the fight against HIV and AIDS (ILO, 2002) because it protects both infected and non-infected employees and the employer from any legal consequences (Alcamo, 2003; Page, *et al*., 2006; Paul, 2003; Rau, 2004; Walch, Lezama & Giddie, 2005). Besides being a formal acknowledgement by firms that HIV and AIDS is a workplace issue (Department of Labour, 2000a, b; Dickinson & Innes, 2004; ILO, 2008; Van Dyk, 2008) it also provides guidelines on employer and employee rights and responsibilities in the context of HIV and AIDS (ILO, 2001, 2008; Rau, 2004; UNAIDS, 2003).

The South African government responded to the threat of HIV and AIDS through provision of a legal framework of various Acts of Parliament, namely:

- the Constitution of South Africa (No. 108 of 1996),
- the Employment Equity Act (No. 55 of 1998),
- the Labour Relations Act (No. 66 of 1995),
- the Medical Schemes Act (No. 131 of 1998),
- Occupational Health and Safety Act (No. 85 of 1993),
- the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 (COIDA) and
- the Basic Conditions of Employment Act (No. 75 of 1997) (Department of Labour,

1997, 1998; South African Government, 1993, 1995,1996, 1998).
South African companies have to comply with HIV and AIDS laws such as, the prohibition of discrimination on the grounds of HIV status regardless of whether they have an HIV and AIDS policy or not (Dickinson & Innes, 2004).

After the extensive testing carried out in this study via the EFA, CFA and path modelling process, the legal driver which one would assume would be an important first step towards effective HIV and AIDS management did not emerge as an important driver. The Delphi participants had also regarded the legal driver as most important and one that could have the second largest impact. The legal aspects did not result in organisations implementing policies or programmes in which they could see the advantages or effect on profitability, company image and/or reputation, employee morale, medical aid/health insurance and on the environment, openness, disclosure and acceptance of HIV and AIDS among all staff. Hypotheses H_1, H_8, H_{18} and H_{29} were therefore not supported.

These findings verified the studies by Bowen, *et al.* (2010) of construction firms in the Western Cape which found that organisations had awareness policies in place but prevention and treatment policies were less common. The study by Harinarain & Haupt (2010) found that only 10% of 123 building contractors in KwaZulu-Natal had HIV and AIDS policies in place which decreased to 8% of 123 construction firms in KwaZulu-Natal in 2011. Five years after the study carried out by Whelan, Dickinson & Murray (2008:384) this research can confirm the sentiments that even though there were Acts and guidelines in place, these were just '*defenceless documents that were easily circumvented*'.

12.4.2 Social elements

The social driver involves the relationships between business and all other major social actors, such as unions, surrounding communities as well as the pressures that are exerted on business by the response or non-response of other businesses.

Companies are being pressured to make a positive contribution to society in the fight against HIV and AIDS via Corporate social responsibility (CSR) (Barnett & Whiteside, 2006; Bendell, 2003; Bloom, Mahal & River Path Associates, 2001; Dickinson, 2004b; George, *et al.*, 2009; Nattrass, *et al.*, 2004; ODI, 2007). Failure by firms to address AIDS may impact negatively on their reputation and, consequently, their bottom line. The implications of no action included, among others, threats to profitability, corporate social responsibility and increased mortality of the workforce. The construction sector within South Africa has been criticised for its lack of activities aimed at mitigating the impact of HIV and AIDS on its employees (George, *et al.*, 2009).

It is important for business to engage in community based interventions because these communities supply the labour that the firms employ. Both employers and employees should promote and encourage information and education programmes within the local community (Daly, 2000; Department of Social Development, 2002; ILO, 2003; Lamptey, *et al.*, 2003; Rau, 2004; Simon-Meyer, 2005). By actively participating in this fight against HIV and AIDS, the construction industry can protect itself, improve the quality of life its employees and also assist the community.

Eight indicators were used initially to measure the social aspects of effective HIV and AIDS management but after the Delphi study this was reduced to 4 items. The Delphi participants did not think that the social driver was important. In fact they rated it as least important, nor did they think that it would have any impact on business.

The EFA and CFA indicated poor model fit and therefore the exclusion of this driver from the final model was not entirely unexpected. The social aspects did not result in organisations implementing policies or programmes in which they could see the advantages or effect on profitability, productivity, employee morale, medical aid/health insurance and on the environment, openness, disclosure and acceptance of HIV and AIDS among all staff. Hypotheses H_2, H_3, H_9, H_{19}, H_{25} and H_{30} were therefore not supported.

12.4.3 Business case elements

The business driver was seen as the most obvious driver in prompting a corporate response to HIV and AIDS, but it has not always been easy as it requires reliable information to show the impact of HIV and AIDS on the companies' bottom line.

There is a strong business case for the corporate response against AIDS (Lutalo, 2006) as the pandemic is having an extensive financial impact on business (BER/SABCOHA, 2004; Evian, 2008; George, 2006). Firms experience increased costs and decreasing profits as a result of falling productivity, increased labour costs, increased absenteeism from work due to morbidity and attendance at funerals, increase recruitment and training costs, decreasing staff morale and the loss of skills and experience. Fatigue results in frequent accidents in the workplace. The loss of employees to the disease results in increased costs to the company in terms of replacing those skills lost and /or training new employees. In addition, stigma and discrimination have resulted in the violation of fundamental rights at work (Ala, 2004; BAA, 2007; BER, 2000;

BER/SABCOHA, 2004, 2005; Bendell, 2003; Bloom, Mahal & River Path Associates, 2001; Bloom, Rosenfield & River Path Associates, 2000; Colvin, Connolly & Madurai, 2007; Daly, 2000; Dickinson, 2004a,b; Dickinson, 2006a; ILO, 2010; Kyereh & Hoffman, 2008; Lutalo, 2006; Nattrass, *et al.*, 2004; Oppenheimer, 2007; ODI, 2007; Rosen, Feeley, Connelly & Simon, 2007; Rosen, Vincent, MacLeod, Fox, Thea & Simon, 2004; Rothberg & Van Huyssteen, 2008; Whiteside & Sunter, 2000). It therefore makes good business sense to address HIV and AIDS in the workplace.

The benefits that could be gained from companies by taking action include productivity gain, increased life expectancy and reduced morbidity, time for drug prices to fall, skills development, improved morale and workplace cohesion, healthier workforce and community, decreased absenteeism due to illness and caring for sick family members, de-stigmatises disease for employees, reduces the time managers and supervisors must spend coping with employee deaths and high turnover rates, improved sustainability of company operations and sustained operations which ensured continued growth (Nattrass, *et al.*, 2004; Rosen, Simon, Thea & Vincent, 2000a).

Business has the skills, imagination, innovation, creativity, mass communication skills, information, marketing and the drive to enhance their image and to assist with increasing employee morale (Ala, 2004; Bendell, 2003; BER/SABCOHA, 2004; Bloom, Mahal & River Path Associates, 2001, Bloom, Rosenfield & River Path Associates, 2000; Nattrass, *et al.*, 2004; Weston, Churchyard, Mametja, McIntyre & Randera, 2007) Business must grasp the opportunity to make a difference (Bloom, Bloom, Steven & Weston, 2006; Bloom, Rosenfield & River Path Associates, 2000).

The literature review identified twenty elements for the business case driver. After the Delphi study two indicators which did not meet consensus were removed. The Delphi participants did not think the business driver was very important and only ranked it 4 out of 6 in terms of importance. They also did not think it would have a great impact on organisations as it was only rated 5 out of 6 in terms of impact.
In order to arrive at a succinct and clear factor solution for the construct eleven items were deleted in the exploratory factor analysis due to the content overlap of certain items and high communality values. The confirmatory factor analysis revealed good model fit but a further four items were removed when the model was refined.

Hypotheses H_4, H_{15} were rejected. Given this finding, it was unexpected that this driver would do so well in the path modelling process. In fact the business case driver outperformed all the other drivers in that it had a direct positive effect on improving the company image and/or reputation (H_{10}), improving employee morale (H_{20}), reducing medical aid/health insurance (H_{26}) and creating an environment that is conducive to openness (H_{31}), disclosure and acceptance of HIV and AIDS among all staff.

12.4.4 Voluntary regulation

To guide the private sector in dealing with those infected and affected by HIV and AIDS, various government departments and organisations have written up polices and guidelines. However unlike the mandatory requirements of the legislative framework, these policies and codes are voluntary frameworks for action. Some of the advantages that can be derived from the use of these codes are positive publicity and good risk management. These codes include:

- HIV/AIDS and STD Strategic Plan for South Africa 2000–2005;
- Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment;
- HIV and AIDS and STI Strategic Plan for South Africa, 2007-2011;
- National Strategic Plan (NSP) on HIV, STIs and TB (2012-2016);
- South African Code of Good Practice on Key Aspects of HIV/AIDS and Employment and the HIV/AIDS Technical Assistance Guidelines;
- Department of Public Works HIV/AIDS Awareness Programme Training Manual;
- ILO Code of Practice on HIV/AIDS and the World of Work;
- ILO Guidelines for the construction sector; and
- the two financial reporting guidelines the King III report and the Global Reporting Initiative (Department of Health, 2000, 2003; Department of Labour, 2000b; Department of Public Works, 2004; Global Reporting Initiative, 2003; ILO, 2008, 2010; Institute of Directors in Southern Africa, 2009; SANAC, 2007, 2011).

The elements of voluntary regulation was not regarded as important (ranked 5 out of 6) or having a high impact (ranked 4 out of 6) by the Delphi participants. After the exploratory factor analysis the driver voluntary regulation emerged with two factors, factor 1 - voluntary procedures and factor 2 - voluntary prevention and treatment. Voluntary regulation factor 1 - voluntary procedures did not perform well in the confirmatory factor analysis and reported really poor goodness of fit measures. Due to this the decision was taken to remove this subscale from further analysis as it could result in an unstable model. Voluntary regulation factor 2 - voluntary prevention and treatment presented mixed evidence in terms of model fit and it was noted with concern that the model failed to display the desired levels of fit across most of the indices. It was therefore not surprising that this driver did not emerge as an important driver for effective HIV and AIDS management. Voluntary regulation did not have any effect on profitability, productivity, company image and/or reputation, sustained strategic focus, employee morale, medical aid/health insurance and on the environment, openness, disclosure and acceptance of HIV and AIDS among all staff. Hypotheses H_5, H_{11}, H_{21}, H_{27} and H_{32} were all rejected.

12.4.5 Visibility of the disease

The lack of visibility (as a result of the biological nature of HIV and AIDS and the stigma and discrimination) of HIV and AIDS resulted in a slow and reactive response by industry.

Stigma and discrimination have also hampered prevention, treatment and testing efforts and remains a major barrier to effective action in this fight against HIV and AIDS (Bowser, *et al.*, 2004; Dickinson, 2005; Karim & Karim, 2005; Piot, *et al.*, 2001).

The consequences of stigma and discrimination of people living with HIV and AIDS is that they force infected people to hide or deny their condition and to continue engaging in high-risk behaviours. Both silence and denial about HIV and AIDS are lethal because they prevent people from accurately assessing their own personal infection risk (Bowen, *et al.*, 2010a, b; SANAC, 2007). A climate of discrimination and lack of respect for human rights leaves workers more vulnerable to infection and less able to cope with AIDS because it makes it difficult for them to seek voluntary testing, counselling, treatment and support (UNAIDS, 2007).

In the workplace, employees experience discrimination when they are treated unfairly and unjustly on the basis of their actual or perceived HIV status. HIV positive employees bare the brunt of stigma and discrimination from co-workers, supervisors and managers in the form of being dismissed from work, being relocated to another position or having their job benefits limited (Dickinson, 2003a). According to Dickinson (2003a), HIV and AIDS stigma impacts on the workplace by lowering the morale of the workforce, creating a working environment in which people living with HIV and AIDS are afraid of gossip or of being suspected of being HIV positive and by undermining the overall effectiveness of the company's workplace programme.

An area where business has an opportunity to influence the course of the HIV and AIDS is by reducing the stigma around the disease and dispelling myths and reinforcing antidiscrimination policies and programs (BAA, 2007; Bloom, *et al.*, 2006; Bowser, *et al.*, 2004; Dickinson, 2004a; George, 2006; George, Gow & Whiteside, 2009; George & Quinlan, 2009; Karim & Karim, 2010; Page, *et al.*, 2006; Rau, 2004; UNAIDS, 2004, 2011a).

Medical aid/health insurance will be reduced when wellness programmes are introduced as these programmes include medical management, access to counselling and support; referral systems and partnerships with other health care providers; family assistance programmes; and reasonable accommodation for infected persons (Department of Labour, 2000b; Van Dyk, 2008).

The Delphi participants considered all six indicators for visibility of the disease as important and having a high impact in all three rounds of the Delphi study. In fact this driver was ranked second in terms of importance and first in terms of impact that is it was regarded as having the highest impact.

The CFA revealed that the visibility of the disease subscale did not fit the empirical data adequately. But, this particular subscale was considered to be very important for the measurement of HIV and AIDS perceptions in the workplace and for this reason this driver was retained. The path analysis however revealed that the driver visibility of the disease had a direct positive effect on reducing medical aid/health insurance and creating an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

Hypotheses H_{12} and H_{22} were rejected. Hypothesis H_{28} and H_{33} could however not be rejected. This implies that the more prevalent the disease is, the more a firm will invest in HIV and AIDS policies and programmes thereby reducing the burden on medical aid/health insurance. Visibility of the disease also encourages management to invest in trying to create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff.

12.4.6 Internal agents

Internal agents are individuals who worked hard to get HIV & AIDS to be taken seriously by companies.

HIV and AIDS management requires top management commitment, strong leadership and consultation and inclusion of all parties involved (Ala, 2004; Van Dyk, 2008). The fragmented nature of the construction industry and lack of leadership has resulted in the sluggish response from the construction industry (Meintjes, *et al.*, 2007). Leadership at all levels and in all sectors is critical in addressing HIV and AIDS (Bendell, 2003; BER/SABCOHA, 2005; BAA, 2007; Dickinson, 2006a; ILO, 2002, 2003; 2008; Paul, 2003; Rau, 2004).

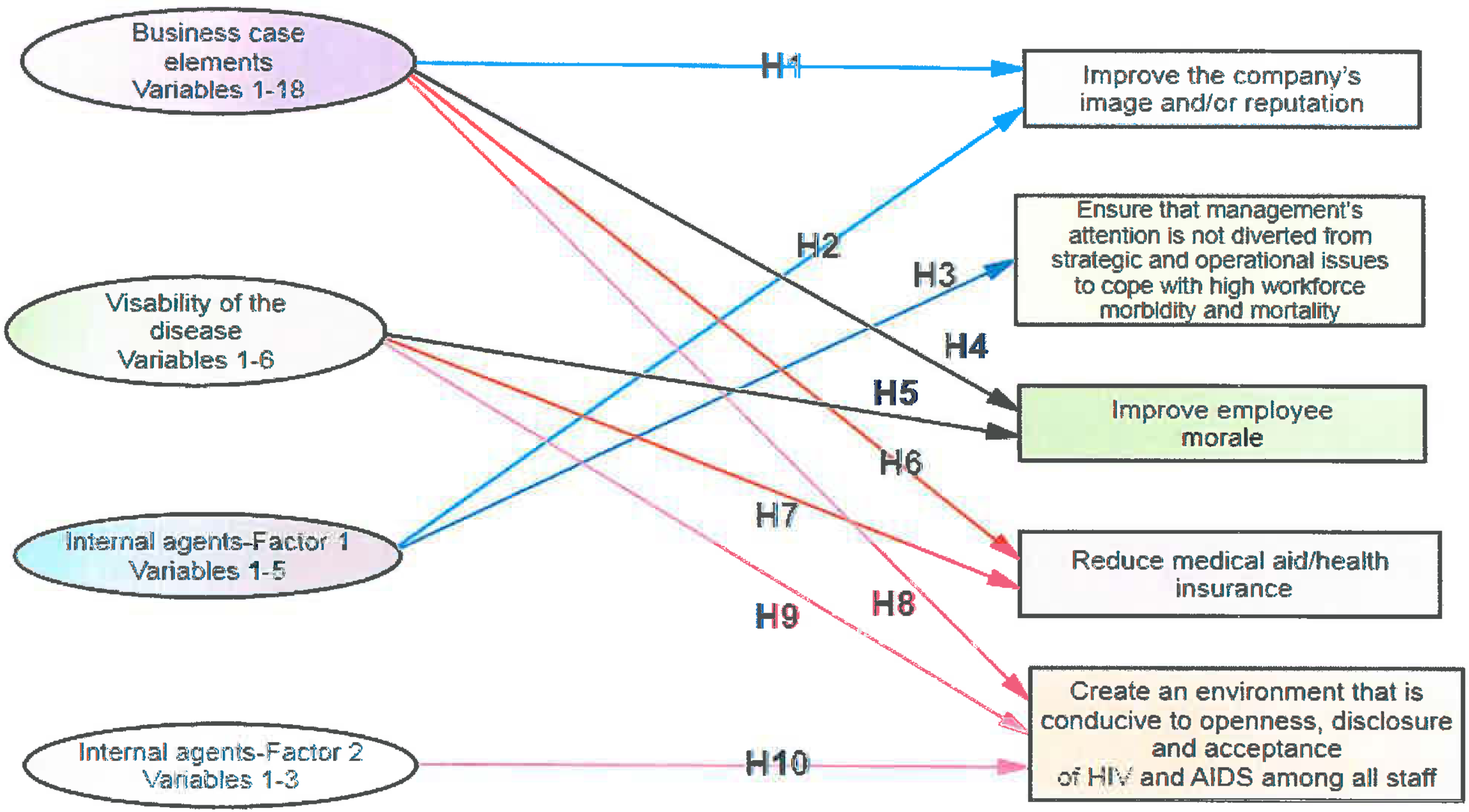


Figure 12.1 The final supported path diagram.

Table 12.2. Summary of the hypotheses.

Observed variable	Hypothesis		Hypothesis
Improve the company's image and/or reputation	H_{10}:	A positive relationship is predicted between *Business case elements* and improve the company's image and/or reputation	**Could not be rejected**
	H_{13}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and improve the company's image and/or reputation	**Could not be rejected**
Strategic and operational issues	H_{16}:	A positive relationship is predicted between *Internal agents Factor 1 - internal agents with authority* and ensure that management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality.	**Could not be rejected**
Improve employee morale	H_{20}:	A positive relationship is predicted between *Business case elements* and improve employee morale	**Could not be rejected**
	H_{22}:	A positive relationship is predicted between *Visibility of the disease* and improve employee morale	**Could not be rejected**
Reduce medical aid/health insurance	H_{26}:	A positive relationship is predicted between *Business case* elements and reduce medical aid/health insurance	**Could not be rejected**
	H_{28}:	A positive relationship is predicted between *Visibility of the disease* and reduce medical aid/health insurance	**Could not be rejected**
Create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	H_{31}:	A positive relationship is predicted between *Business case elements* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	**Could not be rejected**
	H_{33}:	A positive relationship is predicted between *Visibility of the disease* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	**Could not be rejected**
	H_{35}:	A positive relationship is predicted between *Internal agents Factor 2 - External influences with authority* and create an environment that is conducive to openness, disclosure and acceptance of HIV and AIDS among all staff	**Could not be rejected**

12.6 Summary

This chapter discussed the results of the model fit and the hypotheses in relation to existing literature. A total of twelve hypotheses were eventually accepted after the path modelling. Chapter 13 presents a brief overview of the study, highlights the key research findings, discusses limitations and provides recommendations for future research.

CHAPTER 13

CONCLUSION AND RECOMMENDATIONS

13.1 Introduction

This study adopted a positivist paradigm in order to achieve the research objective by carrying out an extensive literature review and a Delphi study validated by means of a national questionnaire the responses of which were analysed using path modelling. This chapter summarizes the key findings of the study, extrapolates from the research findings, draws conclusions and makes recommendations for future research.

13.2 Research questions, aim, objectives and key research findings

Although HIV and AIDS is not curable, it can be prevented and treated. But only a small percentage of construction firms in South Africa appear to be responding to the current impact of HIV and AIDS. The industry has yet a long way to go in terms of adequately assisting its employees in the fight against HIV and AIDS. However there are still areas for concern and room for improvement in terms of overcoming the challenges faced by firms in effective HIV and AIDS management. Ultimately, firms should try to support employees living with HIV and AIDS for as long as possible and encourage those that are negative to stay negative through behaviour change.

The aim of this research was to establish empirically the factors, namely legal requirements, social pressure, business costs, voluntary regulation, visibility of disease and individuals within the companies that would drive the construction industry to manage HIV and AIDS through the development and assessment of an effective HIV and AIDS management model.

The main research question of this study was to identify the drivers that will assist the South African construction industry to effectively manage HIV and AIDS. Of the six drivers, namely legal, social, business, voluntary regulation, visibility of the disease and internal agents only three drivers, namely business, visibility of the disease and internal agents emerged as important after the path modelling process. Due to the fact that the secondary research questions are linked to the research objectives only the research objectives are discussed below.

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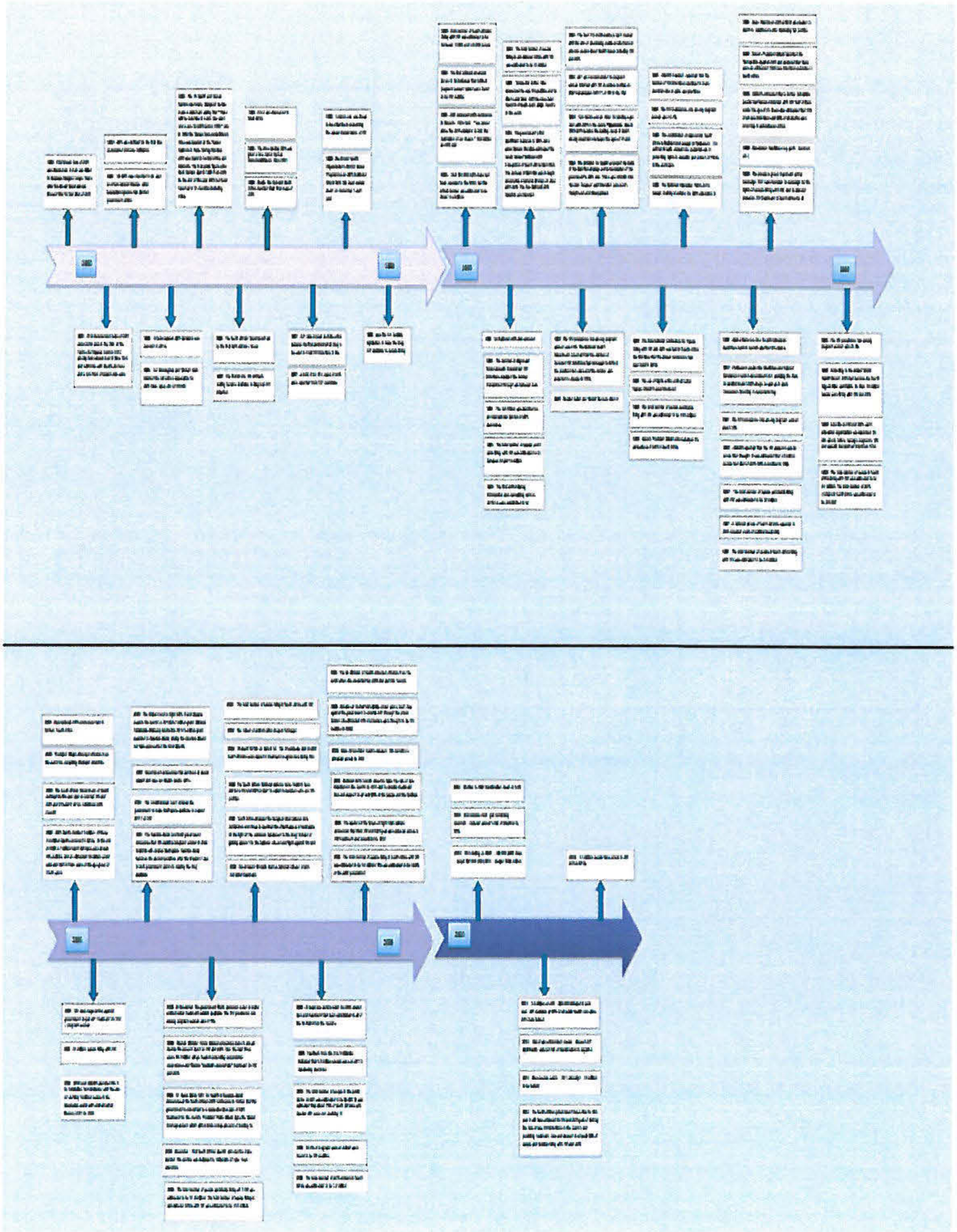
APPENDIX A

HIV and AIDS Timeline

Appendix A



APPENDIX B

HIV and AIDS Drivers

Appendix B

Appendix B

APPENDIX C

Delphi Invitation letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

3 September 2012

Dear Sir/Madam

I am currently conducting research for a Doctor of Philosophy in the School of Engineering, at the University of KwaZulu-Natal under the supervision of Professor Theo C. Haupt.

The aim of my research is to develop a model in the construction industry to effectively manage HIV and AIDS. Since I will be using the Delphi approach which uses multiple iterations designed to develop a consensus of opinion from a panel of experts such as yourself, I need to compile a panel of experts to participate in the Delphi process, who are immersed in the topic of HIV and AIDS and can provide valuable real-time and real-world input.

I invite you to participate in this study by serving on my panel of experts. If you are unable to do so, perhaps you could recommend another expert by providing me with their contact information.

Your participation is totally voluntary and your response will be strictly confidential.

If you have any questions about this research, please contact me on (+27 31 2602687) or Harinarain@ukzn.ac.za.

Let me thank you in advance for your valuable assistance.

Yours sincerely,

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Past-President: Association of Schools of Construction of Southern Africa (ASOCSA)
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APPENDIX D

Delphi Instructions

DELPHI SURVEY – ROUND 1

Effective HIV and AIDS management: A South African construction sector model

Dear Participant,

Thank you for serving on the panel of experts. I value your participation and look forward to working with you in the next few months as you complete each round of responses.

Please send your completed instrument to Harinarain@ukzn.ac.za within two (2) weeks of receiving the request to respond.

DELPHI INSTRUCTIONS FOR ROUND 1

Respond to EACH statement by indicating your response by placing an 'X' in the appropriate box.

You are required to rate the IMPORTANCE and IMPACT respectively of each element of HIV and AIDS management.

The scale of importance (depicted below) ranges from 1 to 100% which is indicated by numbers 1-10. If say you consider the importance of the element to range between 51 & 60% then you should mark 'X' under the box '6'.

IMPORTANCE SCALE (Importance in percentage)

0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
1	2	3	4	5	6	7	8	9	10
					X				

If the impact is considered to be high, then the 'X' should be marked under the '7' or '8' box as shown in the example below.

IMPACT SCALE

No impact		Low impact		Medium impact		High impact		Extremely high impact	
1	2	3	4	5	6	7	8	9	10
							X		

Please answer the following questions using your experience and judgement.

APPENDIX E

Delphi Questionnaire

1.1 **Legal Requirements - There are several legal requirements that employers are required to satisfy.**

No	Legal elements	How important are the LEGAL REQUIREMENTS to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high postive impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Implement a HIV and AIDS policy																				
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status.																				
3	Protect the employees right to privacy about their HIV status at work																				
4	Reduce the risk of occupational exposure to HIV																				
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period																				
6	Prohibit mandatory pre- and post-employment HIV testing unless the employer has applied to the Labour Court for authorisation																				

1.2 **Social pressure - Involves the relationships between a business and all other major social actors as well as the pressures that are exerted on a business by the response or non-response of other businesses.**

No	Social Elements	How important is SOCIAL PRESSURE to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Follow the example and practices of other competitors (benchmarking against other industry participants)																				
2	Pressure by civil society to implement HIV and AIDS management strategies																				
3	Pressure by trade unions to implement HIV and AIDS management strategies																				
4	Pressure by NGOs to implement HIV and AIDS management strategies																				
5	Corporate social responsibility to implement HIV and AIDS management strategies																				
6	Ethical pressure to implement HIV and AIDS management strategies																				
7	Positively engage with surrounding communities (as worker come from and return to these communities)																				
8	External support (e.g. government, funding agencies) to ensure effective strategies are put in place in a sustainable manner																				

1.3 **Business case - the impact of HIV & AIDS on the companies' bottom line. The business case for responding, in which the relative costs of responding or not responding can, with sufficient managerial capacity and information, be weighed up.**

No	Business case elements	How important is BUSINESS CASE to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Provide awareness programmes																				
2	Undertake behaviour change communication																				
3	Provide education and training programmes (e.g. knowledge of first aid practices and 'universal precautions')																				
4	Conduct voluntary counselling and testing																				
5	Implement wellness programmes																				
6	Distribute male/female condoms																				
7	Provide antiretroviral therapy and/or referral to external health care providers																				
8	Provide assistance with combating TB and STTs																				
9	Engage in community outreach programmes																				
10	Conduct a risk and impact assessment																				
11	Conduct a needs and resource assessment																				
12	Develop, implement, monitor and evaluate the HIV and AIDS policy based on a strategic plan																				
13	Appoint active peer educators																				
14	Monitor labour absenteeism and turnover																				
15	Improve the morale of employees																				
16	Address stigma and discrimination																				
17	Conduct an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis, etc.																				
18	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes																				
19	Accommodate the needs of infected persons																				
20	Promote a safe working environment																				

1.4 **Voluntary regulation - can be the use of a code of good practice or one of the corporate reporting frameworks, for example the King III Report.**

No	Voluntary regulation elements	How important is VOLUNTARY REGULATION to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Provide comprehensive care and treatment for people living with HIV and AIDS																				
2	Develop, implement, monitor and evaluate the HIV and AIDS policy																				
3	Promote gender equality																				
4	Promote non-discrimination																				
5	Protect the human rights and dignity of people living with HIV and AIDS																				
6	Include HIV and AIDS awareness programmes																				
7	Promote condom distribution and use																				
8	Provide access to counselling for people affected by HIV and AIDS - (VCT)																				
9	Provide education and training on HIV and AIDS																				
10	Encourage treatment of STIs, TB and HIV and AIDS																				
11	Provide a 'wellness' programme for employees																				
12	Contractually commit construction firms to implement HIV and AIDS programmes																				
13	Report financially on HIV and AIDS, e.g. GRI and King III report																				
14	Benchmark HIV and AIDS organisational practices against industry norms																				

1.5 **Visibility of disease - HIV and AIDS needs to be considered like any other illness, e.g. cancer. HIV and AIDS needs to be more visible (e.g. talking about it)**

No	Elements for Visibility of the disease	How important is VISIBILITY of DISEASE to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Create a supportive, safe and healthy work environment																				
2	Accommodate the needs of sick employees																				
3	Encourage open communication between management and employees.																				
4	Involve people living with HIV and AIDS to help in reducing stigma and discrimination in organisations																				
5	Promote confidentiality and privacy in the workplace																				
6	Encourage employees to test for HIV																				

1.6 **Internal agents (individuals) - Individuals (frequently managers and administrators) who worked hard to get HIV & AIDS to be taken seriously by companies.**

No	Internal agent	How important are INTERNAL AGENTS to the management of HIV and AIDS in the construction industry? (1=not important at all and 10=extremely important)										What would the Impact of the listed element be, if it were to be implemented? (1=no impact and 10=very high impact)									
		0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%	No impact		Low impact		Medium impact		High impact		Very high impact	
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	Senior management																				
2	Middle or line management																				
3	Peer educators																				
4	Traditional healers																				
5	Counsellors																				
6	Medical personnel																				
7	CEO/president																				
8	Staff members																				
9	Unions representatives																				
10	Human resource manager's																				

Thank you for taking your time to fill out this first round survey.

Do not hesitate to contact me (details below) if you have any queries about this questionnaire or about the study in general.

Contact details:
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APPENDIX F

Survey Questionnaire Cover Letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

14 May 2013

Dear Sir/Madam

You are invited to participate in a study being conducted at the University of KwaZulu-Natal. The aim of this research is to determine how the South African construction industry can effectively manage HIV and AIDS.

Questionnaires constitute an important part of academic research. Attached is a questionnaire to obtain your response. In order to develop my model, I require your input. I would appreciate it if you could answer the questionnaire to the best of your ability.

I would like to assure you that your response will be strictly confidential and not used for any other purpose besides the research. Your identify will not be revealed in the final manuscript and all material will be shredded upon completion.

There are no anticipated risks, compensation or other direct benefits to you as a participant in this questionnaire.

I understand the constraints of time on your busy schedule, and have endeavoured to make this questionnaire as simple as possible.

If you have any questions about this research, please contact me on (031-2602687) or Harinarain@ukzn.ac.za.

Thank you

Yours truly,

Nishani Harinarain
Property Development Discipline
School of Engineering
University of KwaZulu-Natal

Property Development
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College of Agriculture, Engineering and Science, University of KwaZulu-Natal
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INSPIRING GREATNESS

APPENDIX G

Survey Questionnaire

HIV AND AIDS MANAGEMENT IN THE SOUTH AFRICAN CONSTRUCTION SECTOR

You are invited to participate in this study on HIV and AIDS management that is being carried out by the University of KwaZulu-Natal, by completing the questionnaire. This questionnaire consists of 3 sections and will take 20 minutes to complete.

SECTION A:

A.1 What is your position in the company

Director	CEO / Managing Director	Owner	Manager	Health & Safety officer	Human Resources Manager	Project manager	Quantity Surveyor	Other. Please Specify

A.2 Which best describes the nature of your business (Tick all that apply)?

General Contractor			Civil contractor	
Specialist Contractor			Home building contractor	
Sub-contractor			Other. Please Specify	

A.3 How many permanent employees do you have in your firm? ....

A.4. In which province are you based?

Eastern Cape		Gauteng		Limpopo	
Free State		KwaZulu-Natal		Mpumalanga	
North West Province		Northern Cape		Western Cape	

A.5 What is your Construction Industry Development Board (CIDB) grading and the range of tender values?

Grading	Turnover value		Grading	Turnover value	
1	R0 – R200 000 thousand		6	R6.5 – 13 million	
2	R200 000 – R650 000 thousand		7	R13 – R40 million	
3	R650 000 – R2 million		8	R40 – R130 million	
4	R2 – R4 million		9	> R 130 million	
5	R4 – R6.5 million		10	N/A	

A.6 What is the age distribution of your workers expressed as a percentage?

< 20 years old	20 – 29 years old	30 – 39 years old	40 – 49 years old	50+ years old

A.7 What is the racial profile of your organisation? State percentage of each group.

	Black	White	Indian	Coloured
Percentage				

A.8 What is the gender distribution (%) in your organisation?

	Male	Female
Percentage		

A.9 What is the occupational breakdown (%) in your organisation? (must add up to 100%)

	Office Management	Site Management	Site supervisory staff	Artisan (Skilled)	Operator (Semi-skilled)	General worker (Unskilled)
Percentage						

A.10 Who is responsible for the HIV and AIDS programmes in your company?

Director	CEO / Managing Director	Owner	Manager	Health & Safety officer	Human Resources Manager	Project manager	Quantity Surveyor	Government	Other, Please Specify	N/A

A.11 Do you have an HIV and AIDS policy?

Yes	No

A.12 If you do not have a HIV and AIDS policy and or programme, which of the following reasons apply?

Is it too costly			Time constraints	
Limited information on HIV and AIDS in workplaces			Lack of resources	
Managers' level of concern about the epidemic is low overall			Your firm is too small (<25 employees)	
Employers incur few direct and indirect costs in replacing workers, especially for unskilled workers			HIV and AIDS is not regarded as a pressing issue	
Lack of information about HIV and AIDS services			Stigma among employees	
Lack of external pressure from labour unions, shareholders			HIV and AIDS is a low business priority	
The epidemic is not currently having large impact on the business			Other, Please Specify	
HIV & AIDS is not the firms problem				

A.13 In your opinion what is the impact of HIV and AIDS on the morale of your workforce?

Do not know	No impact	Low impact	Moderate impact	High impact

SECTION B:

B.1. Place an 'X' in the appropriate box.

To what extent do you agree that the following project **actions should be undertaken** in order to ensure effective HIV and AIDS management in the construction industry, on a 5-point Likert scale; where 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; and 5=strongly agree

	To what degree should organisations undertake the following actions:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
No	**1.1 Legal**					
1	Implement a HIV and AIDS policy					
2	Ensure that there is no unfair discrimination against employees on the basis of their HIV status					
3	Protect the employees right to privacy about their HIV status at work					
4	Reduce the risk of occupational exposure to HIV					
5	Maintain the right to certain basic standards of employment, including six weeks of paid sick leave over a three-year period					
6	Prohibit mandatory pre- and post-employment HIV testing, unless we have applied to the Labour Court for authorisation					
No	**1.2 Social Elements - To what degree should organisations undertake the following actions:**					
1	Implement HIV and AIDS management strategies due to pressure from Trade unions					
2	Implement HIV and AIDS management strategies because of corporate social responsibility					
3	Positively engage with surrounding communities					
4	Find alternate external support (e.g. government, funding agencies) to ensure effective strategies are put in place					
No	**1.3 Business case elements - To what degree should organisations undertake the following actions:**					
1	Provides awareness programmes					
2	Conducts voluntary counselling and testing					
3	Implements wellness programmes					
4	Distributes male/female condoms					
5	Provides antiretroviral therapy and/or referral to external health care providers					
6	Provides assistance with combating Tuberculosis and sexually transmitted infections (STI)					
7	Engages in community outreach programmes					
8	Conducts a risk and impact assessment					
9	Conducts a needs and resource assessment					
10	Develops, implements, monitors and evaluates the HIV and AIDS policy based on a strategic plan					
11	Appoints active peer educators					
12	Monitors labour absenteeism and turnover					
13	Improves the morale of employees					
14	Address stigma and discrimination					
15	Conducts an institutional HIV and AIDS audit e.g. personnel profiling, critical post analysis.					
16	Contractually commit sub-contractors to adopt effective HIV and AIDS workplace programmes					
17	Accommodates the needs of infected persons					
18	Promotes a safe working environment					
No	**1.4 Voluntary regulation elements - To what degree should organisations undertake the following actions:**					
1	Provides comprehensive care and treatment for people living with HIV and AIDS					
2	Develops, implements, monitors and evaluates the HIV and AIDS policy					
3	Promotes gender equality					
4	Promotes non-discrimination					
5	Protects the human rights and dignity of people living with HIV and AIDS					
6	Provides HIV and AIDS awareness programmes					
7	Promotes condom distribution and use					
8	Provides access to counselling for people affected by HIV and AIDS - (VCT)					
9	Provides education and training on HIV and AIDS					
10	Encourages treatment of Sexually transmitted infections (STIs), Tuberculosis (TB) and HIV & AIDS					
11	Provides a 'wellness' programme for employees					
12	Contractually commits construction firms to implement HIV and AIDS programmes					
13	Benchmarks HIV and AIDS organisational practices against industry norms					
No	**1.5 Elements for Visibility of the disease - To what degree should organisations undertake the following actions:**					
1	Create a supportive, safe and healthy work environment					
2	Accommodate the needs of sick employees					
3	Encourages open communication between management and employees.					
4	Involves people living with HIV and AIDS to help in reducing stigma and discrimination in organisations					
5	Promotes confidentiality and privacy in the workplace					
6	Encourages employees to test for HIV					
No	**1.6 Internal agent - To what degree should organisations undertake the following actions:**					
1	Encourage support of Senior management for HIV and AIDS initiatives					
2	Promote the support of Middle or line management for HIV and AIDS initiatives					
3	Promote the support of Peer educators for HIV and AIDS initiatives					
4	Appoint Counsellors for HIV and AIDS initiatives					
5	Appoint Medical personnel for HIV and AIDS initiatives					
6	Promote the support of CEO/president for HIV and AIDS initiatives					
7	Promote support of Staff members for HIV and AIDS initiatives					
8	Promote support of Unions representatives for HIV and AIDS initiatives					
9	Promote support of Human resource managers for HIV and AIDS initiatives					

B.2 Place an 'X' in the appropriate box.

To what extent do you agree that investment in HIV and AIDS policies and programmes has the potential to affect your company's sustainability, using a 5-point Likert scale: where 1=strongly disagree 2=disagree 3=neutral 4=agree and 5=strongly agree.

	To what extent do you agree that investment in HIV and AIDS policies and programmes has the potential to affect your company's sustainability:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Increase profits					
2	Increase productivity					
3	Improve the company's image and/or reputation					
4	Ensure management's attention is not diverted from strategic and operational issues to cope with high workforce morbidity and mortality					
5	Improve employee morale					
6	Reduce medical aid/health insurance					
7	Create an environment that is conductive to openness, disclosure and acceptance of HIV and AIDS among all staff					

B.3. Do you feel your firm has done enough for its employees in terms of HIV and AIDS? Yes / No
Please elaborate on your answer ....
....

SECTION C:

C.1 Which of the following 7 steps would you use when implementing a HIV and AIDS policy or programme?

	Yes
1. Establish a representative HIV and AIDS management team	
2. Assess the risk and impact of HIV and AIDS on the workforce	
3. Assess current preparedness, needs and resources of the workplace	
4. Develop and implement and HIV and AIDS policy	
5. Develop and implement an integrated HIV and AIDS programme	
6. Monitoring, evaluation and review HIV and AIDS workplace policies and programmes	

C.2. In which of the following official languages are your programmes carried out in?

Afrikaans		isiXhosa		Sesotho		Tshivenda	
English		isiZulu		siSwati		Setswana	
isiNdebele		Sesotho sa Leboa		Xitsonga			

C.3 Frequency at which health related aspects are addressed at work.

Aspect	Never	Rarely	Sometimes	Often	Always
HIV and AIDS					
Sexually transmitted infections (STIs)					
Alcohol abuse					
Tuberculosis (TB)					
Drug abuse					
High blood pressure (hypertension)					
Healthy eating (nutrition)					
Sugar diabetes (diabetes)					
Controlling weight (obesity)					
Stress					
Cancer					
Family planning					
Family violence					

C.4 Has your firm used any of the following interventions to combat HIV and AIDS?

Intervention		Intervention	
Provision of condoms		Newsletters	
Awareness education (speaker)		Videos or films	
Wellness management e.g. counselling		Newspapers	
Posters		Toolbox talks	
Induction programs		Brochures/pamphlets/flyers	

C.5 Which of the following do you believe will assist you to implement a HIV and AIDS programme?

	Yes
A compulsory, industry-wide initiative funded via levies which include education, testing and treatment programmes	
Formal certification as part of the completion of work certification process	
Construction Industry Development Board (CIDB) should take on a leadership role in order to provide unifying action	
Other, please specify	

Thank you for your contribution towards improving HIV and AIDS management in the South African construction industry.

Please return to Nishani Harinarain at Harinarain@ukzn.ac.za or Fax to 031-2601411

Page 3 of 3

APPENDIX H

Exploratory Factor Analysis Tables of deleted items

DELETED ITEMS SUBSCALE BUSINESS CASE ELEMENTS

Table 1. KMO and Bartlett's test for Business case elements after the deletion of items B1.3.5, B1.3.11, B1.3.13 and B1.3.18

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.759
Bartlett's Test of Sphericity	Approx. Chi-Square	1707.392
	df	78
	Sig.	.000

Table 2. Communalities for Business case elements after the deletion of items B1.3.5, B1.3.11, B1.3.13 and B1.3.18

Communalities	Initial	Extraction
B1.3.1.BusinessCase	.434	.402
B1.3.2.BusinessCase	.599	.635
B1.3.3.BusinessCase	.741	.834
B1.3.4.BusinessCase	.723	.798
B1.3.7.BusinessCase	.529	.535
B1.3.8.BusinessCase	.741	**.948**
B1.3.9.BusinessCase	.696	.739
B1.3.10.BusinessCase	.365	.530
B1.3.12.BusinessCase	.172	.175
B1.3.14.BusinessCase	.181	.218
B1.3.15.BusinessCase	.290	.230
B1.3.16.BusinessCase	.333	**.999**
B1.3.17.BusinessCase	.229	.218

Extraction Method: Maximum Likelihood.
Note: High communalities in boldface.

Table 3. Initial Eigenvalues – Business elements after the deletion of items B1.3.5, B1.3.11, B1.3.13 and B1.3.18

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.910	30.081	30.081	1.420	10.919	10.919	3.125
2	2.479	19.068	49.149	3.018	23.216	34.135	2.714
3	1.319	10.143	59.292	2.257	17.361	51.496	1.547
4	1.086	8.350	67.642	.567	4.361	55.858	1.343
5	.841	6.467	74.109				
6	.760	5.845	79.954				
7	.716	5.506	85.460				
8	.477	3.668	89.129				
9	.410	3.154	92.282				
10	.370	2.842	95.125				
11	.306	2.358	97.482				
12	.186	1.429	98.911				
13	.142	1.089	100.000				

Extraction Method: Maximum Likelihood.

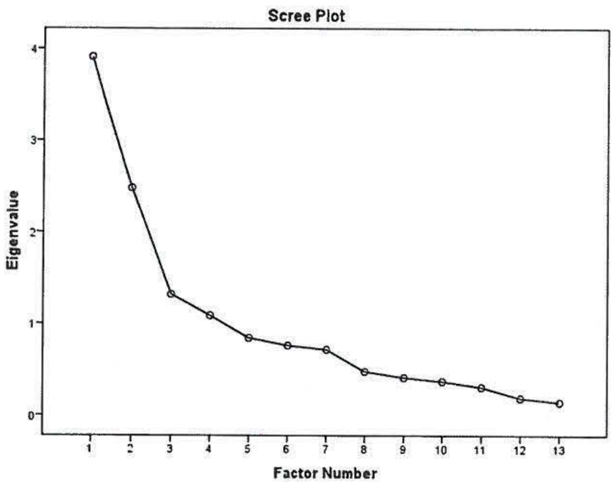

Figure 1. Scree plot for Business case elements after the deletion of items B1.3.5, B1.3.11, B1.3.13 and B1.3.18

Table 4. KMO and Bartlett's test for Business case elements after the deletion of items B1.3.8 and B1.3.16

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	1175.238
	df	55
	Sig.	.000

Table 5. Communalities for Business case elements after the deletion of items B1.3.8 and B1.3.16

Communalities		
	Initial	Extraction
B1.3.1.BusinessCase	.431	.399
B1.3.2.BusinessCase	.591	.628
B1.3.3.BusinessCase	.737	.829
B1.3.4.BusinessCase	.704	.792
B1.3.7.BusinessCase	.420	.435
B1.3.9.BusinessCase	.481	.926
B1.3.10.BusinessCase	.292	.469
B1.3.12.BusinessCase	.167	.257
B1.3.14.BusinessCase	.134	.157
B1.3.15.BusinessCase	.147	.101
B1.3.17.BusinessCase	.200	.202

Extraction Method: Maximum Likelihood.

Table 6. Initial Eigenvalues – Business elements after the deletion of items B1.3.8 and B1.3.16

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.606	32.779	32.779	2.494	22.677	22.677	3.050
2	1.934	17.577	50.356	2.199	19.995	42.671	1.809
3	1.091	9.915	60.272	.501	4.553	47.224	1.115
4	.937	8.515	68.787				
5	.836	7.602	76.388				
6	.732	6.656	83.045				
7	.566	5.142	88.187				
8	.449	4.081	92.268				
9	.387	3.517	95.785				
10	.294	2.676	98.461				
11	.169	1.539	100.000				

Extraction Method: Maximum Likelihood.

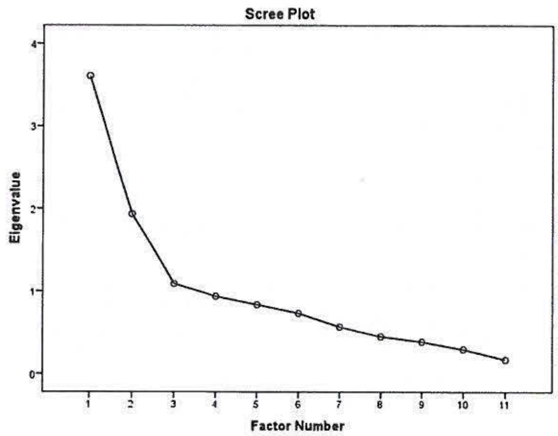

Figure 2. Scree plot for Business case elements after the deletion of items factors B1.3.8 and B1.3.16

Table 7. Pattern matrix – Business elements after the deletion of items B1.3.8 and B1.3.16

	Factor		
	1	2	3
B1.3.1.BusinessCase	.620		
B1.3.2.BusinessCase	.746		
B1.3.3.BusinessCase	.883		
B1.3.4.BusinessCase	.890		
B1.3.7.BusinessCase		.610	
B1.3.9.BusinessCase		.982	
B1.3.10.BusinessCase		.444	.460
B1.3.12.BusinessCase			.449
B1.3.14.BusinessCase			.324
B1.3.15.BusinessCase		.270	
B1.3.17.BusinessCase	.441		

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.

Table 8. KMO and Bartlett's test for Business case elements after the deletion of item B1.3.10

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.782
Bartlett's Test of Sphericity	Approx. Chi-Square	1070.945
	df	45
	Sig.	.000

Table 9. Communalities for Business case elements after the deletion of item B1.310

Communalities	Initial	Extraction
B1.3.1.BusinessCase	.428	.845
B1.3.2.BusinessCase	.589	.618
B1.3.3.BusinessCase	.737	**.903**
B1.3.4.BusinessCase	.702	.751
B1.3.7.BusinessCase	.416	.420
B1.3.9.BusinessCase	.419	**.967**
B1.3.12.BusinessCase	.120	.092
B1.3.14.BusinessCase	.125	.082
B1.3.15.BusinessCase	.136	.153
B1.3.17.BusinessCase	.191	.188

Extraction Method: Maximum Likelihood.
Note: High communalities in boldface.

Table 10. Initial Eigenvalues – Business elements after the deletion of item B1.3.10

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.569	35.687	35.687	1.803	18.033	18.033	3.120
2	1.615	16.147	51.834	2.742	27.424	45.457	1.668
3	1.037	10.374	62.208	.472	4.722	50.179	1.557
4	.917	9.165	71.374				
5	.814	8.145	79.518				
6	.717	7.174	86.692				
7	.461	4.606	91.298				
8	.399	3.995	95.293				
9	.300	3.003	98.296				
10	.170	1.704	100.000				

Extraction Method: Maximum Likelihood.

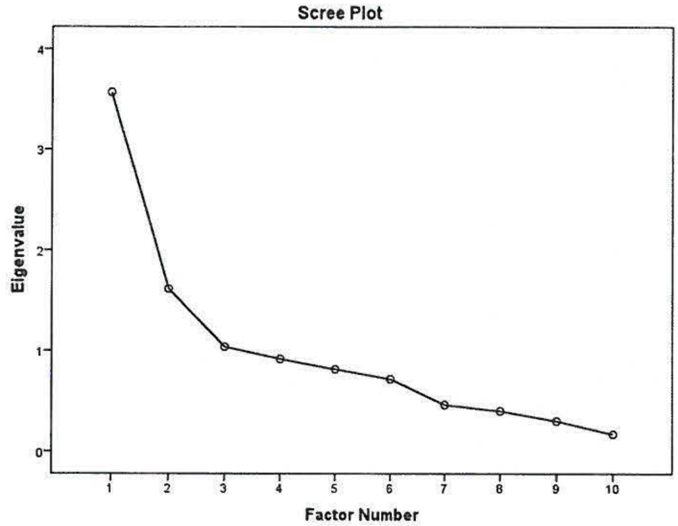

Figure 3. Scree plot for Business case elements after the deletion of item B1.3.10.

Table 11. KMO and Bartlett's test for Business case elements after the deletion of items B1.3.3 & B1.3.9

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.770
Bartlett's Test of Sphericity	Approx. Chi-Square	498.660
	df	28
	Sig.	.000

Table 12. Communalities for Business case elements after the deletion of items B1.3.3 & B1.3.9

Communalities		
	Initial	Extraction
B1.3.1.BusinessCase	.426	.506
B1.3.2.BusinessCase	.498	.616
B1.3.4.BusinessCase	.546	.713
B1.3.7.BusinessCase	.115	.125
B1.3.12.BusinessCase	.107	.094
B1.3.14.BusinessCase	.118	.105
B1.3.15.BusinessCase	.100	**.999**
B1.3.17.BusinessCase	.172	.190

Extraction Method: Maximum Likelihood.
Note: High communalities in boldface.

Table 13. Initial Eigenvalues – Business elements after the deletion of items B1.3.3 & B1.3.9

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.785	34.816	34.816	1.070	13.371	13.371	2.278
2	1.185	14.806	49.622	2.278	28.470	41.841	1.070
3	.994	12.431	62.053				
4	.881	11.007	73.060				
5	.716	8.950	82.011				
6	.686	8.570	90.580				
7	.435	5.439	96.019				
8	.318	3.981	100.000				

Extraction Method: Maximum Likelihood.

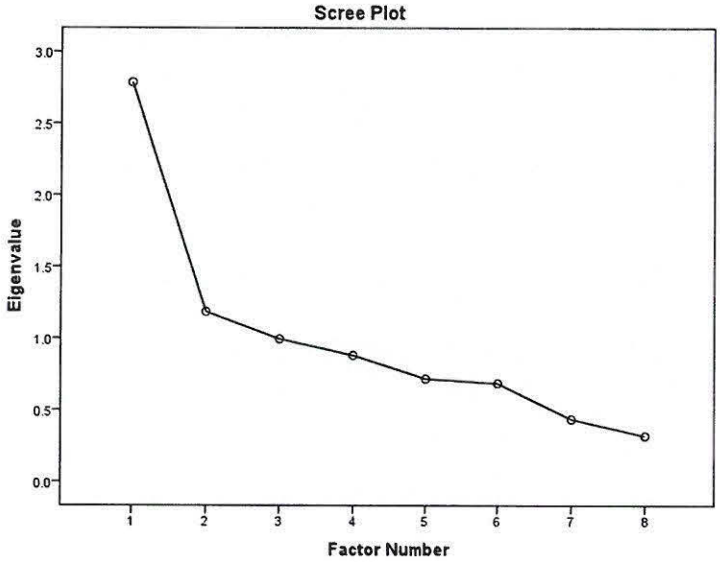

Figure 4. Scree plot for Business case elements after the deletion of items B1.3.3 & B1.3.9.

DELETED ITEMS SUBSCALE VOLUNTARY REGULATION

Table 14. KMO and Bartlett's test for voluntary regulation after the deletion of item B1.4.10

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.693
Bartlett's Test of Sphericity	Approx. Chi-Square	1483.137
	df	66
	Sig.	.000

Table 15. Communalities for voluntary regulation after the deletion of item B1.4.10.

Communalities		
	Initial	Extraction
B1.4.1.Voluntaryregulation	.504	.555
B1.4.2.Voluntaryregulation	.626	.754
B1.4.3.Voluntaryregulation	.691	.801
B1.4.4.Voluntaryregulation	.532	.722
B1.4.5.Voluntaryregulation	.476	.596
B1.4.6.Voluntaryregulation	.550	.622
B1.4.7.Voluntaryregulation	.517	.643
B1.4.8.Voluntaryregulation	.247	.218
B1.4.9.Voluntaryregulation	.377	.298
B1.4.11.Voluntaryregulation	.393	.374
B1.4.12.Voluntaryregulation	.554	**.893**
B1.4.13.Voluntaryregulation	.495	.523

Note: High communalities in boldface.

Table 16. Initial Eigenvalues – voluntary regulation after the deletion of item B1.4.10.

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.317	27.645	27.645	2.365	19.711	19.711	2.348
2	2.600	21.667	49.312	2.419	20.156	39.867	2.281
3	1.549	12.908	62.220	1.584	13.197	53.064	1.867
4	1.026	8.553	70.773	.631	5.258	58.322	1.914
5	.855	7.122	77.895				
6	.678	5.654	83.548				
7	.447	3.727	87.276				
8	.429	3.573	90.849				
9	.369	3.078	93.927				
10	.296	2.468	96.395				
11	.249	2.075	98.469				
12	.184	1.531	100.000				

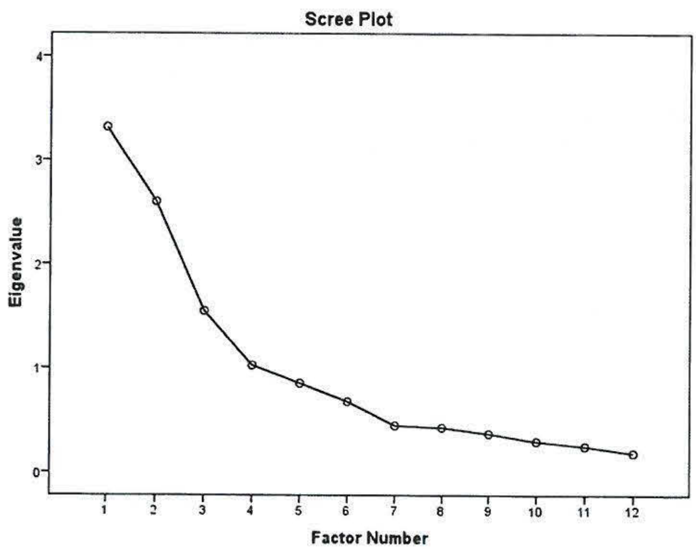

Figure 5. Scree plot for voluntary regulation after the deletion of item B1.4.10.

Table 17. KMO and Bartlett's test for voluntary regulation after the deletion of item B1.4.12

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.699
Bartlett's Test of Sphericity	Approx. Chi-Square	1239.205
	df	55
	Sig.	.000

Table 18. Communalities for voluntary regulation after the deletion of item B1.4.12.

Communalities	Initial	Extraction
B1.4.1.Voluntaryregulation	.487	.550
B1.4.2.Voluntaryregulation	.626	.767
B1.4.3.Voluntaryregulation	.688	.772
B1.4.4.Voluntaryregulation	.524	.808
B1.4.5.Voluntaryregulation	.476	.576
B1.4.6.Voluntaryregulation	.542	.633
B1.4.7.Voluntaryregulation	.507	.635
B1.4.8.Voluntaryregulation	.247	.219
B1.4.9.Voluntaryregulation	.375	.324
B1.4.11.Voluntaryregulation	.329	**.999**
B1.4.13.Voluntaryregulation	.216	.196

Note: High communalities in boldface.

Table 19. Initial Eigenvalues – voluntary regulation after the deletion of item B1.4.12.

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.317	30.157	30.157	1.529	13.897	13.897	2.281
2	2.298	20.895	51.052	2.622	23.840	37.737	2.289
3	1.179	10.717	61.769	1.650	14.999	52.736	1.620
4	1.023	9.303	71.072	.677	6.157	58.893	1.922
5	.854	7.764	78.836				
6	.662	6.020	84.856				
7	.436	3.965	88.820				
8	.427	3.886	92.706				
9	.338	3.069	95.776				
10	.275	2.498	98.274				
11	.190	1.726	100.000				

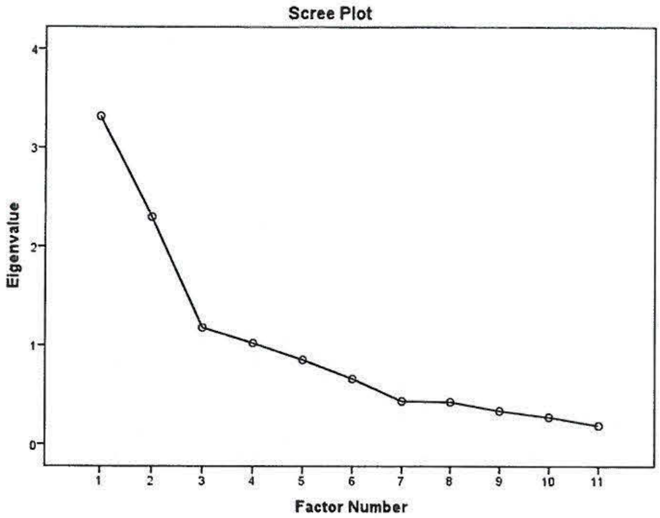

Figure 6. Scree plot for voluntary regulation after the deletion of item B1.4.12.

Table 20. KMO and Bartlett's test for voluntary regulation after the deletion of item B1.4.11.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	1118.762
	df	45
	Sig.	.000

Table 21. Communalities for voluntary regulation after the deletion of item B1.4.11.

Communalities		
	Initial	**Extraction**
B1.4.1.Voluntaryregulation	.481	.540
B1.4.2.Voluntaryregulation	.626	.777
B1.4.3.Voluntaryregulation	.686	.761
B1.4.4.Voluntaryregulation	.524	.800
B1.4.5.Voluntaryregulation	.474	.582
B1.4.6.Voluntaryregulation	.537	.625
B1.4.7.Voluntaryregulation	.507	.639
B1.4.8.Voluntaryregulation	.235	.208
B1.4.9.Voluntaryregulation	.305	.273
B1.4.13.Voluntaryregulation	.073	**.067**

Note: Low communalities in boldface.

Table 22. Initial Eigenvalues – voluntary regulation after the deletion of item B1.4.11.

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.222	32.217	32.217	2.707	27.066	27.066	2.232
2	2.170	21.697	53.914	1.898	18.977	46.043	2.257
3	1.048	10.482	64.397	.669	6.687	52.730	1.855
4	.923	9.232	73.629				
5	.772	7.721	81.350				
6	.619	6.190	87.540				
7	.435	4.347	91.886				
8	.346	3.458	95.344				
9	.275	2.748	98.092				
10	.191	1.908	100.000				

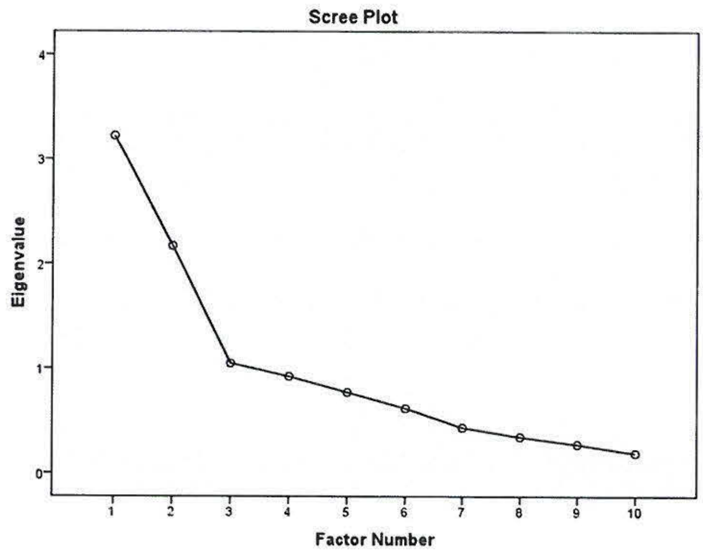

Figure 7. Scree plot for voluntary regulation after the deletion of items B1.4.11.

APPENDIX I

Research Publications

Publication 1

Harinarain, N. and Haupt, T. (2011). HIV and AIDS: The KZN Construction Industry Response. Journal of Construction, 4(2): 13-17.

HIV AND AIDS: THE KZN CONSTRUCTION INDUSTRY RESPONSE

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ABSTRACT

Purpose: Only eight percent of the 123 construction firms in KwaZulu-Natal have a HIV and AIDS policy in place. This paper investigates why these particular firms decided to implement a HIV and AIDS policy and why others did not.

Method: 123 contractors on the Master Builders Association (MBA) website were telephonically contacted to determine whether they had a HIV and AIDS policy in place. Interviews were then conducted with only those companies that had HIV and AIDS policies.

Findings: Of the six 'drivers' that influence corporate behaviour regarding HIV and AIDS, it was found that business costs had the greatest impact. Of equal importance, but to a lesser extent was the visibility or lack thereof of the disease. The law, voluntary regulation, social pressures and individuals within the companies did not drive company responses to HIV and AIDS in the construction sector.

Limitations: This study was limited to contractors in KwaZulu-Natal registered with the Master Builders Association. Future research can involve similar studies in other provinces.

Value: Understanding why firms implemented a HIV and AIDS policy could be used to encourage more firms to implement policies because the construction industries' response to HIV and AIDS to date has been poor.

KEYWORDS

HIV and AIDS, policy, construction industry

INTRODUCTION

HIV[a] and AIDS[b] are among the greatest challenges facing the world [2] in terms of its workforce and its skills as well as economic and social development [3]. The impact of HIV and AIDS affects the most productive age group. The average loss of experience per AIDS death is 15 years [4]. The death of this economically active population leaves a huge gap in businesses by destabilising the quantity and quality of the labour force in the South African economy [1,3,5].

South Africa (SA) with only 0.7% of the global population reportedly has about 5.7 million people living with HIV [6]. Although SA has the largest antiretroviral therapy programme in the world [6,7] for every two people who start antiretroviral therapy, five individuals are newly infected with HIV [8]. Companies in SA are concerned about the high levels of HIV infections [2,9,10,11] as SA, due to absenteeism, loses up to R12 billion a year of which an average of R2 billion is attributed to HIV and AIDS [12].

According to the Department of Public Works [13] the construction industry has the third highest incidence rate of HIV and AIDS compared to other industrial sectors in South Africa. The SA construction industry contributes 3% to the gross domestic product and employed over 1.1 million people in 2009 which is almost twice the number of people employed in the industry since the early 2000s [14]. After two decades of decline, activity in the building industry increased rapidly from 2004 mainly due to spending for the preparation for the FIFA 2010 World Cup [15].

The construction industry is particularly vulnerable to the pandemic because it employs a constantly changing labour force that works on short-term contracts. It also employs permanent employees who move between projects across the country and in other countries [16]. The migrant labour which usually has more than one sexual partner when away from home for long periods of time [4] and the predominantly semi/unskilled workers in a survey conducted by Bureau for Economic Research (BER)/South African Business Coalition on HIV/AIDS [17] suggest that HIV prevalence is higher among semi- and unskilled workers than among skilled and highly skilled workers. The survey found that the sector employment practices were usually the prime contributor to the spread of HIV and AIDS as it increases the risk of workers becoming infected [16,17,18].

SA consists of nine provinces with differing prevalent rates. An earlier study [19] indicated that 26.4% of KZN's working age population was HIV positive, compared to 15.9% in the Western Cape. By 2025, two-fifths of the KZN adult population would have died from HIV and AIDS [20]. The concentration of the pandemic among the economically active population will therefore have grave implications for South Africa's workforce [20]. This study examines why some construction firms have implemented an HIV and AIDS policy, focusing on KwaZulu-Natal, which is the hardest-hit province in South Africa [17,20,21].

WHY SHOULD CONSTRUCTION FIRMS RESPOND TO HIV AND AIDS?

The working environment is a place where most people spend a large amount of their time. Therefore the workplace is an ideal setting in which to address HIV and AIDS [2,17,22]. Unfortunately, the corporate sector is not using this platform effectively and the response of the construction industry has been slow [17, 23]. A further study [24] found that only 10% of 123 building contractors in the KwaZulu-Natal (KZN) province of SA had an HIV and AIDS policy in place.

There is a strong business case for the corporate response against AIDS [25] as the pandemic is having an extensive financial impact on business [21]. Firms experience increased costs and decreasing profits as a result of falling productivity, increased labour costs, increased absenteeism from work due to morbidity and attendance at funerals, increase recruitment and training costs, decreasing staff morale and the loss of skills and experience. In addition, stigma and discrimination have resulted in the violation of fundamental rights at work [2,4,10,22,25].

THE SIX 'DRIVERS' THAT INFLUENCE CORPORATE BEHAVIOUR

Six key 'drivers' of company HIV and AIDS responses have been identified, namely legal requirements, social pressures, business

[a] Human Immunodeficiency Virus [b] Acquired Immune Deficiency Syndrome

costs, voluntary regulation, visibility of the disease, and individuals within companies [1] as summarised in Table 1. The study found that legal requirements, economic performance, and social pressures were external to the company and were generally weak in framing the corporate response to HIV and AIDS. An important finding of this study was that costs calculations were driving company responses to HIV and AIDS but in fact it was the social pressure of other companies' responses.

Table 1: Drivers of company responses [1].

No.	Driver	Explanation	Type of driver
1	Legal considerations/ requirements	Legal considerations played a major role in the wider national response to HIV & AIDS but it had a limited impact in the workplace. HIV & AIDS law has been fragmented, with no single overarching piece of legislation. The law is unable to penetrate into the lower levels within the company resulting in companies having HIV & AIDS policies that are rarely consulted.	
2	Social pressure	Involves the relationships between business and all other major social actors, as well as the pressures that are exerted on business by the response or non-response of other businesses. Business is generally cautious and a 'strategy' of following others has been as applicable to corporate HIV & AIDS responses.	External
3	Business costs	Was seen as the most obvious driver in prompting a corporate response to HIV & AIDS, but this is no longer true because it has not always been easy (requires reliable information) to show the impact of HIV & AIDS on the companies' bottom line. The business rationale for responding to HIV & AIDS is important but not the overriding factor taking into account other (social, political and psychological) facets.	
4	Voluntary regulations	In the context of HIV & AIDS, voluntary regulation can be the use of a code of good practice or one of the corporate reporting frameworks, for example the King II Report. The role of voluntary regulation in driving company responses to HIV & AIDS has been limited.	
5	Visibility of disease	The lack of visibility (as a result of the biological nature of HIV and AIDS and the stigma and discrimination) of HIV & AIDS has resulted in a slow and reactive response by industry.	Internal
6	Individuals within companies	Individuals (frequently black, managers, nurses and administrators) who worked hard to get HIV & AIDS to be taken seriously by companies. Because these responses are driven from below, they are generally weak and fragmented.	

RESEARCH APPROACH

From the Master Builders Association (MBA) website, 123 contractors were telephonically contacted to determine if they had a HIV and AIDS policy in place. Interviews were only conducted with Human Resource/Wellness managers and Health and Safety officers of construction companies in KwaZulu-Natal, South Africa who had HIV and AIDS policies in place to determine why they had implemented HIV and AIDS policies and practices in their organisations.

FINDINGS

Of the 123 contractors in the sample frame only 10% (12) had a HIV and AIDS policy in place in their organisations [24]. A year later when these same 123 companies were contacted for this study, it was found that the number of firms with active HIV and AIDS polices had dropped to 8% (10) all of whom agreed to be interviewed. Two firms declared that due to the downturn in the construction industry and the fact that they had to retrench staff, their policy was relegated to the 'back of their health and safety file'.

Evidently, 90% of contractors in KZN have not as yet realised the importance of having and implementing a HIV and AIDS policy. They reported that they did not foresee themselves implementing a specific HIV and AIDS policy. Reasons proffered for not implementing a HIV and AIDS policy included that they were a small company with average numbers of employees < 25; that they did not have the resources to research, draft and implement an HIV and AIDS policy; and they thought it would be too expensive and time consuming. This finding is in line with those of other studies [17, 26].

DISCUSSION AND ANALYSIS

The six drivers in Table 1 were used and tested within the context of the KZN construction industry to determine its response to the HIV and AIDS pandemic. All the companies interviewed considered HIV and AIDS to be major problems in the industry and that they had a serious impact on the morale of their workforce. Employees were generally demotivated and afraid of been stigmatised by their colleagues should they have disclosed their HIV status. All the participants opined that the corporate sector had an active role to play in terms of its involvement in health programmes and equipping workers with skills to prevent the spread of HIV infection. However 50% of them noted that it was only those firms that were committed to combating HIV and AIDS proactively played this role, in that only interested firms were doing something about the pandemic. Therefore, 90% of contractors in the region were not actively involved in any HIV and AIDS initiatives at all.

The participants reported that they had a budget dedicated to HIV and AIDS programmes and initiatives. They carefully monitored the costs of their involvement in HIV and AIDS. Consequently they were able to report regularly on current HIV and AIDS associated costs and losses to their organisations.

When asked about the percentage of their employees that were HIV positive, the mean response was in the range of 15 to 20%. However, only 1 to 5% of their employees had openly disclosed their HIV status, largely due to fear of being stigmatised by their fellow employees.

The responses of participants to ranking each of the six 'drivers' prompting corporate response to HIV and AIDS are shown in Table 2. The smaller the mean of the rankings the more important was the factor in prompting response to the pandemic.

All participants ranked the business case (mean=1.00) as the most important factor driving the response of construction firms to HIV and AIDS. More than half of them ranked the visibility or lack thereof of HIV and AIDS (mean=2.78) as the next important driver of responses. The third most important prompt to action was legal requirements (mean=3.56). Individuals who assumed responsibility for the company's response to HIV and AIDS was ranked fourth (mean=4.33). The fifth factor was found to be social reasons (mean=4.44), or being a good corporate citizen. Voluntary reporting was ranked sixth (mean=4.89).

Table 2: Ranking of drivers of corporate response to HIV and AIDS (N=9).

No	Drivers	Ranking						
		1	2	3	4	5	6	Mean
1	Legal requirements		3	3		1	2	3.56
2	Social reasons			1	4	3	1	4.44
3	The business case	9						1.00
4	The visibility, or lack thereof, of HIV and AIDS		5	2	1	1		2.78
5	Voluntary reporting			1	2	3	3	4.89
6	Individuals within companies		1	2	2	1	3	4.33

Driver 1: Legal considerations/ requirements

The primary response of the South African government to protect those infected and affected by HIV and AIDS was through creating a legal framework of various Acts of Parliament such as, for example, the Constitution of South Africa (No. 108 of 1996); the Employment Equity Act (No. 55 of 1998); the Labour Relations Act (No. 66 of 1995), the Medical Schemes Act (No. 131 of 1998) the Occupational Health and Safety Act (No. 85 of 1993) and the Basic Conditions of Employment Act (No. 75 of 1997) [24]. The most important outcome of these Acts is the prohibition of discrimination against anyone on the basis of HIV status. SA companies are therefore required to comply with laws, regulations and protocols relevant to HIV and AIDS [23] regardless of whether or not they had an HIV and AIDS policy in place.

During the interviews of participants the legal framework and requirements were not major influences on the response of companies to the HIV and AIDS pandemic. However, these firms ensured that there was no preemployment HIV testing and that as far as possible they did not discriminate against their employees on the basis of their HIV serostatus.

Driver 2: Social pressure

Companies are being pressured to make a positive contribution to society in the fight against HIV and AIDS via corporate social responsibility [10]. Failure by firms to address AIDS may impact negatively on their reputation and, consequently, their bottom line. Conversely, high profile AIDS programmes involving local communities could have a positive impact on the brand of a company [10]. The risk to their reputation may be the key motivator for businesses in certain sectors to take action against HIV and AIDS [25].

By taking action on AIDS, businesses do more than protect investment and reduce risk. They also have the chance to significantly enhance their image [9]. This was found to be the key motivation for company response to HIV and AIDS in another study [1].

When the participants in this study were asked whether it was important to keep up with what other companies were doing, 70% responded affirmatively, stating that they were aware of what other firms were doing but did not use this as a reason to promote their own response. Eighty percent of the firms ran corporate social programmes in the communities in which they worked. These firms were responding appropriately as the lives of employees were connected to the wider community [10]. Twenty percent ran training programmes and handed out T-shirts and key holders as incentives for involvement.

Driver 3: Business costs

Cost within companies can be conceptualised as being direct, indirect and systemic [23,25,27,28]. Employee benefits such as, for example, health insurance, medical costs, funeral provisions, training of new workers and recruitment costs are considered direct costs. Whereas absenteeism, low morale, productivity losses and staff turnover are considered indirect costs. Systemic costs arise as a result of institutional memory and loss of social capital [23,25]. The main reason given by all participants was the impact that HIV and AIDS could have on business operations and costs. An important point to note is that none of these firms in KZN had as yet conducted prevalence testing. As a result their estimates on numbers of HIV positive people in the company were based solely on perception and the inference they were making when tracing, for example, high absenteeism rates and sick leave. They had therefore not conducted any 'cost-benefit' analysis. Some firms (30%) had monitored high absenteeism rates in particular and consequently began to implement HIV and AIDS policies to reverse the trend. Other firms cited the effect of AIDS on the health of employees and responded with initiatives to support their employees by looking after their health and welfare. While this was a very valid reason in order to implement HIV and AIDS policies the researchers were concerned that maybe this response was the 'socially correct reason' one, whereas the real reasons were that they were concerned high absenteeism, low productivity and losing skilled staff. One firm was honest enough to state that it had implemented an HIV and AIDS policy solely because it was 'requested' to do so by the client, suggesting that clients were applying pressure on it to take action.

These firms provided workplace care and support programmes to ensure that employees affected and infected with HIV and AIDS remained productive for as long as is possible. All firms interviewed provided training programmes as evidence to their employees that the company was concerned about their welfare. However, only 60% of them supported their employees in terms of outsourcing or providing health care and support for HIV-positive employees in the form of counselling services or time off for health related appointments and/or access to anti-retroviral drugs (ARV).

Driver 4: Voluntary regulations

In order to assist the private sector in dealing with those infected and affected by HIV and AIDS, various government departments and organisations have written up polices. However, unlike the various previously mentioned Acts, these policies and codes were voluntary frameworks for action. Some of these policies include the HIV and AIDS and STD Strategic Plan for South Africa 2000–2005 and the Operational Plan for Comprehensive HIV and AIDS Care, Management, and Treatment [29,30], the National Economic Development and Labour Council (NEDLAC)' Department of Labour Code of Good Practice on *Key Aspects of HIV/AIDS and Employment* [31] and the HIV and AIDS and STI Strategic Plan for South Africa, 2007-2011 (NSP) [32]. The HIV and AIDS Strategy for the construction industry is covered by the Department Of Public Works HIV/AIDS Awareness Programme Training Manual [13]. The Construction Industry Development Board (CIDB) drew up The Generic Specification for HIV/AIDS Awareness for public comment in 2003 [33]. Other guidelines include the Global Reporting Initiative's *Reporting Guidance on HIV/AIDS* and the King II reporting system [23].

International guidelines include the UNAIDS HIV/AIDS and Human Rights International Guidelines – Consolidated version, The ILO Code of Practice on HIV/AIDS and the World of Work and The South African Development Community-Code on HIV/AIDS and Employment [24].

These documents provide companies with guidance in drawing up policies and outline what steps or programmes they should implement in the workplace [23]. Voluntary regulations were not one the major drivers for these construction companies in the construction industry to take action in order to combat HIV and AIDS.

Driver 5: Visibility of HIV and AIDS

An area where businesses had an opportunity to influence the course of the HIV and AIDS virus was by reducing the stigma around the disease [9,21]. By being open about HIV and AIDS, providing accurate information, and promoting non-discrimination in their recruitment, promotion and salary decisions, they could help instil more tolerant, informed perceptions of the pandemic in their workers and surrounding communities [9].

A previous study [24] found that employees feared disclosing their status as they feared the response of their coworkers. Forty percent of the firms interviewed specifically monitored the visibility of the disease via high absenteeism rates, sick leave and production rates. In some cases even though HIV and AIDS was not visible, firms still supported their employees by looking after their health and welfare as they were concerned about the effect of AIDS on the health of employees.

Driver 6: Individuals within companies

Individuals and generally employees who, because of their occupational role or social position, had been exposed to HIV and AIDS had succeeded in getting management to take AIDS seriously [1]. The workforce would most likely be the main driver of action when the infection rates started to mushroom [9].

This study found that only one person in one firm was specifically employed to run their HIV and AIDS programme. Others were part of human resources departments (60%) or the health and safety department (20%) that had been tasked to run the company HIV and AIDS programme.

When asked about the number of peer educators and their effectiveness, only one firm reported that they had any active peer educators. Forty percent outsourced the service and forty percent did not have any peer educators as yet. An interesting response from one firm was that they had sent staff for training, but that the staff lacked enthusiasm or were just too busy to continue with being a peer educator. As a result only a few peer educators remained.

The final question presented to interview participants revolved around how they rated the private sector response to HIV and AIDS. Even though only eight percent of all the firms were actively involved with HIV and AIDS initiatives, 60% still felt that their responses were inadequate or deficient. They felt that they could be doing more in terms of assisting subcontractors and suppliers. Only ten percent saw the private sector response as been more than adequate because the industry could only do so much. They argued that the perception and attitudes of individuals in terms of stigmatisation had to change. Thirty percent described the private sector response as adequate.

CONCLUSION

The response by the construction industry to HIV and AIDS is important given the contribution it makes to GDP and the large number of employees it employs. However, the construction sector has not done enough to limit or prevent the impact of HIV and AIDS on its employees. If the construction industry wants to do well financially, they need a healthy, productive workforce. This in itself should be reason enough to take part in the fight against HIV and AIDS. But this has not been the case in the KZN construction industry with only eight percent of 123 construction firms having active HIV and AIDS policies and programmes.

The aim of this paper was to understand why firms in the construction industry decided to take action with regards to HIV and AIDS in terms of, for example, having a HIV and AIDS policy in place. The investigation showed that the business case was the main issue driving company responses to HIV and AIDS, even though prevalence testing and cost-benefit analyses were not conducted. Firms based their decision on the high absenteeism rates the effect of AIDS on the health of employees. There had also recently been increased pressure from clients to implement a HIV and AIDS policy. This driver was closely followed by the visibility of the disease which in turn was followed by the legal requirements. The other drivers of the social reasons, voluntary reporting and individuals within firms were not seen as major drivers for firms in the construction sector to take action on HIV and AIDS.

The response of the construction industry to HIV and AIDS to date has been feeble. The industry has yet a long way to go in terms of adequately assisting its employees in the fight against HIV and AIDS. Even small steps taken to manage HIV and AIDS could show rewards in the future in terms of a healthy workforce and reduced financial impact on business.

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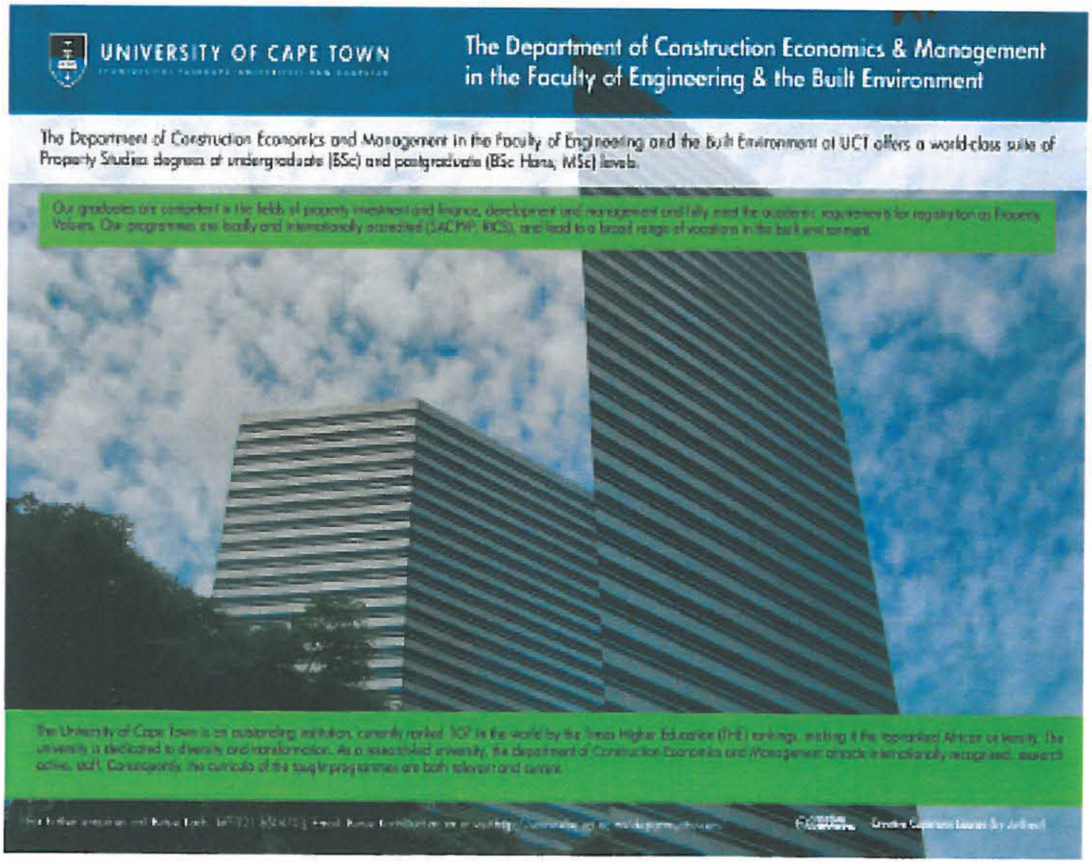

Publication 2

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The vulnerability of the construction industry to HIV and AIDS

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ABSTRACT

Purpose: This paperdiscusses the vulnerability of the South African construction industry to HIV and AIDS.

Design/methodology/approach: The research approach involved an extensive review of relevant literature and semi-structured interviews with 28 construction firms in KwaZulu-Natal and Gauteng.

Findings: If the construction industry wants to do well financially, they need a healthy, productive workforce. This in itself should be reason enough to take part in this fight against HIV and AIDS. The construction industry is particularly vulnerable to the epidemic because of its migrant labour force, large unskilled labour force and aging workforce amongst others reason but the industry is not doing enough to assist in this fight to combat HIV and AIDS.

Practical implications: By highlighting the serious threat that HIV and AIDS poses to the industry, the authors highlight the need for the industry to move away from denial of the impact that HIV and AIDS has in the workplace.

Originality/value: HIV and AIDS poses a grave threat to the South African construction industry and the construction industry in South Africa can and must do more.

Keywords: HIV and AIDS, construction industry, South Africa

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1. INTRODUCTION

HIV and AIDS is a pandemic with serious implications for South Africa (SA) in general, and the South African construction industry in particular (Meintjes, Bowen & Root, 2007). According to the Department of Public Works (2004) the construction industry has the third highest incidence rate of HIV and AIDS per sector in South Africa. The construction industry has a predominant migratory labour force, making it the prime contributor to the spread of HIV and AIDSas workers are prone to visit prostitutes or have multiple sexual partners when they are separated from their families for long periods of time. Due to the high percentage (approximately 60%) of informal labour engaged in construction (Haupt *et al.*, 2005a), they are less likely to protect themselves against HIV transmission(Meintjes, *et al.*, 2007) due to their lack of knowledge of their risky sexual behaviour.

This paper discusses the effect of HIV and AIDS on the construction industry with particular emphasis on the South African construction industry.

2. LITERATURE REVIEW - THE CONSTRUCTION INDUSTRY

The construction industry is essential to a nation's growth and a key sector in the nation's economy and its development in terms of wealth creation and quality of life for its people (Ibrahim, Roy, Ahmed &Imtiaz, 2010; Rwelamila, 2002). It is usually one of the top five employers in any economy and accounts for up to 70% (R1.2 trillion) of the nation's capital (Simon-Meyer, 2005).

The construction industry provides the physical infrastructure necessary for the country's development (Rwelamila, 2002) as it is primarily involved in the construction of buildings and other structures, heavy construction, additions, alterations, reconstruction, installation, maintenance and repairs. (Ibrahim, *et al.*, 2010;Simon-Meyer, 2005).

The SA construction industry contributed 3% to the gross domestic product and employed over 1.1 million people in 2009 which is almost twice the number of people employed in the industry since the early 2000s (International Organization for Migration (IOM), 2010). After two decades of decline, activity in the building industry increased rapidly from 2004 mainly due to spending for the preparation for the FIFA 2010 World Cup (ILO, 2010).

HIV and AIDS is a pandemic with serious implications for South Africa in general, and the South African construction industry in particular (Meintjes, *et al.*, 2007). According to the Department of Public Works (2004) the construction industry has the third highest incidence rate of HIV and AIDS per sector in South Africa. The epidemic threatens to reduce the overall construction labour force, increase labour turnover, shift the age structure and change the skill composition of the construction labour supply

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(Haupt, *et al.*, 2005a; Haupt & Smallwood, 2004). In addition to increasing costs and dwindling profits (Ahwireng-Obeng&Akussah, 2003), construction enterprises can expect declining output, diminishing quality and quantity of labour supplied (Barnett & Whiteside, 2006).

The workplace is generally not associated with the transmission of HIV and AIDS (Haupt *et al.*, 2005a), but it provides an ideal platform to reach workers through the development and implementation of workplace policies and programmes on HIV and AIDS (ILO, 2010). However the important role that companies play in addressing the pandemic has not been optimally utilised. In fact the response of corporate South Africa to HIV and AIDS has being slow, partial and erratic (Dickinson, 2004; Haupt, Smallwood &Chileshe, 2005b).

Over 30 years since the first discovery of HIV and AIDS, the majority of companies still feel AIDS is not their problem. A survey conducted by Bureau of Economic Research/ South African Business Coalition on HIV and AIDS (BER/SABCOHA) showed that the construction industry was one of the least responsive industries (BER/SABCOHA, 2004). In a study conducted by Harinarain & Haupt (2010) it was found that only 10% of 123 building contractors in the KwaZulu-Natal province of South Africa had a HIV and AIDS policy in place. A survey by Bowen, *et al.* (2010) of construction firms in the Western Cape found that most organisations had awareness policies in place but prevention and treatment policies were less common.

The construction industry needs to understand that it makes good business sense to address HIV and AIDS in the workplace because failure to do so results in decreased productivity due to increased absenteeism and also because sick workers are less productive. Fatigue results in frequent accidents in the workplace. The loss of employees to the disease results in increased costs to the company in terms of replacing those skills lost and/or training new employees. Ultimately the declining population growth rate will result in companies having a smaller skills base from which to choose their replacement employees. Labour costs will also increase as companies have to increase their contributions for medical aid and life and/or disability coverage (Ahwireng-Obeng&Akussah, 2003; Haupt, *et al.*, 2005b; ILO, 2010; Meintjes, *et al.*, 2007; Whiteside &Sunter, 2000).

2.1 The vulnerability of the construction industry

The largest study undertaken in South Africa among construction workers was by Bowen, Dorrington, Distiller, Lake and Besesar in 2008 where 10,243 construction employees from 55 companies nationwide participated in order to understand the degree of association between risk factors and the prevalence of HIV and AIDS. Other studies conducted in the construction industry included the study of older construction workers and their awareness of HIV and AIDS (Haupt & Smallwood, 2003a), the

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awareness of HIV and AIDS among construction workers in general (Haupt & Smallwood, 2003b), the relationship between age and worker perceptions, knowledge, beliefs, attitudes and behaviour (Haupt, *et al.*, 2005a) and the aspects of HIV and AIDS intervention strategies within the South African construction industry(Haupt, *et al.*, 2005b).

The construction industry is vulnerable to the disease because of its fragmented nature. The industry encompasses numerous companies of various sizes and discourages permanent employment by encouraging subcontracting and labour only subcontracting (Construction Industry Development Board (CIDB), 2003; IOM, 2010; Haupt, *et al.*, 2005a). Other factors include the lack of leadership and the slow response in acknowledging and addressing the disease (Bowen, *et al.*, 2008; Bowen, *et al.*, 2010; Meintjes, *et al.*, 2007).

The construction industry is also particularly vulnerable to the pandemic because it employs a constantly changing labour force that worked on short-term contracts (Dickinson &Versteeg, 2004) and permanent employees who moved between projects across the country and in other countries (*ibid*). The construction industry has a predominantly migratory labour force, making it the prime contributor to the spread of HIV and AIDS as workers were prone to visit prostitutes or have multiple sexual partners when they are separated from their families for long periods of time (Bowen, *et al.*, 2008; Bowen, *et al.*, 2010; Deacon & Smallwood, 2003; Dickinson &Versteeg, 2004; Haupt *et al.*, 2005a; IOM, 2010; Meintjes, *et al.*, 2007; Whiteside &Sunter, 2000).

Due to the high percentage (approximately 60%) of informal labour engaged in construction (Haupt, *et al.*, 2005a), they were less likely to protect themselves against HIV transmission (Barnett & Whiteside, 2006; Meintjes, *et al.*, 2007) as a result of their lack of knowledge of their risky sexual behaviour and various misconceptions about the disease (IOM, 2010). Workers avoided personal responsibility by believing that the spread of the disease was attributable to external factors (Haupt & Smallwood, 2004), placing themselves and their families at risk (Meintjes, *et al.*, 2007).

The informal nature of the industry which was largely unregulated is also a contributing factor (Barnett & Whiteside, 2006; Bowen, *et al.*, 2010). The industry does not attract enough new young people as there was a decline in interest in careers in the construction industry (a worldwide phenomenon) (Haupt, *et al.*, 2005a). The construction industry vulnerable because of its focus on occupational safety rather than health (Deacon & Smallwood, 2003; Haupt, *et al.*, 2005a) so that health-related interventions were not undertaken nor supported (*ibid*).

The industry consists of an aging workforce (older workers were those construction workers aged 40 years and older) (Dickinson &Versteeg, 2004; Haupt, *et al.*, 2005a).The harsh environment that these older workers toil in also exposed them to numerous health threats (Deacon & Smallwood, 2003; Haupt, *et al.*, 2005a)

The construction sector had a large number of semi-skilled and unskilled workers (IOM, 2010) and are dependent on highly skilled people to direct these workers (CIDB, 2003) which further increased the industry's vulnerability to HIV and AIDS (Ahwireng-Obeng&Akussah, 2003; Meintjes, *et al.*, 2007). The predominantly semi/unskilled workers in a survey conducted by BER/SABCOHA (2005) suggested that HIV prevalence was higher among semi and unskilled workers than among skilled and highly skilled workers. The survey found that the sector employment practices were usually the prime contributor to the spread of HIV and AIDS as it increased the risk of workers becoming infected (BER/SABCOHA, 2005; Dickinson &Versteeg, 2004; Haupt, *et al.*, 2005a).

Given these serious factors, HIV and AIDS poses a grave threat to the South African construction industry and according to Bowen, *et al.* (2010) and Haupt, *et al.* (2005b) the construction industry in South Africa could, and must, do more.

3. RESEARCH METHOD

In order to gain an in-depth understanding of how the epidemic was conceived, understood and managed in the construction industry a qualitative study was carriedin order to collect resonant and fertile data. Qualitative research seeks meaning (rather than generality as with its quantitative counterpart) and builds understanding by depth instead of condensing information (Leedy&Ormrod, 2010).

Given that the aim of the research was to explore and discuss issues of HIV and AIDS vulnerability in the SA construction industry, rather than focus on the generalisation of the results, purposive sampling was employed as the sampling method (Leedy&Ormrod, 2010). The advantage of purposive sampling is that the researcher can identify participants who are likely to provide data that are detailed and relevant to the research question (Oliver, 2006). Construction firms were identified from the KwaZulu-Natal (KZN) Master Builders Association website. The reason for expanding the study to Gauteng was because some firms in KZN stated that they were unable to carry out the interview and the researcher should contact the '*head-office*' in Gauteng.

Telephonic semi-structured interviews were conducted with 28 construction firms. The interviews lasted on average 30 minutes and the researcher was clear and unambiguous in the presentation of the questions in order to reduce any misunderstanding or confusion on the part of the interviewee. Semi-structured interviews were selected so that the researcher had key questions and themes to discuss, but it also allowed the interviewee to speak freely and without fear of reprisal as well as allowing for comments and questions from the interviewee to be followed

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up.

4. DATA ANALYSIS AND RESULTS

The analysis of qualitative data does not involve counting and dealing with numbers but is based more on information expressed in wordsthat uncover patterns or themes (Leedy&Ormrod, 2010).

The researcher analysed the data by dividing the text (interview) in small manageable units and then coding it into themes as discussed below.

Sixty eight percent of the contractors interviewed were based in KwaZulu-Natal (KZN) and 32% were based in Gauteng. Out of the 28 contractors interviewed, only 7 firms had a HIV and AIDS policy, 75% of the firms did not have a policy or programme.

The average number of people employed in the participating organisations was 311, with employment ranging from 42 employees to 580 employees. The firms based in Gauteng had a full quantum of staff and in some cases were currently recruiting new employees. The firms in KZN are still trying to overcome downturn in the industry after the 2010 World Cup.

In order to convey just how vulnerable the firms are to the impact of HIV and AIDS, the researcher and interviewees had a discussion on the various problems experienced by the firms, such as loss of employees and skills due to death and ill-health; increasing absenteeism; labour turnover; training and recruitment costs. Only 25% of the firms (those that had HIV and AIDS policies) monitored absenteeism with the intension of viewing the impact that HIV and AIDS has on their employees, the other 75% were aware of the productive days lost due to absenteeism but did not pay too much attention to what attributed it, as it was more a concern of lost profit. All the firms acknowledged that they only kept a small percentage of core essential staff and their unskilled labour usually changed on different projects. The Gauteng firms experienced labour turnover of key personnel when they were offered higher salaries and in Durban labour turnover was experienced by firms retrenching staff. In both scenarios all the firms incurred training and recruitment costs that were in these cases not directly attributable to HIV and AIDS.

The researcher found that mostly large (companies that employ more than 500 employees) and medium (companies that employ between 100 and 500 employees, SABCOHA, 2005) companies had HIV and AIDS policies in place. This research confirmed the findings of Haupt,*et al.* (2005b) showing that very little has changed 8 years later. The 21 small firms (those with less than 100 employees) did not have policies or programmes in place which lead to an in-depth discussion as to why they were not implementing HIV and AIDS policies and programmes.

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Seventy five percent of contractors acknowledged that HIV and AIDS affected them and their employees. They also reported that employees had died from AIDS and that some of their current workforce was HIV-positive. Although aware of the severity of the problem and the vulnerable position they were in they did not foresee themselves implementing a specific HIV and AIDS policy. Reasons stated by the majority of contractors for not implementing a HIV and AIDS policy included:

- "they are a small company";
- "they do not have the resources to research, draft and implement an HIV and AIDS policy";
- "they think it would be too costly and time consuming."
- "they did not have enough information on HIV and AIDS in the workplace and how to implement HIV and AIDS programmes";
- "managers' level of concern about the epidemic was low overall"; and
- "HIV and AIDS was not regarded as a key business priority".

The predominant migratory labour force, made it the prime contributor to the spread of HIV and AIDS (Bowen, *et al.*, 2008; Bowen, *et al.*, 2010; Deacon & Smallwood, 2003; Dickinson &Versteeg, 2004; Haupt *et al.*, 2005a; IOM, 2010; Meintjes, *et al.*, 2007; Whiteside &Sunter, 2000).All 28 firms confirmed working away from homewas a serious problem that they encountered which definitely contributed to the spread of HIV and AIDS. In fact one interviewee stated that: *"in the first week we see only men's clothes on the line and in the second week there are female's clothes on the line."*

The researcher asked those firms that had a HIV and AIDS policy why they decided to implement a policy and the problems they encountered. The response varied from the fact that workers moved around from site to siteand were promiscuous, they noticed increased absenteeism and the fact that the client demanded it. One of the problems they experienced in implementing the policy was the fact the employees did not want to change their traditional belief systems, for example "*employees believed that they will get cured when they go to church or if they go home and slaughter two cows*".

The other problem that these firms experienced was that employees don't want to know their status as they are afraid and although this percentage was small e.g. 4% of the workforce in one particular firm, it was still 4% too much. One of the firms that implemented a HIV and AIDS policy said that they didn't experience a 100% success rate, but more employees came out and disclosed their status,and more people were enlightened about the disease. This firm hopes with time they will experience a 100% success rate.

Some of the benefits that the firms experienced from implementing a policy include the fact that employees are taking an interest in their health and asking for assistance, and they are becoming more empowered. Firms

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have also noticed a decrease in absenteeism.

Although these firms had policies in place they were unsure of what percentage of the company budget was spent on the implementation of HIV and AIDSprogramme. They did however have condom distribution programmes and HIV and AIDS were discussed regularly in toolbox talks and safety inductions. However none of the firms that had policies shared it with the subcontractors or even encouraged their subcontractors to implement a HIV and AIDS policy.

None of the 28 firms funded or are involved in funding research related to the disease. This is a major shortfall in the industry as not enough is been done to protect those most vulnerable, the employees. The 25% of the firms that had policies as had treatment referral systems to assist employees while the smaller firms relied on community clinics and state hospitals to assist their employees. Some of these firms did not even have booklets or brochures on HIV and AIDS which can be obtained for free from the Department of Health.

Those firms that had policies would like to assist the communities in which they work, it is not always possible.For the smaller firms, assisting communities was not even on their agenda.

The interviewees felt that construction firms need to implement HIV and AIDS policies and programmes because firms loose scarce skills, which results in them poaching staff from other firms, which is detrimental to the industry. Recruitment of new staff is also very expensive. Firms need to stop been afraid and need to know the severity of the epidemic in their organisations so that action can be taken.

What is even more distressing is the all interviewees expected future increase in HIV and AIDS prevalence and incidence rates. Construction firms by not acknowledging the vulnerability that HIV and AIDS pose to their firms are not only letting down their employees but they are also failing the country as a whole.

5. CONCLUSION

The consequences of ignoring the threat that HIV and AIDS poses to the construction industry can be catastrophic if the industry continues to ignore the warning signs.However the construction sector has not done enough in order to limit or prevent the impact of HIV and AIDS on its employees. If the construction industry wants to do well financially, they need a healthy, productive workforce. This in itself should be reason enough to take part in this fight against HIV and AIDS. By actively participating in this fight against HIV and AIDS, the construction industry can protect itself, improve the quality of life its employees and also assist the community. This paper highlights the fact that the construction industry is vulnerable to HIV and

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AIDS an area of research that the authors will purse in future research activities.

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Publication 3

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Threats to effective HIV and AIDS management in construction: Lessons from literature

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ABSTRACT

Purpose of this paper
HIV and AIDS in the construction industry must not be ignored or overlooked. The paper draws pointers from a comprehensive literature review about the issues impeding the involvement of the construction industry in implementing HIV and AIDS policies and programmes.

Design/methodology/approach
The research approach involves a review of relevant literature to inform how the non-involvement of construction can be addressed.

Findings
The impediments facing construction companies include, inter alia, stigma and discrimination, the cost of workplace programmes, voluntary counselling and testing, and antiretroviral therapy (ART) provision. The review suggests a more holistic approach that does not only focus on business costs to effectively manage HIV and AIDS.

Practical implications
The implementation of workplace HIV and AIDS prevention and care programmes can improve the health and wellbeing of affected employees, if the industry is able to respond effectively and proactively to the challenges they face.

Originality/value of paper.
Only by understanding the nature of the challenges faced by the construction industry in managing HIV and AIDS can prevention and

treatment programmes be implemented in order to sustain a healthy and productive workforce.

Keywords: HIV and AIDS, Construction industry, Threats, Challenges, South Africa

1. INTRODUCTION

South Africa with a population of about 50 million people has an estimated 5.7 million (11.4%) people living with HIV and AIDS. Every year there are 497 000 people newly infected with HIV and 360 000 AIDS related deaths (South African Institute of Race Relations, 2010).

The sustainability of companies is at risk due to the threats posed by HIV and AIDS (Dickinson, 2004). These afflictions endanger the lives of the economically active population, affect investor confidence and impact negatively on the economic market (Dickinson, 2004; Whiteside & Sunter 2000).

The private sector is forced to reconsider its role in assisting with fighting AIDS because it is negatively impacting the profits of businesses (Whiteside & Sunter, 2000) and companies are now confronted by many sick and/or dying employees (George, Gow & Whiteside, 2009).

The response by the construction industry to HIV and AIDS is important as the sector contributed 3% to the gross domestic product and employed over 1.1 million people in 2009 (Statistics South Africa, 2010). However the industry has not done enough to limit or prevent the impact of HIV and AIDS on its employees.

2. LITERATURE REVIEW

If the construction industry wants to do well financially, a healthy, productive workforce is needed, which in itself should be reason enough to participate in this fight against HIV and AIDS.

The implications of no action include, *inter alia*, threats to profitability and corporate social responsibility, and increased mortality of the workforce. The South African construction sector has been criticised for its lack of activities aimed at mitigating the impact of HIV/AIDS on its employees (George *et al.*, 2009).

The workplace provides an ideal platform to reach workers through the development and implementation of workplace policies and programmes on HIV and AIDS (International Labour Organization (ILO), 2010). In fact the response of corporate South Africa to HIV and AIDS has been slow, partial and erratic (Dickinson, 2004; Meintjes, Bowen & Root, 2007). In a study conducted by Harinarain and Haupt (2010) it was found that only 10% of 123 building contractors in the KwaZulu-Natal province of

South Africa had an HIV and AIDS policy in place. A survey by Bowen, Cattell, Edwards and Marks (2010) of construction firms in the Western Cape found that most organisations had awareness policies in place but prevention and treatment policies were less common.

2.1 Why should companies get involved?

Business needs to get involved because business is first and foremost a profit-oriented venture. Human capital is lost, HIV and AIDS affect the economically active population (the workers aged between 20 and 49 years) hardest (Bloom, *et al.*, 2000; Bloom, Bloom, Steven & Weston, 2006; Business action for Africa, 2007; George, *et al.*, 2009).

The working environment is a place where most people spend a large amount of their time and is, therefore, an ideal setting in which to address HIV and AIDS (BER)/South African Business Coalition on HIV/AIDS (SABCOHA), 2005; ILO, 2010; Nattrass *et al.*, 2004).

It makes good business sense to address HIV and AIDS in the workplace because failure to do so results in decreased productivity due to increased absenteeism and also because sick workers are less productive. Fatigue results in frequent accidents in the workplace. The loss of employees to the disease results in increased costs to the company in terms of replacing those skills lost and/or training of new employees. Ultimately the declining population growth rate will result in companies having a smaller skills base from which to choose their employees. Labour costs will also increase as companies have to increase their contributions for medical aid and life and/or disability coverage (Dickinson, 2004; ILO, 2010; Whiteside & Sunter, 2000).

Recent increased pressure from clients to implement an HIV and AIDS policy has resulted in companies getting involved (Harinarain & Haupt, 2011).

Although the pace of vaccine development has escalated there is still no cure for AIDS. Even following a major breakthrough, trials and distribution would take many years (Bloom, *et al.*, 2000). The best defence at present is information.

Companies are being pressured to make a positive contribution to society in the fight against HIV and AIDS via corporate social responsibility (George, *et al.*, 2009; Overseas Development Institute (ODI), 2007). Failure by firms to address AIDS may impact negatively on their reputation and, consequently, their bottom line. (ODI, 2007).

The cost of treating an HIV-infected person has dropped considerably resulting in companies reassessing their situation with regard to providing treatment (George, *et al.*, 2009).

The construction industry needs to respond to the epidemic because operators/drivers (semi-skilled workers) have the highest prevalence (21%) of HIV, followed by skilled construction workers and then labourers (Bowen, *et al.*, 2008). This is important because these employees cannot easily be replaced and are therefore usually more permanently employed than general labourers.

2.2 The challenges faced in implementing HIV and AIDS programmes

The challenges facing companies in responding to HIV and AIDS include stigma and discrimination, the high costs of workplace programmes, voluntary counselling and testing and antiretroviral therapy (ART), lack of prevalence testing, HIV and AIDS policies, low usage of codes, guidelines and best practice, slow response by the construction industry, lack of action by small and medium enterprises, migrant labour and the asymptomatic period of the disease.

2.2.1 Stigma and discrimination

HIV and AIDS is perhaps the most stigmatised medical condition in the world (Harinarain & Haupt, 2010). Together, stigma and discrimination constitute the greatest barriers in HIV testing and prevention and care (Bowen, *et al.*, 2010; Harinarain & Haupt, 2011; Mahajan, Saylesc, Patela, Remiend, Sawiresa, Ortize, Szekeresa, & Coatesa, 2008), as well as acting as a deterrent to accessing antiretroviral therapy (Mahajan *et al.*, 2008). The stigma attached to HIV and AIDS creates a feeling of loneliness and a sense of isolation (Haupt, Munshi & Smallwood, 2005).

The South African construction industry attempted to address stigma and discrimination, but with very little success. In a study conducted by Harinarain & Haupt (2010) workers did not disclose their HIV status due to fear of discrimination from their co-workers and not due to fear of losing their jobs. This finding suggests that the workplace polices did not have much effect in reducing the effects of stigma and discrimination as employees still seemed to fear the reactions of their fellow workers.

In order to reduce the stigma attached to HIV and AIDS, the following are suggested (Harinarain & Haupt, 2010; UNAIDS, 2010), namely that HIV and AIDS education and training be communicated to all staff repetitively using multiple mediums and the construction vernacular; assistance of people living with HIV and AIDS as role models; improved workplace policies that reassure workers and reduce stigma and discrimination; training of peer educators; formation of strategic partnerships to reduce the costs of HIV and AIDS programmes; and visible involvement and commitment of the senior management of firms.

2.2.2 High costs of workplace programmes

High mortality rates due to HIV and AIDS impose costs on businesses (Business action for Africa, 2007). These costs can be direct or indirect (productivity-linked costs) (George, *et al.*, 2009). The direct costs include increased medical costs, and the costs of recruiting and training replacement employees. The indirect costs include the decreasing productivity, increased absenteeism from work due to morbidity and attendance of funerals, increased supervisor's time in managing the ill employees, increased recruitment and training costs, decreasing staff morale, the loss of skills and experience and initially lower productivity of the new employees (Business action for Africa, 2007; George, *et al.*, 2009; ILO, 2010; Nattrass, *et al.*, 2004; ODI, 2007).

Bowen, *et al.* (2010) found a significant relationship between the existence of a treatment programme and perceptions of financial viability. Once firms actually ran treatment programmes they were able to see the financial viability of it. This study also found a significant relationship between the perceived financial viability of treatment programmes and the existence of a treatment policy within the company which may be due to the declining cost of treatment (Bowen, *et al.*, 2010).

By tackling HIV and AIDS in the workplace, new infection can be prevented, productivity is ensured, and negative effects on the profit margin are mitigated (Ala, 2004). Bowen, *et al.* (2010) and George, *et al.* (2009) have provided reasons why treatment programmes are viable. These include the fact that it adds value to the workforce; the cost effectiveness of retaining skilled persons; it promotes employee wellness and reduces mortality rates. The short-term costs are outweighed by the long-term savings (providing AZT drugs versus time off to attend government clinics).

2.2.3 Voluntary counselling and testing (VCT) and antiretroviral therapy (ART)

The underlying economic imperative for providing ART, according to Bowen, *et al.* (2010), is that it enables infected workers to remain productive, and contains recruitment, training and absenteeism costs. However, the greatest barriers that South Africa faces are a low uptake of HIV counselling and testing (Bowen, *et al.*, 2010), weak integration of tuberculosis–HIV services and poor access to antiretroviral therapy (George, *et al.*, 2009; UNAIDS, 2010). The low uptake of services has resulted in companies not maintaining a healthy workforce and therefore not experiencing the gains anticipated from investing in treatment (*ibid*). This is confounded by the fact that employees are unaware of their HIV status and do not present themselves to be tested (George, 2006).

Reasons cited for not mounting a treatment programme (Bowen, *et al.*, 2010) include amongst others: the cost of such campaigns; insufficient resources to manage the process; guaranteeing the confidentiality and anonymity of employees and the perception that HIV/AIDS has very little effect on the company.

Reasons cited by Bowen, *et al.* (2010) for supporting the implementation of treatment programmes include: the added value to the workforce; the cost effectiveness of retaining skilled persons; promotion of employee wellness and action as a motivating factor; facilitating knowledge about employee wellness and the fact that the short-term costs are outweighed by the long-term savings.

The business case has been bolstered by the falling costs of ARV treatment over the past five years, which has provided a greater incentive for business to provide treatment for employees, rather than relying on the public health system (ODI, 2007)

2.2.4 Lack of prevalence testing

Understanding the epidemiology of HIV in the workplace assists to facilitate effective management of the epidemic, and can be used to monitor and evaluate the success of treatments. However, data on HIV prevalence in South Africa is drawn from sentinel surveys of pregnant women attending antenatal clinics and are not representative of formal sector workforces. Evian, Fox, MacLeod, Slotow and Rosen (2004) carried out voluntary anonymous, unlinked zero-prevalence surveys of 34 workforces with 44 000 employees in South Africa, Botswana, and Zambia during the period of 2000 through 2001. Their study found that HIV prevalence among workers was different to those among antenatal clinic attendees because workplace surveys generated prevalence estimates for demographic groups that were not represented in antenatal surveys which in fact strengthened support for prevention and treatment interventions (*ibid*). The problem is further exacerbated by the fact that HIV/AIDS is not a reportable disease in SA as compared to other diseases, e.g. Tuberculosis or Malaria (Department of Health, 2012), which also affects the accuracy of prevalence rates. A study by Harinarain and Haupt (2011) found that none of the firms in KZN had conducted prevalence testing. As a result their estimates of numbers of HIV positive people in the company were based solely on perception and the inference they were making when tracing, for example, high absenteeism rates and sick leave.

In order to implement and maintain effective HIV and AIDS treatment and prevention programmes, business needs to conduct voluntary anonymous, unlinked zero-prevalence surveys, in order to know the true extent of the damage on the workforce.

2.2.5 Lack of HIV and AIDS policies

One of the most effective ways of reducing and managing the impact of HIV and AIDS in the workplace (Department of Labour, 2000) is through the implementation of an HIV and AIDS policy and programme that guides the employer and employee on their rights and responsibilities.

The primary response of the South African government to protect those infected and affected by HIV and AIDS was through creating a legal framework of various Acts of Parliament such as, for example, the Constitution of South Africa (No. 108 of 1996); the Employment Equity Act

(No. 55 of 1998); the Labour Relations Act (No. 66 of 1995), the Medical Schemes Act (No. 131 of 1998) the Occupational Health and Safety Act (No. 85 of 1993) and the Basic Conditions of Employment Act (No. 75 of 1997) (Harinarain & Haupt, 2010). The most important outcome of these Acts is the prohibition of discrimination against anyone on the basis of their HIV status. SA companies are therefore required to comply with laws, regulations and protocols relevant to HIV and AIDS (Dickinson & Innes, 2004) regardless of whether or not they had an HIV and AIDS policy in place.

Bowen, *et al.* (2010) found that a slight majority of the participating Western Cape construction firms (55%; *n*=23) perceives HIV/AIDS to constitute a long-term problem for the industry with only two-thirds (67%) of the companies reported having an HIV and AIDS policy. Large firms were found to be no more likely than smaller ones to have developed such a policy. A significant relationship was found between the availability of a policy and the perception of HIV and AIDS as a threat to the industry (*ibid*).

Harinarain and Haupt (2011) found that the legal framework did not influence companies to respond to the HIV and AIDS pandemic. However, these firms ensured that there was no pre-employment HIV testing and that as far as possible they did not discriminate against their employees on the basis of their HIV zero-status.

2.2.6 Low usage of codes, guidelines and best practice

In order to assist the private sector in dealing with those infected and affected by HIV and AIDS, various government departments and organisations have written up best-practice guidelines and codes. However, unlike the various previously mentioned Acts, these policies and codes were voluntary frameworks for action. The HIV and AIDS strategy for the construction industry is covered by the Department of Public Works HIV/AIDS Awareness Programme Training Manual (Department of Public Works (DPW), 2004). The Construction Industry Development Board (CIDB) drew up The Generic Specification for HIV/AIDS Awareness for public comment in 2003 (CIDB, 2003).

International guidelines include the UNAIDS HIV/AIDS and Human Rights International Guidelines – Consolidated version, The ILO Code of Practice on HIV/AIDS and the World of Work and The South African Development Community-Code on HIV/AIDS and Employment (Harinarain & Haupt, 2010).

These documents guide companies in drawing up policies and outline what steps or programmes they should implement in the workplace (Dickinson & Innes, 2004).

However, Vass (2004) and Whelan, *et al.* (2008) argue that the connection between the guidelines and implemented best practice remains weak and incompatible. According to Harinarain and Haupt (2011) voluntary best-practice guidelines and codes were not major drivers for these construction companies to take action in order to combat HIV and AIDS. The marginal uptake of the codes and guidelines however raises two important concerns: first, from where are companies accessing information on how to design and implement best-practice HIV/AIDS programmes; and, second, how reliable are alternative resources? (Whelan *et al.*, 2008).

2.2.7 Slow response by the construction industry

The response of the South African construction industries to HIV and AIDS started late in the epidemic, with only 12.5% of the companies in KZN implementing an HIV and AIDS policy eight years ago. The majority of the firms (75%) had their respective policies in place between three to five years and 12.5% had only started implementing their policy as recently as one year ago (Harinarain & Haupt, 2010).

In 2002, the South African Business Coalition on HIV and AIDS (SABCOHA) reported that the majority of companies in South Africa had yet to assess the risk of HIV and AIDS within their workforces and begin to mount a response to this risk. Not much seems to have changed ten years later as 90% of contractors in KZN (Harinarain & Haupt, 2010) still did not intend implementing a specific HIV and AIDS policy even though they were aware of employees who have died from AIDS and that some of their current workforce were HIV-positive. The reasons given were that they considered themselves a "small company, and did not have the resources to implement an HIV and AIDS policy which would probably be too expensive and time consuming" (Harinarain & Haupt, 2010).

Dickinson (2004) offered two explanations for the slow response of South African business to the threat of AIDS, namely that South African government had failed to lead and co-ordinate a national response to AIDS and that the senior managers believed that AIDS would not have a significant impact on their operations.

2.2.8 Lack of action by small and medium enterprises

Some 90% of contractors in KZN had not as yet realised the importance of having and implementing an HIV and AIDS policy (Harinarain & Haupt, 2010). They reported that they did not foresee themselves implementing a specific HIV and AIDS policy. Reasons proffered included that they were a small company with average numbers of employees < 25; that they did not have the resources to research, draft and implement an HIV and AIDS policy; and they thought it would be too expensive and time consuming. These findings were in line with those of other studies (Ala, 2004; BER/SABCOHA, 2005).

There are many inexpensive actions that small and medium enterprises could take to protect their employees from the ravages of HIV and AIDS. Larger companies could support smaller employers by effectively sharing good practice (Business Action for Africa, 2007). Although small firms perceived the development of a policy to be costly and time consuming, the fact that they were doing something, even in a small way, would demonstrate commitment and assist in creating a working environment of trust and confidence (Harinarain & Haupt, 2010).

2.2.9 Migrant Labour

The construction industry is particularly vulnerable to the pandemic because it employs a constantly changing labour force working on short-term contracts (Whiteside & Sunter, 2000). It also employs permanent employees who move between projects across the country and in other countries. Typically migrant labour works in conditions that promote poor lifestyle choices, increasing their risk of contracting HIV (Bowen, *et al.*, 2008).

2.2.10 The asymptomatic period

The progression from HIV to AIDS differs from person to person. Symptoms can appear any time from six to eight years after infection. The initial costs associated with HIV and AIDS are very low but increase as the employee progresses to AIDS (George *et al.*, 2009).

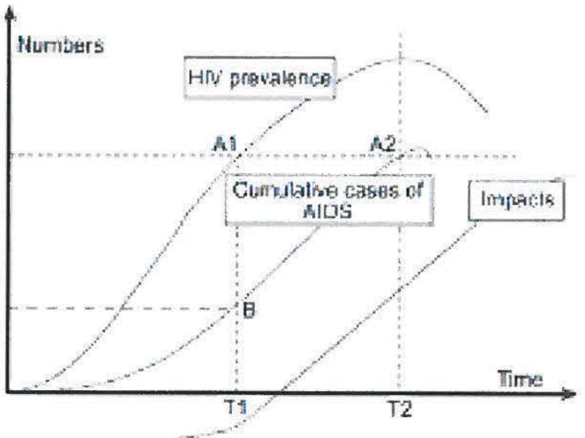

Figure 1: Three curves depicting the HIV and AIDS epidemic (Whiteside & Sunter, 2000: 27).

Figure 1 illustrates the asymptomatic/incubation period (8–10 years) between initial HIV infection, and the period of subsequent cumulative AIDS-related illnesses and deaths (Whiteside & Sunter, 2000). The impacts that would follow are represented by a third curve; it is these impacts that are being felt by many companies in South Africa (George, 2006). Figure 1 portrays the gradual impact of this on absenteeism and productivity, resulting in employers having to replace and train new employees to fill positions left by those who have died or left work due to ill health. As a result, companies will experience a large-scale loss of existing skills and institutional memory within the organisation (George, 2006).

Science and medicine has made tremendous inroads in the treatment of HIV, which assists in prolonging the productive lives of people living with HIV and thus enabling them to work for a longer period of time after being infected. According to Oppenheimer (2007) antiretroviral therapy (ART) is vital to control the virus, but there is a danger that other equally important aspects, including HIV prevention and combating stigma, are slipping off the radar. This problem thus needs to be looked at holistically in order to win the fight posed by HIV and AIDS.

2.3 What can companies do?

Companies can respond to the threat of HIV and AIDS by providing prevention and care treatment programmes (Ala, 2004) which ensure a healthy workforce, increase productivity and reduce absenteeism (Nattrass, *et al.*, 2004). Business can also contribute to reducing the spread of HIV and AIDS by:

- developing and implementing HIV and AIDS policies
- addressing stigma and discrimination;
- engaging with the community;
- promoting condom use and distributing condoms;
- optimising the use of their problem-solving expertise;
- providing prevention education;
- helping to change the behaviour of employees;
- increasing access to voluntary counselling and testing;
- using company leadership as positions of authority in the lives of workers;
- supporting mass communication opportunities;
- using their financial power;
- being actively involved through participation of peer educators;
- involving people living with HIV and AIDS to help reduce stigma and discrimination; and
- using business relationships to encourage sub-contractors to adopt effective HIV and AIDS workplace programmes (Ala, 2004; Bloom, *et al.*, 2000; Bloom, *et al.*, 2006; Business action for Africa, 2007; George, 2006; McGreevey, Alkenbrack & Stover, 2003; Nattrass, *et al.*, 2004).

3. CONCLUSION

Although AIDS is at present incurable, HIV infection can be prevented and AIDS can be treated even if only to improve quality of and extend life. However, only a small percentage of construction firms in South Africa appears to be responding to the current impact of HIV and AIDS. The industry still has a long way to go in terms of adequately assisting its employees in the fight against HIV and AIDS. However there are still areas for concern and room for improvement in terms of overcoming the challenges faced by firms in effective HIV and AIDS management. Ultimately, firms should try to support employees living with HIV and AIDS for as long as possible and encourage those that are HIV-negative to stay negative through behaviour change. Even small steps taken to manage HIV and AIDS could show rewards in the future in terms of a healthy workforce and reduced financial impact on business.

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