

# **An analysis of strategy plan on business performance of a water utility (A Midvaal water company case study)**

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Mini-dissertation submitted in partial fulfillment of the requirements for the degree Masters in Business Administration at the Potchefstroom Campus of the North-West University

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November 2014

## DECLARATION

I declare that this mini-dissertation is my own work. I further declare that apart from the assistance acknowledged, the research contained in this mini-dissertation is my own unaided work. It is being submitted in partial fulfilment of the requirements for the degree Masters in Business Administration at the Potchefstroom Campus of the North-West University. It has not been submitted before for any other degree or examination to any other university.

I also declare that nobody including Prof RA Lotriet (Supervisor), but myself is responsible for the final version of this mini dissertation.

Erven Sello Malatji

Signature.....

Date: 16 October 2014

# ABSTRACT

The purpose of the research was to assess the strategic management process of a water utility in South Africa. The research focused on Midvaal Water Company, a section 21 water utility based in South Africa, North West Province town of Klerksdorp. The objectives of the study were; (a) to assess the organisational level of knowledge when it comes to SMP, (b) to determine different perceptions with regards to SMP between management and employees, (c) to determine the organisational profiles (age, gender, educational qualifications, race and employment type).

Literature review was conducted covering the South Africa water framework paying particular attention to different role players and legislative framework governing the sector; the latter included the strategic management process of a water utility as applied in the Midvaal Water Company context. The research approach was quantitative methodology, which involved distribution of questionnaires as part of field work in the water utility. Questionnaires were analysed through statistical approach, and further linked back to the problem statement. The questionnaires were also tested for Validity and reliability which was found to be acceptable.

The results indicate that there is a correlation between strategic management process and organisational results. The results also provide interesting relationships between variables that can be explored further. In conclusion successful implementation of strategy requires both leadership and employee commitment. More effort needs to be put in place to ensure that there is an understanding of company values mission and vision. As part of the succession planning the water utilities should consider succession planning as a tool to develop future leaders, by identifying future potential leaders and involving them in the strategy crafting process can help in creating a pool of competent future leaders that will contribute to the well being and sustainability of the water utility.

## **Keywords:**

Strategy, strategic management process, water challenges, water resource management, water utilities

## ACKNOWLEDGEMENT

- First and foremost I would like to thank God, (Jehovah) my creator, for the love and life he gave to me.
- I would like to thank my supervisor Professor Ronnie Lotriet, for the guidance and support throughout my studies.
- To my parents, Mr Evans Mashile and Mrs Ronnica Mokwape Malatji, for always being there and encouraging me to follow my dreams.
- To my grandmother Mrs Mokgadi Malatji, “*ngwana wa mo tšhiwa Kgole*” even though you never set foot in a classroom door, you always knew the importance of education.
- To my children, Mokgadi D`Abvgail, Kgahliso, Kuno Mokuhle and Abang Evans Jr, I will forever be motivated.
- To my siblings, Irene, Tshepo, Mafete, Mafeto, Modjadji and Uncle Bright, thanks for your love and support throughout the years
- To my fiancé Ms Realeboha Mmasenate Ratau, thanks for your love and encouragement.
- To the Midvaal Water Company management, thank you for allowing me to conduct my research at your organisation
- To my fellow employees at the Midvaal Water Company, thank you for your time donated to complete the questionnaires, I really appreciate your generosity.
- To my previous manager and mentor at BP Southern Africa, Mr Elias Alexander “its a jungle out there”.

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## **List of abbreviations**

|        |                                                               |
|--------|---------------------------------------------------------------|
| ACIP   | Accelerated Community Infrastructure Programme                |
| AIDS   | Acquired Immune Deficiency Syndrome                           |
| AgriSA | Agriculture South Africa                                      |
| ASGISA | Accelerated and Shared Growth Initiatives South Africa        |
| AMD    | Acid Mine Drainage                                            |
| ARMC   | Audit and Risk Management Committee                           |
| BBBEE  | Broad Based Black Economic Empowerment                        |
| BC     | Before Christ                                                 |
| BCE    | Basic Condition of Employment                                 |
| BSC    | Balanced Score Card                                           |
| BUSA   | Business Unity South Africa                                   |
| CCMLM  | City Council of Matlosana Local Municipality                  |
| CEO    | Chief Executive Officer                                       |
| CIPRO  | Companies and Intellectual Property Commission                |
| CSIR   | Council for Scientific and Industrial Research                |
| CMAs   | Catchment Management Agencies                                 |
| DSM    | Demand Side Management                                        |
| DWA    | Department of Water Affairs                                   |
| EE     | Employment Equity                                             |
| EWSETA | Energy and Water Services Sector Education Training Authority |
| FET    | Further Education and Training                                |
| GDP    | Gross Domestic Product                                        |
| HIV    | Human Immunodeficiency Virus                                  |

|       |                                                         |
|-------|---------------------------------------------------------|
| HSRC  | Human Sciences Research Council                         |
| HRRC  | Human Resources and Remuneration Committee              |
| HSSE  | Health Safety Security and Environment                  |
| HR    | Human Resources                                         |
| ICAS  | Independent Counselling and Advisory Services           |
| IDMC  | Infrastructure Development and Maintenance Committee    |
| IT    | Information Technology                                  |
| IMESA | Institute of Municipal Engineers of South Africa        |
| IMFO  | Institute of Municipal Financial Officers               |
| IWRM  | Integrated Water Resources Management                   |
| KPIs  | key Performance Indicators                              |
| KPAs  | key Performance Areas                                   |
| LRA   | Labour Relations Act                                    |
| KOSH  | Klerksdorp, Orkney and Stilfontein and Hartebeesfontein |
| LHWP  | Lesotho Highlands Water Project                         |
| LLF   | Local Labour Forum                                      |
| MDGs  | Millennium Development Goals                            |
| MDP   | Management Development Programme                        |
| MOU   | Memorandum of Understanding                             |
| MSA   | Kaiser's Measure of Sample Adequacy                     |
| MTSF  | Medium Term Strategic Framework                         |
| MWC   | Midvaal Water Company                                   |
| MWIG  | Municipal Water Infrastructure Grant                    |
| NDP   | National Development Plan                               |
| NGWRS | National Ground Water Resource Strategy                 |
| NPC   | National Planning Commission                            |

|        |                                                                        |
|--------|------------------------------------------------------------------------|
| NPO    | Non Profit Organisation                                                |
| NQF    | National Qualification Framework                                       |
| NWA    | National Water Act                                                     |
| NWR2   | National Water Research Strategy 2 <sup>nd</sup> edition               |
| NWU    | North West University                                                  |
| OECD   | Organisation for Economic Co-operation and<br>Development              |
| PESTEL | Political, Economic, Social, Technological, Environmental and<br>Legal |
| RBIG   | Regional Bulk Infrastructure Grant                                     |
| SABS   | South African Bureau of Standards                                      |
| SAICE  | South African Institute of Civil Engineers                             |
| SALGA  | South African Local Government Association                             |
| SAMWU  | South African Municipal Workers Union                                  |
| SANS   | South African National Standards                                       |
| SAPA   | South African Press Association                                        |
| SAS    | Statistical Analysis System                                            |
| SANAS  | South African National Accreditation System                            |
| SBU    | Strategic Business Unit                                                |
| SCM    | Supply Chain Management                                                |
| SMART  | Simple, Measurable, Attainable, Relevant and Time bound                |
| SMP    | Strategy Management Process                                            |
| SWOT   | Strength, Weakness, Opportunity and Threats                            |
| TCTA   | Trans Caledon Tunnel Authority                                         |
| UASA   | United Association of South Africa                                     |
| WEF    | World Economic Forum                                                   |

|       |                                                  |
|-------|--------------------------------------------------|
| WESSA | Wildlife and Environment Society of South Africa |
| WFGD  | Water for Growth Development                     |
| WHO   | World Health Organisation                        |
| WISA  | Water Institute of South Africa                  |
| WRC   | Water Research Council                           |
| WSA   | Water Services Authorities                       |
| WSP   | Water Service provider                           |
| WUAs  | Water User Associations                          |
| WUL   | Water Use Licence                                |

# **Chapter 1**

## **Nature and scope of the study**

### **1.1 Background**

The South African water industry is facing challenges, as the country is striving to grow its economy: raw water quality is deteriorating; infrastructure is old; under-investment in water infrastructures; poor revenue collection; skills shortages in the water sector; and climate change are some of the challenges facing the water industry. Communities throughout the country vent their frustrations with water shortages by means of protest demonstrations which often result in violent clashes with the police force.

Water is the basis for human life, economic development and environmental preservation, therefore it connects various actors in society (DWA, 2009(a):2). South Africa is a water-stressed country and is facing a number of water challenges and concerns, including security of supply, environmental degradation and resource pollution. The limited water resources require careful management to enable the provision of basic water services to every citizen, while meeting the needs of economic growth without threatening the environmental integrity of water resources (DWA, 2013(a):7). South Africa is ranked as the 30<sup>th</sup> driest country in the world when it comes to rain fall. The country is semi-arid with rainfall varying from less than 100mm per annum in the west to over 1500mm per annum in the east. The average rainfall is 450 mm per annum which is well below the world average of 860 mm per annum (DWA, 2013(b):5).

Water scarcity, deteriorating raw water quality, ageing infrastructure, under-investment in water infrastructures, poor revenue collection, skills shortages in the water sector, and climate change, put the Government and water role players in a difficult position to manage the water value chain so that quality potable drinking water is continuously delivered to households and industrial consumers. Whether in the private sector, the public sector or non-profit organisations, the ultimate goal is the same. Organisations are striving to adopt world class practices that will enhance

their performance with the view to be customer focused; reduce cost; achieve operational excellence; and gain and maintain a competitive advantage (Hough *et al*, 2011:06).

The water sector in the South African context is not characterised by competition among the water utilities, the geographical area of supply is determined and allocated by the Minister of the Department of Water Affairs. Water Boards are DWA-owned and water utilities are either municipality-owned, Johannesburg Water, Maluti-a-Phofung or privately owned such as the Midvaal Water Company (MWC), and Sembcorp-Selulamanzi.

The activities of these organisations affect South African lives. From the economy, to households “Water is a source of life”. From executives to the floor level of these organisations, employees need to be aware of what service delivery is all about, to what extent the organisation’s capacity can be stretched to meet the demand at the lowest possible cost, without compromising quality. To which direction the organisation should be heading and how to achieve the much needed service delivery. Strategy addresses these questions; therefore a need for organisations to craft, implement and continuously review strategy becomes a priority.

To achieve and maintain a competitive advantage for service delivery in the water sector, Water Boards and water utilities, are required to develop and implement strategies to ensure that the Government’s service delivery initiatives are met. Strategy is the overall concept of how an organisation plans, coordinates and executes its activities in order to conduct business successfully and delivering superior returns to shareholders (Bamford & West, 2010:9).

## **1.2 Problem statement**

The process of delivering quality, safe drinking water to consumers is attributed to a network of carefully planned and coordinated activities. In South Africa, the value chain of the water retail industry is characterised by a political interwoven partnership involving the National Government departments, water utilities and the local government (DWA, 2013(a):14). Water utilities are expected to perform in order to

keep the household and industrial tap flowing, therefore a need exists to craft and continuously review strategy that will enhance business performance.

The challenge facing water utilities is that bulk water, after purification, is sold to municipalities that do not have good track record in honouring their financial obligations. According to the South African Press Association (SAPA, 2010), by the end of June 2010, municipalities were owing water utilities and the Department of Water Affairs a total amount of R1.58 billion in unpaid water bills. The ability of the organisation to achieve acceptable results is paramount, without financial capability, an organisation's pursuit of its strategic vision as well as sustainability is threatened (Hough *et al.*, 2011:35).

South African water utilities are operating in a confined, highly legislated and politically influenced environment. In most cases there is no competition in their geographical area of operation that could threaten the market. In terms of the National Water Act, 1998 (Act no. 36 of 1998) water users are required to take precautionary measures in order to ensure that their activities are not polluting the rivers downstream. A lack of a legislative framework for water polluters leads to water utilities having to bear additional costs in their treatment processes. Water boards and water utilities formulate, execute and continuously review strategies internally to remain low cost producers to generate enough revenue to cover the operational and capital costs needed for their ageing infrastructure.

The ultimate survival and performance of water utilities lay within the organisation, since it does not have the control over, or the ability to negotiate the price of polluted raw water, and secondly, the price of the purified water is guided by the National Treasury through the Water Industry's Act (Section 35) of the pricing order issued by the National Treasury from time to time. It is important that whatever strategic direction the utility is taking, the strategy is communicated and understood down to the floor level employees, because business performance depends on it.

### **1.3 Objectives of the study**

The research objectives are divided into primary and secondary objectives.

#### **1.3.1 Primary objective**

The primary objective of the study is to assess the strategic Management Process (SMP) of a water utility in South Africa.

#### **1.3.2 Secondary objectives**

The secondary objectives of the study are as follows:

- To assess the organisational level of knowledge in terms of SMP;
- To determine alignment of Medium Term Strategic Framework (MTSF), DWA and MWC objectives; and
- To determine the water utility's demographics (age, gender, educational qualifications, and race).

### **1.4 Scope of the study**

#### **1.4.1 Geographical demarcation**

The Midvaal Water Company (MWC) is situated on the banks of the Vaal River in the North West Province town of Klerksdorp, under the City Council of Matlosana Local Municipality (CCMLM) in the Republic of South Africa. The MWC was established in 1954 by Genkor (Pty) Limited, one of the mining houses in the region at that time, originally to supply water to the South African mining institutions that were being established in the Klerksdorp, Orkney, Stilfontein and Hartebeesfontein (KOSH) area. To date the MWC supplies 140 mega-litres of treated potable drinking water to the CCMLM and gold mines in the KOSH area (MWC, 2013). The organisation operates as a Section 21, a non-profit organisation that said all revenue generated is utilised for daily operations and infrastructure development.

In total, the organisation serves an area which spans 900 square kilometres across the KOSH region. The organisation supplies the CCMLM with 66.7% of its portable water while the remaining 33.3% goes to the mining operations and other smaller remote domestic consumers (MWC Annual Report, 2012:13). The company has an operating capacity to purify and distribute 250 mega litres of potable water per day and an installed capacity of 320 mega litres of water per day. However, due to down-

scaling and rationalization of mines in the region, the average daily supply of water is 130 mega litres (MWC, 2013).

## **1.5 Research methodology**

This study's relevance to the specific objectives consists of two phases, namely a literature review and an empirical study.

### **1.5.1 Literature review**

Literature review will be conducted utilising readily available material in the form of the following sources: text books, the Internet, publications, articles, journals, newspapers, magazines and the North West University's (NWU) on-line library.

The purpose for conducting such a review is to establish an understanding of the management of water as a strategic resource. This knowledge will be utilised to assess and draw conclusions on the impact of strategy on business performance.

### **1.5.2 Empirical investigation**

#### **1.5.2.1 Structured interviews**

Structured interviews will be conducted during working hours with employees who cannot read or write. The objectives of these interviews will be to give the targeted population an opportunity to express their views on the subject matter relating to the effect of strategy management process (SMP). Both open-ended and leading questions will be asked.

#### **1.5.2.2 Questionnaires**

The techniques to distribute and complete the questionnaires will be physical deliveries. Questionnaires will be delivered to randomly selected employees in different departments within the company. Should it occur that employees, schedules are congested or that they are unable to complete the questionnaires; the

questionnaires will be completed through telephonic interviews and the researcher will fill in the questions on behalf of the employees.

### **1.5.2.3 Population and sampling**

According to (Lavine *et al.*, 2011:34), a population consists of all the items or individuals about which the researcher wants to draw a conclusion, while a sample is the portion of a population selected for analysis. For the purpose of the study no random sampling will be conducted due to the flat structure of the organisation, however the total available population of 244 of research participant will be considered.

### **1.5.2.4 Measuring tools**

A 5-point Likert scale will be utilised to rate the weight of the questions asked on the questionnaires.

**Table 1.1: 5-point Likert Scale**

| <b>1</b>                 | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b>              |
|--------------------------|----------|----------|----------|-----------------------|
| <b>Disagree strongly</b> | Disagree | Not sure | Agree    | <b>Agree strongly</b> |

(Source: Vagias, 2006)

### **1.5.2.5 Statistical analysis**

The data collected will be sent to the NWU Statistics Consulting Services for analysis using the Statistical Analysis System (SAS), version 9.3. The descriptive statistical analysis method will be used to present data graphically by means of bar charts pie, charts, and gross tabulation, followed by the interpretation and discussion of the results.

- A pilot survey will be conducted with five questionnaires, in order to test the validity of the question; and
- A statistical verification of the scale will be conducted to test reliability.

## **1.6 Limitations of the study**

There are no major limitations envisaged for the strategic business performance review however, the following facts might affect the research:

- The willingness of the targeted population to partake in the study;
- The availability of the sample to conduct interviews;
- The time frames for completion of the questionnaires may be a challenge to the researcher;
- Permission to conduct the research might be difficult to obtain from the CCMLM's water services sections; and
- The sample size may produce biased results.

## **1.7 Chapter layout**

The chapters in this mini-dissertation are presented as follow:

### **1.7.1 Chapter 1: Nature and scope of the study**

The first chapter provides a background of the role of the water utilities in South Africa, and the complexities that they encounter in delivering quality drinkable water to their demarcated areas of operation, and how they deploy strategies to enhance business performance, leading to the rationale of the study. This chapter also relates to the research design and methodology for the purpose of the study and the general and specific objectives.

### **1.7.2 Chapter 2: The management of water resources in South Africa**

The second chapter covers the theoretical foundation of the study and outlines the management of water resources in South Africa. It contextualises business performance of a water utility and further highlights the elements of a credible strategy, as defined theoretically. Finally, the chapter clarifies and discusses certain terms related to the study topic.

### **1.7.3 Chapter 3: Strategic management process in a South African water utility**

Chapter three discusses the concept of strategy, its history, and how it is utilised by different organisations in order to achieve their objectives.

#### **1.7.4 Chapter 4: Empirical study**

The results of the empirical study on the performance management system are presented and discussed. In this chapter, the findings are summarised and recommendations for improvements are made.

#### **1.7.5 Chapter 5: Conclusions and recommendations**

In this chapter conclusion are drawn from the study, and recommendations are made to the water utility

#### **1.8 Chapter Summary**

This chapter provided a an overview of the study by introducing the problem statement, the primary and secondary objective to be achieved

# **Chapter 2**

## **Water resources and management in South Africa**

### **2.1 Introduction**

South Africa has undertaken considerable reform in different spheres of the Government since 1994 with aim to make water provision accessible to all citizens. The DWA, as the national custodian and leader of the South African water sector, operates at national, provincial, and local levels and across all elements of the water cycle (from water source and water abstraction; via water processing and distribution; to water services; wastewater collection; treatment; and discharge (DWA, 2010:3).

The water sector, like any other sphere of Government is characterised by its own challenges, given the complexity of the structures involved in the water value chain. The South African Government, through the DWA, has instituted a number of structures over the past 20 years with the aim of water service provision to the people. According to the DWA (2009(a):1), the structure included formal high-level politically led structures such as the Provincial Water Liaison Committees; non-statutory provincial and district-level planning forums for engaging local government; sanitation task teams at district, provincial and national levels; coordinative structures between the South African Local Government Associations (SALGA), the Department of Cooperative Governance and Traditional Affairs and the DWA.

The management and coordination of this structure can be daunting for the DWA which results in backlogs in water provision. The DWA, through its national office and represented throughout the nine provinces, playing a role in formulating policies [Water Services Act, 1997 (Act No.108 of 1997), Water Research Act, 1971 (Act No. 34 of 1971) and the National Water Act, 1998 (Act No.36 of 1998)]. The DWA is also responsible for water resource management and water provision, through institutions like Water Boards, private water utilities, Catchment management Agencies (CMAs) and Water User Associations (WUAs). According to the South African Yearbook (2012 / 13:652), in order for the DWA to further promote sustainability and equitable

water resource management, it has developed and continues to update a range of strategies for water management:

- National Water Resource Strategy (NWRS);
- Water for growth and development (WFGD);
- Raw water pricing strategy; and
- National ground water strategy.

The aim of these strategies and the policies outlined is to support the country's 2030 vision which is known as the National Development Plan (NDP).

## **2.2 The management of water resources in South Africa**

Water is not distributed evenly across the globe, with nine countries, namely Brazil, Russia, China, Canada, Indonesia, USA, India, Columbia and the Democratic Republic of Congo possessing 60% of the world's available freshwater supplies (Wales *et al.*, 2011:4). The World Economic Forum Global Risk Report (WEF Global Risk Report, 2012) advocates that South Africa is the 30<sup>th</sup> lowest country in per capita water availability; the situation is thus far more pressing for the country. Based on current usage trends, it is estimated that by 2040, the water demand will exceed availability (Global Water Security, 2012:1).

The South African Government through the DWA has adopted a proactive approach to preserve, allocate and regulate water resources. In support of the Government's service delivery initiatives, the DWA developed macro strategic planning through developing and maintaining the business framework for the water sector within which the various role players in the water sector perform their functions. The department adopted the Integrated Water Resources Management (IWRM) approach, which provides a more holistic approach to water resource management. The IWRM requires intensive planning to ensure efficient, equitable and sustainable management of water resources and for coping with conflicting demands.

### **2.2.1 Integrated Water Resources Management (IWRM)**

According to the DWA (2010/11 - 2012/13:3), the IWRM requires intensive planning to ensure efficient, effective, equitable, and sustainable management of water resources and for coping with conflicting demands. The DWA developed two key strategic frameworks to guide it, namely the National Water Resources Strategy (NWRS) in South Africa with the first edition having been released in 2004, a follow up or second edition released in 2013, and the WFGD of 2008 that was incorporated into NWRS's second edition and released in 2013. The strategy seeks to achieve the reconciliation between the available water resources, with growing water demand in order to meet the country's water requirements.

### **2.2.3 National Water Resource Strategy**

The NWRS is a five year strategic plan formulated by the DWA. It was first released in 2004, with the current version, namely the National Water Resource Strategy's 2<sup>nd</sup> edition (NWRS2). NWRS2 was released in June 2013 and will guide DWA activities until 2018. NWRS2 will be focusing on the following objectives:

- Achieving equity, including water allocation reform;
- Water conservation and water demand management;
- Institutional establishment and governance;
- Compliance monitoring and enforcement; and
- Planning, infrastructure development and operation, and maintenance of water resources infrastructure.

These objectives look into all water resource plans for the country and the activities that the DWA will be focusing on from 2013 up until 2018. The Key Performance Areas (KPA) are identified in the form of strategic objectives, while action items are incorporated into a strategic action plan. Key Performance Indicators (KPIs) are developed to monitor performance. The DWA constantly monitors progress and the necessary adjustments are made to ensure adherence to performance requirements. The results are published annually via the strategy overview of the water sector and the department's annual report. The NWRS2 responds to South Africa's vision for

2030, as articulated in the NDP, and to the national Government outcomes outlined in national Government's programme of action. These priorities are key drivers for change, and as such are the national strategic initiatives that shape the DWA's strategy (DWA, 2013(a):3).

#### **2.2.4 Water for Growth and Development Framework**

WFGD seeks to achieve a balance between supply, and demand-driven approaches. Its intention is to place water at the heart of all planning that takes place in the country. In order to ensure that any decisions taken that rely on the steady supply of water adequately factors in water availability. It seeks to ensure that there is sustained investment in the water sector to avert a potential water crisis and to ensure that water management supports the growth targets of Accelerated and Shared Growth Initiatives South Africa (ASGISA) without compromising the ecological sustainability of the resource (DWA, 2008:1).

The WFGD's framework sets a foundation and provides the necessary pointers for the review of the NWRS. It provides the strategic guidance for supporting the South African requirements for economic growth and development. It includes both water resources and water services and places emphasis on the challenge of ensuring access to adequate potable water for all South Africans. It focuses on the social and economic growth dimensions of water management within the environmental sustainability paradigm. Although the WFGD framework was approved by cabinet, it was never gazetted, but it was incorporated in NWRS2 (South African Yearbook, 2012 / 13:652).

#### **2.2.5 Raw water pricing strategy**

The National Water Act, 1998(Act No. 36 of 1998), gives power to the DWA Minister concurrently with the Minister of Finance to establish a pricing strategy for charges related to any water use within the framework of the existing relevant policies. According to the South African Yearbook (2012 / 13:653), the objectives of the water pricing strategy are to promote financial sustainability and economic efficiency in

water use. The Act also makes provision for financial assistance in the form of grants, loans or subsidies. A sustainable water price in South Africa is one that will:

- Reflect true costs, including infrastructure, management, operation and maintenance and environmental costs;
- Incentivise efficient water use;
- Reduce pollution;
- Promote low-cost solutions to providing water;
- Achieve equity in terms of incorporating cost-sharing practices as needed;
- Enhance affordability for poor water users; and
- Enhance the long-term viability of water institutions.

### **2.2.6 National Ground Water Strategy**

South Africa's water usage typically comprise of 77% surface water, 9% groundwater, and 14% re-use of return flows (DWA, 2013(b):5). Ground Water is a strategic resource in many parts of the country, especially in rural areas. It also plays an important role in supplying water to small towns, villages and farms located far away from dams and rivers in the drier parts of the country. The need for improved ground water management was realised in the formulation of NWRS1, and led to the formulation of the National Ground Water Resource Strategy (NGWRS), through which strategic objectives are carried out to conserve the utilisation of ground water resources (South African Yearbook, 2012/13:653).

## **2.3 Water Legislation in South Africa**

The DWA is informed by various key legislative, policies and regulatory frameworks that are passed into law by parliament after consultation with the relevant stakeholders. Apart from the constitution of South Africa, 1996, (Act No. 108 of 1996) referred to as the Bill of Rights (which stresses water as a right).

The DWA has developed the following key water legislations that will be discussed:

- The National Water Act, 1998 (Act No. 36 Of 1998);
- The Water Services Act, 1997 (Act No. 108 of 1997); and

- Water Research Act, 1971 (Act No. 34 of 1971).

### **2.3.1 The Constitution of South Africa, 1996 (Act No. 108 of 1996)**

Referred hereto as the Bill of Rights, Section 27(1) states that everyone has the right to have access to sufficient water. Section 27(2) makes provision that the “state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights”. Provision of water services should gradually be achieved by the Government within the limits of its resources in the form of municipal, public, and private utilities or the Government itself.

Sections 24 and 27 of the Bill of Rights in the Constitution grant specific rights to the access to sufficient water, an environment not harmful to health, and the well-being and protection of the environment from degradation. The right to basic sanitation is not an explicit constitutional right. However, the right to sanitation could be derived from the right to a clean environment read together with the right of access to clean water. From the Bill of Rights it is clear that water is a right to all citizens of the Republic of South Africa and that the state plays a role in ensuring that this basic need (water) reach the vast majority of the population, and therefore the Government should by all means deliver on this mandate. In order to achieve these goals, the DWA as an organ of the Government, has formulated the National Water Act, 1998 (Act No 36 of 1998) to ensure that the water resources are protected, developed, used, allocated equally and controlled.

### **2.3.2 The National Water Act, 1998 (Act. 36 Of 1998)**

In South Africa the National Water Act, 1998 (Act No.36 of 1998), governs water resources and the management thereof. The act does not directly provide for the provision of water services, but provides the background and framework within which the Water Service Act is implemented. In this manner it establishes a regulatory rule that informs complements and supports the realisation of several rights in the Bill of Rights. The objective of the Act is to ensure that South Africa’s water resources are protected, used, developed, conserved, managed and controlled in a sustainable

and equitable manner, for the benefit of all persons. The DWA, as the public trustee of the nation's water resources, has the legislative mandate and power to regulate the use, flow and control of all water in South Africa.

### **2.3.3 The Water Services Act, 1997 (Act No. 108 of 1997)**

The Water Services Act, 1997 (Act No.108 of 1997) recognises the rights of access to basic water supply and basic sanitation necessary to ensure sufficient water and an environment that is not harmful to health or well-being. This recognition is repeated in section 3(1), which states that everyone has a right of access to basic water supply and basic sanitation. Furthermore, Section 3(2) states that every water service institution must take reasonable measures to support the Government mandate.

The objective of the Act is to provide for the right of access to basic water supply and basic sanitation, by setting national standards and norms subsequent to the Bill of Rights. This Act provides a framework for the provision of water supply and sanitation services to households in South Africa. The Act sets the standards for the local and provincial agencies, and establishes the norms and standards for tariffs. The Act also outlines the rights and duties of the Water Services Authorities (WSA), the Water Service Providers (WSP) and intermediary for water utilities. The water value chain is a cycle, and the likelihood of pollution is imminent. To curb these challenges, the DWA has established another government entity, known as the Water Research Council (WRC), with the sole purpose of conducting water research. With its headquarters situated in Silverton Pretoria, the WRC carries out its mandate under the Water Research Act, 1971 (Act No. 34 of 1971).

### **2.3.4 Water Research Act, 1971 (Act No. 34 of 1971)**

The Act was developed for the promotion of water research. The DWA Minister appoints members of the commission and exercise executive oversight with regard to the affairs of the commission. According to the Act, the DWA has to establish the water research commission and water research fund. Section (2)20 outlines the objects of the commission which are to coordinate, to promote, to encourage or to

cause to be undertaken, as determined by the Minister specifically or in broad outline research in respect of:

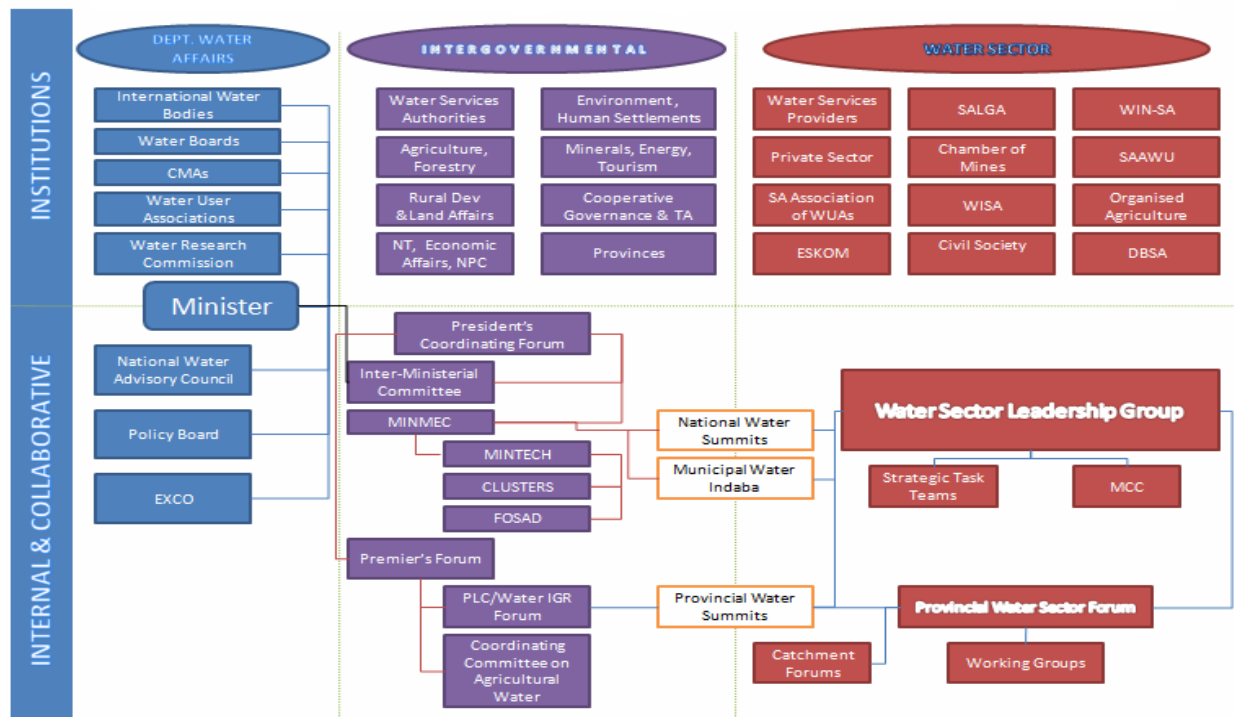
- The occurrence, preservation, conservation, utilisation, control, supply, distribution, purification, pollution or reclamation of water supplies and water; and
- The use of water for, agricultural, industrial or urban purpose.

The Water Research Commission (WRC) was established to promote the coordination, communication and cooperation in water research, to establish water research needs and priorities from a national perspective, to fund prioritised research and to promote the effective transfer, dissemination and application of research findings (DWA, 2007:13). Through research, the WRC will be able to advise role players in the water value chain to manage water resources therefore ensuring water availability.

## **2.4 Stakeholders in the South African water sector**

The DWA is mandated to ensure that South Africa's water resources are protected, managed, used, developed, conserved and controlled in accordance with the requirements of the policies of the Department, the Water Services Act, 1997 (Act No.108 of 1997), Water Research Act, 1971 (Act No. 34 of 1971) and the National Water Act, 1998 (Act No.36 of 1998) (DWA, 2011/12: 9). The DWA leads and regulates the water sector; it develops policies; manages water resources; develops infrastructure; develops strategy; builds capacity; manages inter-governmental and intra-sectoral coordination; oversees water regulation; and provides support to the water sector (DWA, 2013(b):1). According to the DWA (2009(b):3-4), the South African water sector comprises of the institutions depicted in Figure 2.1, and structures that use water, affects water use, are affected by water use, or are interested in water use:

**Figure 2.1: Institutional and partnership arrangements in the water sector**



(Source: (DWA, 2009(a):5)

- The Department of Water Affairs the DWA is responsible for the overall policy formulation: the development and implementation of legislation, for national water resources, the planning, development and management of national water resources infrastructure (large dams, transfer schemes); regulation of water use, and regulatory oversight over various water sector institutions Water Boards, CMAs and WUAs;
- Various national Government departments (Agriculture, Mining, Energy, Forestry, Environment, Human Settlement, Rural Development and Land, ) are mandated to implement functions that affect, or are affected by the availability of water;
- Various public/quasi-government institutions like ESKOM are responsible for business activities that affect and require water resources;
- Various water sector institutions (Water Boards, TCTA, CMAs, international water management bodies, WUAs) implement activities that affect water use;

- The Provincial Government departments (Agriculture, Health, Environment) engage in functions that affect water use;
- The Local Government (WSA) that is responsible for providing potable water services to domestic consumers;
- Industry players such as mining companies, Sasol, PetroSA carry out business that affects water use, and are represented through organised business forums (Chamber of Mines, Chamber of Business/Business Unity South Africa (BUSA);
- Institutions of higher learning and research, such as universities, the Water Research Commission and the Council for Scientific and Industrial Research (CSIR), conduct learning and research on water resources;
- Water sector professional, such as the Water Institute of South Africa (WISA), actively promote peer learning and knowledge management for water professionals; and
- The Civil society and organised sector structures such as WUAs, Agriculture South Africa (AgriSA), the National African Farmers Association (NAFA), and various Key Performers play a role in advocacy, lobbying for and the implementation of water sector programmes.

#### **2.4.1 The DWA National level**

The Minister of Water Affairs is the custodian of all water sector policies and legislation related to the protection, development, use, allocation and control of water resources in the country. The Minister is the highest political authority on water resource management, and is responsible for overall the decision-making on the water resources policies and legislation (DWA, 2009(a):9). The DWA is represented in all nine provinces through its regional offices, CMAs and the TCTA, to support regional water schemes, dams and the WSAs. The DWA oversees and regulates the water functions through appropriate policies and regulations, which are developed by the national office and implemented through the nine provincial offices and the four water management clusters (DWA, 2010:4).

### **2.4.2 Trans Caledon Tunnel Authority (TCTA)**

The TCTA is a DWA-owned entity established in terms of the National Water Act, 1998 (Act No.36 of 1998) (Chapter 10), in order to implement an international agreement between the South African Government and the Government of Lesotho regarding the Lesotho Highlands Water Project (LHWP). Subsequent to the completion of phase 1 of the LHWP, the TCTA has been directed to implement large water resources infrastructure projects that are commercially viable and of which the full cost could be recovered from water users. The TCTA also provides financial and treasury management services to designated water boards, water management institutions and the DWA itself (DWA, 2007:13).

### **2.4.3 Catchment Management Agencies (CMAs)**

Management of South Africa's water resources involves catchment management functions, river systems management, water storage, water abstraction and return-flow management (DWA, 2010:5). The CMAs are responsible for water resource planning at catchment level, and most water resources management activities in these areas, such as the licensing of water use and discharges, where delegated by the DWA, monitoring abstractions and discharges, collecting abstraction and discharge fees, monitoring water quality, and overseeing land-use activities as this also affects water management.

According to the DWA (2013(b):10), the CMAs are responsible for performing the following functions:

- Developing strategies for integrated water resource management within the water management areas;
- Developing and supporting organisations in the water management areas, including coordination and capacity building;
- Regulating water use, including authorization and charging of water use;
- Managing information to support the other water resources management functions;

- Implementing physical interventions, including conservation and demand management and possibly infrastructure development and/or operation; and
- Auditing water resource management, in terms of the stated objectives of the organisational business plans and water resources management strategies.

**Figure 2.2: Water management areas**



(Source: DWA 2013(b):11)

Figure 2.2 indicates the nine planned water management areas that will be decentralized to the CMAs, namely Limpopo, Olifants, Inkomati-Usuthu, Pongola-Mzimkulu, Vaal, Orange, Mzimvubu-Tsitsikama, Breede-Gouritz and Berg-Olifants. Currently only two CMAs are operational, namely the Inkomati-Usuthu and Breede-Overberg CMAs (DWA; 2013(b):10). The CMAs will play a critical role in managing the country's scarce water resources, including facilitating stakeholder input into the management of water resources within their demarcated jurisdiction.

#### **2.4.4 Water Services Authority (WSA)**

A municipality that has been accorded responsibility for ensuring access to water services is termed a Water Services Authority (WSA). These municipalities normally

have their own water abstraction, water purification and distribution infrastructure, rendering them self-reliant as far as water services are concerned. Although South Africa has 278 municipalities, (made up of 8 metros, 44 district municipalities and 226 local municipalities), not all of these municipalities are WSAs. Currently there are 152 WSAs (DWA, 2013(b):17). The remaining WSAs are reliant on Water Service Providers (WSP) to fulfil the water provision in their demarcated areas. WSP refers to water boards (Rand water, Umgeni water, Amatola water, etc.) and private water utilities (Midvaal Water Company and Selulamanzi-Sebcorp).

#### **2.4.5 Water Boards**

Water Boards operate, and maintain water resource infrastructure in South Africa. In terms of the constitution, South African Water Boards are classified as Government owned entities operating under the auspices of the Water Services Act, 1997 (Act No.108 of 1997). According to Brauteseth (2010:5-6), Sections 28 to 50 of the Water Services Act deal very comprehensively with the roles and functions of the Water Board. The most salient points are the following:

- It is the Minister of the DWA that establishes a Water Board;
- The primary activity of a Water Board is to provide water services to other water service institutions within its service area;
- The Water Board may perform an activity other than its primary activity, only in defined circumstances;
- A Water Board may set and enforce general conditions including tariffs for the provision of water services;
- A Water Board may enter into contracts with any person in terms of which that person undertakes and is authorised to exercise any of the powers, or to perform any of the duties of the water utilities (except setting general conditions and tariffs);
- A Water Board may set conditions for the provision of services, which are either set generally or agreed specifically;
- Before setting general conditions, a Water Board must invite comment from other institutions, consumers and users;

- Every person who then make use of the services provided by said Water Board, does so subject to any applicable general conditions set by that Board, unless specifically agreed otherwise;
- A Water Board must prepare and adopt a policy statement and a business plan; and
- The Minister may issue directives to water utilities which must strictly account and report in accordance with the provisions of the Act.

Water Boards have been set up as financially independent institutions, in terms of section 34(1) of the Water Services Act, 1997 (Act No. Act 108 of 1997) and must aim to be financially viable (DWA, 2009(b):14). The Water Boards that are currently reporting to the DWA Minister are as follows:

- Amatola Water;
- Bloem Water;
- Botshelo Water currently under the de-establishment process;
- Bushbuckridge Water currently under the de-establishment process;
- Lepelle Northern Water;
- Magalies Water;
- Mhlathuze Water;
- Overberg Water;
- Pelladrift Water;
- Rand Water;
- Sedibeng Water; and
- Umgeni Water.

South Africa has twelve Water Boards that supply a total volume of approximately 2.46 billion cubic metres of bulk purified potable water per annum, which equate 57% of the total domestic supply. They have a total fixed asset value of R19.6 billion and a total operating cost of R5.6 billion per annum (DWA, 2013(b):19). Not all Water Boards are WSPs, as some of the municipalities have their own water entities that abstract, purify and distribute water.

### **2.4.6 Municipalities**

Municipalities operate some local water resource infrastructures such as dams, purification plants, boreholes and bulk water supply schemes. Municipalities are also responsible for the supply of water and sanitation services to consumers. They are also responsible for the operation of wastewater treatment systems and maintenance of the bulk water distribution network. According to the Municipal Systems Act, 2000 (Act No. 32 of 2000), municipalities must ensure continuous delivery of basic services needed on a day to day basis to the communities they serve. There are a large number of services that municipalities provide to the communities that they serve:

- Water supply;
- Sewage collection and disposal;
- Refuse removal;
- Electricity supply;
- Municipal health services;
- Roads and storm water drainage;
- Street lighting; and
- Municipal parks, recreations and cemeteries.

Apart from the DWA owned Water Boards, and municipal entities in South Africa there are also private water utilities which are regarded as WSPs. Their role is to provide water and sanitation services to the municipalities and other clients.

### **2.4.7 Private water utilities**

According to the DWA (2013(b):19), not all municipalities depend on Water Boards for regional bulk water supply infrastructure, but may manage their own water supply

as long as they operate within the norms and standards of the Water Services Act, the National Water Act and related regulations and strategies.

The Water Services Act of South Africa, 1997 (Act No. 108 of 1997), defines the role of a Water Service Provider (WSP), as either public, private or mixed entities or municipality or Government itself, that provides the services and perform the duties as required in their contract as stipulated in the Water Services Act and the Constitution of the Republic of South Africa. The Act does not discriminate between state-owned, municipal-owned, or private water utilities, but promote WSPs to enter into water supply agreement contracts with their clients. The water industry is a knowledge sharing sector that private water utilities, Water Boards, municipalities, CMAs, and WUA can join in force to tackle water resource challenges and knowledge sharing from the sector.

#### **2.4.8 Water User Associations (WUAs)**

WUAs are established in terms of Section 92 (1) (a) of the National Water Act, 1998 (Act No. 36 of 1998). WUAs are water management institutions that manage and regulate water at a localised level, unlike the CMA's that have a very limited sphere of operation, and consist of water users wishing to manage their own affairs to their best advantage, pooling of resources for mutual and public benefit and implementing agents for DWA projects. The procedure for establishment of their powers and their constitutions are set out in Chapter 8 of the Water Services Act of South Africa, 1997 (Act No. 108 of 1997), and are subject to the Minister's directives with regard to admitting members into the association. The Minister has jurisdiction and power to intervene in this regard, and may specifically take over any of the powers or duties of such an association. Overall the water sector is characterised by a variety of role players in this water value chain, which is why the DWA has adopted an IWRM so as to ensure synergy in addressing water challenges.

#### **2.5 Water scarcity**

Water scarcity is a challenge as South Africa is striving for economic growth and urbanisation. Water scarcity is therefore a significant constraint to economic and

social development goals and the sustenance of ecological systems. It has been estimated that there will be a gap of about 17% in water demand and supply by 2030 if no significant policy shifts occur in order to address water pollution and conservation. Within individual freshwater catchments in South Africa, it is predicted that the gap between supply and demand could be between 20-50% range by 2030 (2030 Water Resources Group, 2009).

## **2.6 Water availability in South Africa**

South Africa is a water scarce country with extreme climate and rainfall fluctuations. South Africa's water usage typically comprises of 77% surface water, 9% groundwater, and 14% re-use of return flows. Management of South Africa's water resources involves catchment management, river systems, water storage, water abstraction and return-flow management (DWA, 2013(b):5).

The current basic domestic water use component (25 litres/person/day), translates to 472 million cubic metres per annum or 11% of the total domestic water use. Many rural settlements still have insufficient water resources to meet their basic water demands, and thus further ground water and surface water resource developments are necessary. Table 2 depicts that the country's water management resource areas across the country, based on current usage trend it is estimated that by the year 2025 the country will have a reliable local supply of 14 681 million cubic meters per annum as compared to local requirement of 14 486 million cubic meters per annum. The country water resource management areas transfer 124 million cubic meters per annum out to neighbours and to the sea, while the retained water balance accounts to 504 million cubic metres per annum. There are still households that do not have access to water, as revealed by Census 2011. The country will face water scarcity if it had to deliver on the NDP's objectives.

**Table 2.1: Reconciliation of water requirements and availability for 2025, base scenario (million m<sup>3</sup> p.a.)**

| Water management area    |                           | Local yield   | Transfers in | Local requirements | Transfers out | Balance   | Potential for development |
|--------------------------|---------------------------|---------------|--------------|--------------------|---------------|-----------|---------------------------|
| 1                        | Limpopo                   | 281           | 18           | 347                | 0             | (48)      | 8                         |
| 2                        | Luvuvhu/Letaba            | 403           | 0            | 349                | 13            | 41        | 102                       |
| 3                        | Crocodile West and Marico | 805           | 901          | 1 594              | 10            | 102       | 0                         |
| 4                        | Olifants                  | 630           | 210          | 1 075              | 8             | (243)     | 239                       |
| 5                        | Inkomati                  | 1 073         | 0            | 1 088              | 148           | (163)     | 114                       |
| 6                        | Usutu to Mhlathuze        | 1 011         | 32           | 700                | 114           | 229       | 110                       |
| 7                        | Thukela                   | 742           | 0            | 347                | 497           | (102)     | 598                       |
| 8                        | Upper Vaal                | 1 818         | 1 743        | 1 440              | 2 042         | 79        | 50                        |
| 9                        | Middle Vaal               | 205           | 775          | 400                | 580           | 0         | 0                         |
| 10                       | Lower Vaal                | 48            | 648          | 645                | 0             | 51        | 0                         |
| 11                       | Mvoti to Umzimkulu        | 555           | 34           | 1 012              | 0             | (423)     | 1 018                     |
| 12                       | Mzimvubu to Keiskamma     | 872           | 0            | 413                | 0             | 459       | 1500                      |
| 13                       | Upper Orange              | 4 799         | 2            | 1 022              | 3 496         | 283       | 900                       |
| 14                       | Lower Orange              | (1 001)       | 1 931        | 883                | 54            | (7)       | 150                       |
| 15                       | Fish to Tsitsikamma       | 452           | 595          | 979                | 0             | 68        | 85                        |
| 16                       | Gouritz                   | 278           | 0            | 353                | 1             | (76)      | 110                       |
| 17                       | Olifants/Doring           | 335           | 3            | 371                | 0             | (33)      | 185                       |
| 18                       | Breede                    | 869           | 1            | 639                | 203           | 28        | 197                       |
| 19                       | Berg                      | 506           | 203          | 829                | 0             | (120)     | 210                       |
| <b>Total for Country</b> |                           | <b>14 681</b> | <b>0</b>     | <b>14 486</b>      | <b>124</b>    | <b>68</b> | <b>5 576</b>              |

(Source: Muller *et al.*, 2009:23).

## **2.7 Population growth, industrialisation and urbanisation**

According to the latest Census (2011) findings, out of a population of just over 50 million people, there are currently an estimated 4.4-million people with no access to piped water, and a further 8.67 million people with access to a water supply outside a yard. The continuing trend of industrialization and urbanization of the population is expected to place further pressure on the country's sources of water supply, unless appropriate corrective action is taken (National Treasury Budget Review South Africa, 2012:97). The continued growth of the population, urbanisation and industrialisation and rising income, will put increasing pressure on scarce water resources, creating policy challenges, relating to both ensuring adequate supply and restraining demand as a strategy to ensure equitable distribution of these scarce resources (Organisation for Economic Co-operation and Development (OECD), 2013:112).

Moving into the future, the National Development Plan (NDP) vision 2030 (NDP, 2011:155-157), advocates that in order for South Africans to alleviate poverty, enhance its citizens lives and stimulate economic growth, the Government will be focusing on the following with regard to the country's water resources:

- Manage, monitor and protect water resources for growth and sustainability;
- Assure water supplies by investment and re-use;
- Conservation and demand management;
- Water re-use and desalination options to meet local needs; and
- Institution arrangement for water resource management.

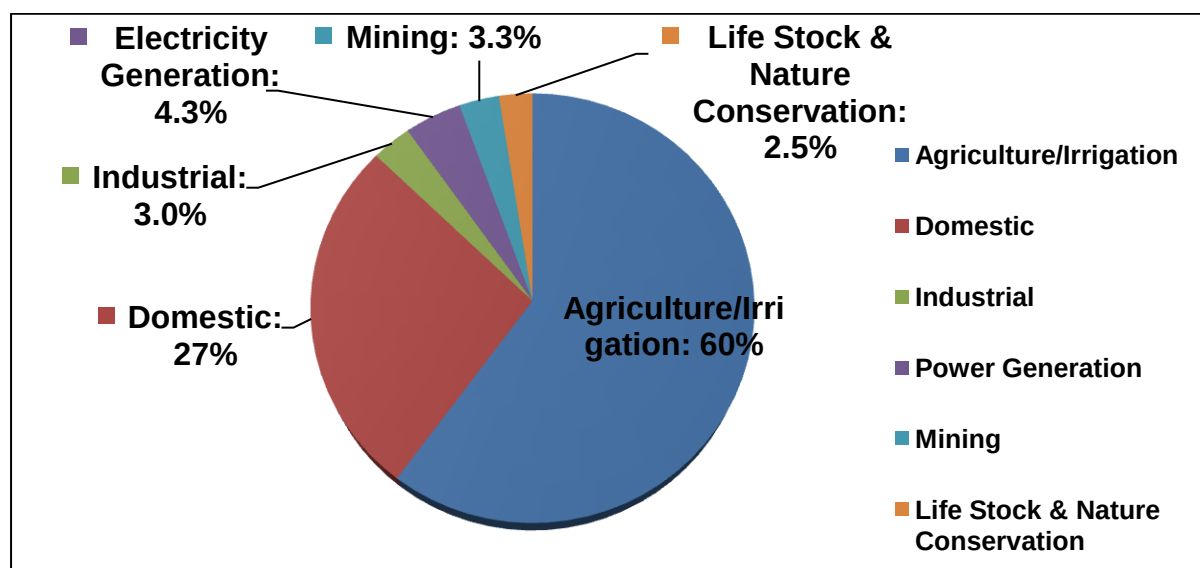
## **2.8 Water requirements**

There are six major water use sectors, namely irrigation, urban use, rural use, mining and bulk industrial use, and power generation. The total net abstraction of water from surface water amounts to approximately 10 200 million cubic-meters per year for the entire country, after allowing for reuse of return flows. This represents about 20% of the total mean annual runoff of approximately 49 200 million cubic-meters per year, which translates to 98% assurance or security of supply. A further 8% is estimated to be lost in the water cycle through evaporation, storage and distribution along rivers,

and 6% through land-use activities. As a national average, about 66% of the natural river flow (mean annual runoff) therefore still remains in the country's rivers\ systems (DWA, 2011 / 12:551).

Figure 2.5 depicts the country's water usage per sector. The major consumer is the agricultural sector at 60% (live-stock and nature conservation consume a further 2.5%) and agriculture/irrigation consuming the balance of 60. The sector provides food and other agricultural products for the country. Domestic at 27% refers to municipal water use of 24% that is consumed by urban areas and 3% consumed by rural domestic users. This water is used for household purposes like bathing, showering, car washing, toilet flushing, etc. A total of 4.3% of the country's water is utilised for electricity generation, with Eskom being the sole electricity generation and distribution in the country. A total of 3.3% of the water is used for mining activities, such as gold, platinum, chrome, etc., while the remaining 3% goes to industrial usage like factories, abattoirs, food and beverage manufacturers.

**Figure 2.3: Proportional water usage per main economic sector**



(Source: DWA2013(a):9)

### 2.8.1 Agriculture/Irrigation

The agricultural, forestry and fisheries sector provide about 8,5 million people with employment and income while the primary agricultural sector contributes about 3%

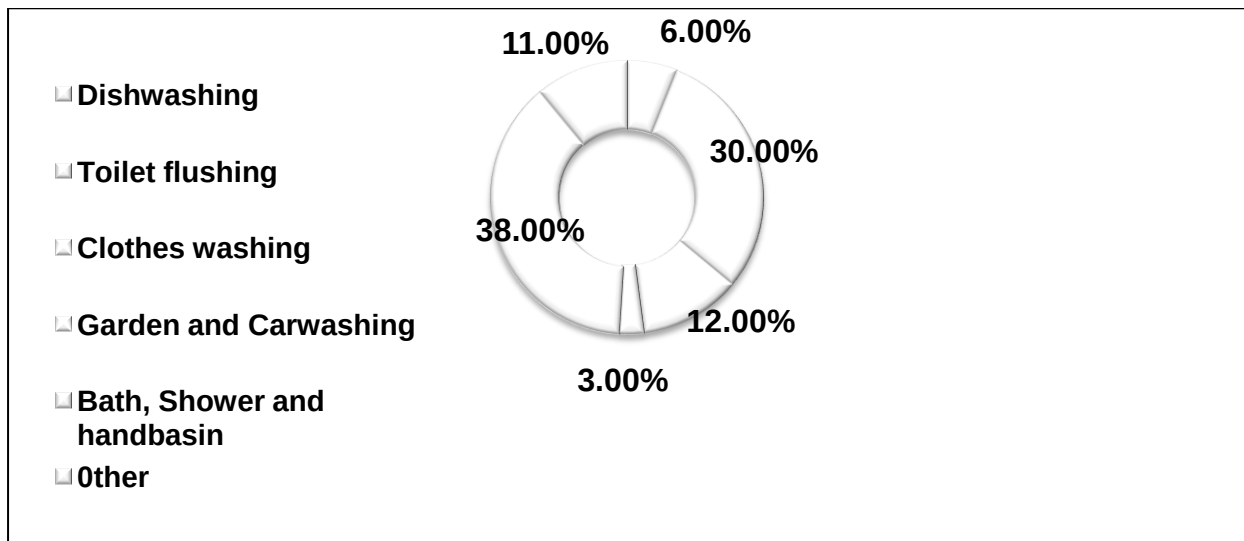
to the country's gross domestic product (GDP), representing about 7% of formal employment (South African yearbook, 2012 / 2013:44). If the entire value chain of agriculture is taken into account, its contribution to the GDP reaches about 12%. The agricultural sector is the largest water user in the country, consuming almost 60% of the entire available water resources (DWA, 2009(b):8). The agricultural sector provides food to the nation, thus with future water deficit looming, food security cannot be guaranteed in the future, let alone food export that contributes to the GDP. Utilising 62.5% of the available fresh water resources, agriculture is the biggest single consumer, followed by household water usage.

### **2.8.2 Household water usage**

According to Statistics South Africa (Census 2011) 89,3% of South African households have access to piped water. The current basic domestic water use component (25 litres/person/day), translates into 452 million cubic metres per annum or 13% of the urban and rural water usage, or 3% of the total water usage (DWA, 2010:20). Water for domestic purposes in South Africa includes drinking water, the use for public services, and commercial service establishments, such as hotels, and homes. All the domestic water supply in South Africa has to comply with the South African National Standards specifications (SANS 241:2011), which meets World Health organisation (WHO) guidelines for drinking water standards (DWA, 2008:10).

Figure 2.6 represents water usage in South African households according to the study (Water-how it is used at home) conducted by Consulting Engineers (CEs) in Stellenbosch and Cape Town, South Africa in 2005. This study reveals that 38% of the water in an average household is used for bathing, showering and the hand basin, while 30% of water is used for toilet flushing, 12% of the water in an average household is utilised for the washing of clothes (mainly over the weekends), 11% is reserved for other activities such cooking, the swimming pool etc., 6 percent is utilised for dishwashing and finally 3% is utilised for garden irrigation and car washing.

**Figure 2.4: Household water usage**



(Source: Jacobs *et al.*, 2006)

In order for South African households and different industries of the economy to operate, they rely on electricity which is supplied by Eskom (a South African state-owned entity). Eskom is the sole supplier of electricity in South Africa and its power plants are heavily reliant on water for cooling purposes.

### **2.8.3 Electricity generation**

Eskom generates approximately 95% of the electricity used in South Africa and approximately 45% of the electricity used in Africa, while about 85% of Eskom's generating capacity is produced by coal-fired plants (Eskom Integrated Report, 2013:12). South Africa depends on coal-fired base load power stations that make up the largest portion of Eskom's plant mix. Eskom has 13 coal-fired power stations which utilises water for cooling purposes. In addition to that, Eskom also has hydroelectric power stations located in river-dams and pumped storage schemes that utilise water height to drive turbines that generate electricity (Eskom COP17 fact sheet, 2012).

Eskom consumes on average 10 000 litres of water per second, which translates into 1.76% of the national water supply going to coal-fired electricity generation, compared to the 3% that goes to the industrial sector (Steele, 2012:20). Eskom is in the process of building two more coal fired power stations, namely Medupi in the Waterberg and Kusile in the Witbank coal-fields, which would further increase

Eskom's water consumption. The capacity of these two plants is expected to be higher than the capacity of all other coal-fired plants currently in existence in South Africa (Goga & Pegram, 2014:9). Electricity, just like water, is a catalyst for an economic growth, while security of electricity supply attracts foreign investment in the form of industrialisation and mining.

#### **2.8.4 Mining activities**

The South African mining sector has for many years been the critical pillar in terms of driving the economy since the discovery of gold in the 1800s. The mining sector contributed 18,7% of the country's GDP in 2010 as well as 514 760 direct mining jobs and 838 622 indirect mining jobs in bulk railing, port handling businesses related to transporting and storing mining products, catering and accommodation services, finance, insurance and business services (Chamber of Mines South Africa, 2012:1). However on the downside, mining activities are also associated with environmental and water contamination, such as Acid Mine Drainage (AMD).

AMD is highly acidic water, usually containing high concentrations of metals, sulphides, and salts as a consequence of mining activity. The major sources of AMD include drainage from underground mine-shafts, runoff and discharge from open pits and mine waste dumps, tailings, and ore stockpiles, which make up almost 88% of all waste produced in South Africa (Manders *et al.*, 2009:1).

#### **2.8.5 Industrial activities water usage**

Industrial water usage in South Africa can be classified into the following industries: chemical industries, including petro-chemical industries: the food industry, the Steel industry, and the packaging industry. This economic sector produces large quantities of waste and waste waters, which end up in our rivers, streams and ground water systems. Industrial wastes may contain thousands of compounds, especially organic compounds originating from raw materials, intermediates, products, reagents, solvents and catalysts (Oelofse & Strydom, 2010:50).

Industries have reduced their consumption by focusing on the management of their effluents, which has contributed to drastic cut-backs in intake water. As part of the

green economy, South African industrial water users has introduced effluent treatment and reuse to a certain degree, however there is still room for improvement in terms of implementation on a much larger scale. These initiatives can further reduce water pollution into our rivers, dams, streams and ground water sources, thus increasing the quality of the raw water sources.

## **2.9 Water quality**

In South Africa drinking water or domestic purpose water must meet the South African National Standards (SANS 421) and World Health Organisation's (WHO) drinking water guidelines. Both SANS and WHO's, drinking water guidelines put much emphasis on the physical, chemical and microbiological characteristics.

To ensure compliance with the minimum water-quality norms and standards, the DWA started the annual Blue Drop and Green Drop assessments in order to ensure that potable drinking water and waste-water systems are managed according to set norms and standards. The department has set a target of 99% compliance with drinking-water quality standards and 80% compliance with waste-water effluent standards (DWA, 2011 / 12:553).

### **2.9.1 Blue drop & Green drop certification framework**

The DWA has implemented a Blue Drop system as a framework for water quality assurance, whereby water quality parameters are set as per SANS (SANS 421) and the WHO guidelines. WSPs and WSAs are required to incorporate Blue Drop and Green Drop initiatives into strategy so that the DWA's expectations are met as far as potable drinking water and waste-water compliance is concerned. Compliance audits are conducted annually whereby the DWA officially conducts physical inspections on the WSAs and WSPs and the results are published. The system looks into the microbiological, chemical, aesthetic and operational components of the water.

According to the DWA (2013(c):15) the certification programme is designed with the specific intent to encourage and facilitate a turnaround in non-compliant municipalities and their WSPs, to acknowledge those who are achieving and maintaining standards of best practice and excellence, and to bring credible and

current information to the South African public. The objectives of Blue Drop Certification include to:

- Introduce incentive-based regulations of drinking water quality management;
- Promote transparency and subsequent accountability;
- Provide reliable and consistent information to the public;
- Facilitate closer relationships between Water Service Authorities and Water Service Providers (where applicable); and
- Introducing an element of excellence instead of conventional regulation.

The DWA is of the opinion that incentive based regulations introduce best practises and excellence to the water services sector, therefore awards are issued annually to WSPs and WSAs that are found to be complying with the Blue Drop system requirements.

**Table 2.2: Joint Blue Drop assessment report for the City Council of Matlosana Local Municipality and Midvaal Water Company**

| <b>Water Services Authority</b>            | <b>Matlosana Local Municipality</b>                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Water Services Provider(s)</b>          | <b>Midvaal Water Company</b>                                                                              |
| <b>Municipal Blue Drop Score:</b>          | <b>95.35%</b>                                                                                             |
| Performance Area                           | <b>Matlosana</b><br> |
| <b>Water Safety Planning (35%)</b>         | <b>98</b>                                                                                                 |
| <b>Treatment Process Management (10%)</b>  | <b>95</b>                                                                                                 |
| <b>DWQ Compliance (30%)</b>                | <b>85</b>                                                                                                 |
| <b>Management, Accountability (10%)</b>    | <b>92</b>                                                                                                 |
| <b>Asset Management (15%)</b>              | <b>100</b>                                                                                                |
| Bonus Scores                               | 1.85                                                                                                      |
| Penalties                                  | 0.00                                                                                                      |
| <b>Blue Drop (2012)</b>                    | <b>95.35% (1)</b>                                                                                         |
| <i>2011 Blue Drop Score</i>                | 95.38%                                                                                                    |
| <i>System Design Capacity (Ml/d)</i>       | 250                                                                                                       |
| <i>Operational Capacity (% ito Design)</i> | 50.00%                                                                                                    |
| <i>Population Served</i>                   | 400 000                                                                                                   |
| <i>Average daily Consumption (l/p/d)</i>   | 62.50                                                                                                     |
| <i>Microbiological Compliance (%)</i>      | <b>98.2%</b>                                                                                              |
| <i>Chemical Compliance (%)</i>             | <b>99.9%</b>                                                                                              |

(Source: DWA Blue Drop report, 2012)

Table 2.1 represents the joint Blue Drop assessment for CCMLM extracted, from the DWA's Blue Drop Report (2012) for North West Province. The MWC, as their WSP, did exceptionally well in supporting the CCMLM towards obtaining the overall second place after the Tlokwe Local Municipality, on the provincial log. This second place is certainly an achievement, but the individual scorecard suggests that there is ample room for improvement in spite of this achievement. The first ever Blue Drop report, in 2009 indicated that the national microbiological compliance for South African tap water, was measured at 93.3% against the National Standard (SANS 241). This increased to 97.3% in the 2012 reporting cycle, in spite of a significant increase in data sets being available on analyses done on tap water by various laboratories in the country (DWA, 2012(a):9). A lot of work still needs to be done to overcome the challenges present in the water value chain.

## **2.10 Water Challenges in South Africa**

The water resources challenges mainly have to do with the management of supply and increasing demand, pollution of water resources, and the successful implementation of integrated water resources management. Water follows a recycle process, it flows through streams and rivers from where it is abstracted, purified and distributed to the different sectors of the economy and households, after which it is treated through municipal sewage systems and industrial effluent systems, and released back into streams and rivers after it has been treated. The treatment processes that are not that effective result in polluted water going back to the rivers and streams. Water pollution is a serious challenge that the country is facing at this point in time, and unless the authorities decide to impose hefty penalties on violators, the entire water value chain will remain under threat.

### **2.10.1 Polluted raw water**

Poor quality water not only limits its utilisation value, it also places an added economic burden on society through both the primary treatment costs and the secondary impact on the economy. Economic growth implies industrialisation and urbanisation, which will result in further deterioration of water resources (Oelofse & Strydom, 2010:5). The cost associated with treating polluted raw water puts a burden on the WSPs, because it results in escalated costs as far as the treatment process

technology and associated treatment chemicals are concerned. Under these circumstances, water utilities treatment plants are expected to produce quality water that meets the SANS (SANS 241) and WHO guidelines for drinking water. Pollution is a unique challenge in the South African water value chain, threatening the existence of both aquatic and non-aquatic species. The latter is aggravated by the municipal sewage systems that discharge untreated sewage into the rivers and streams.

### **2.10.2 Sewage systems**

According to the DWA (2009(b):1), there are approximately 850 municipal waste treatment plants in the country, treating an average of 7 589 mega litres of waste water on a daily basis. The country's municipalities run a prominent waste water treatment business with an estimated capital replacement value of approximately R23 billion and an estimated operational expenditure of approximately R3.5 billion per annum. A large proportion of the sewage emanating from the South African urban areas is not treated properly prior to discharge, the sewer systems are incomplete or broken, or sewage treatment plants are overloaded and mismanaged by the municipalities (Oelofse & Strydom, 2010:9).

The onus lies with the municipalities to ensure that the systems are running efficiently and effectively to the benefit of the citizens, but unfortunately untreated effluent from sewage water ends up in rivers, dams, streams, etc. posing a danger to the communities residing nearby. During the month of June 2014, three babies died and hundreds were treated for diarrhoea, while the municipal manager of the Lekwa Teemane Municipality was suspended regarding the municipal sewage spillage into the Vaal River in the Bloemhof area of the North West Province. The town was without water, for weeks while a consented effort was put in place to resolve the crisis (Moore, 2014).

The same polluted water end up becoming part of the raw water sources for water utilities. Polluted raw water escalates the purification cost of the water utilities, and the ultimate result being that an additional premium has to be paid by the water utilities for treatment cost.

### **2.10.3 Non-revenue water**

Non-revenue water is defined as the volume of water for which no income is received by the water services institution (DWA, 2010:21). Mckenzie *et al.*, (2012:iii), advocate that 133 out of the possible 237 municipalities in South Africa, representing over 75% of the total volume of municipal water supplies, show that the current level of non-revenue water estimated for the country as a whole is 36.8%. Of this, 25.4% is considered to be losses through physical leakage in the distribution network, due to the condition of the ageing water infrastructure.

The study, which was conducted between 2007 and 2011, found that the Eastern Cape had a loss of 29%, the Free State 45.2%, Gauteng 35.9%, KwaZulu-Natal 43.5%, Limpopo 36.3%, Mpumalanga 44.7%, North West Province 29.7%, the Northern Cape 52.0% and the Western Cape 23.9%. This means that the Government loses an estimated R7bn every year, because this water loss is not billed. This also translates into an estimated 1,580 million cubic metres of water loss each year in an already "water-scarce" country (Blaine, 2013).

### **2.10.4 The state of the water infrastructure in South Africa**

Water infrastructure normally consists of abstraction points, pipelines, pump-stations, treatment plants and the distribution system. Asset management within the DWA is in accordance with the approved Asset Management Policy and the Asset Management Procedures. The main focus of these instruments is on the water resources infrastructure developed, operated and maintained by the department over a number of decades (DWA, 2009(b):61). According to the South African Institute of Civil Engineers (SAICE), 2011:14), much of South Africa's bulk water infrastructure is reaching the end of its life cycle and it requires an upgrade or replacement. South Africa needs to spend around R700 billion over the next 10 to 15 years to insure the country's water supplies (Cassell, 2013:19).

According to the South Africa's Presidency's development indicators (2010:30) access to water supply infrastructure in the sector had improved from 1994 59% to 93.8% of the population by 2010. As the country is striving to achieve the Millennium Development Goals` (MGD) targets, proportionately there is a need to develop

knowledge and skills in the engineering, scientific, process control, finance, human resources, etc. sides of the water sector in order to create an environment whereby physical assets are operated and maintained, and as such the human capital and finances are developed and managed to the benefit of the country.

#### **2.10.5 Skills shortage in the South African water sector**

South Africa has, by proportion of population, up to 20 times fewer engineers than Australia, America, Western Europe, and even India and China (SAICE 2011:11). South Africa has 473 engineers per million citizens, while Japan has 3306. The country is also ranking low when compared to other developing countries, such as Chile, which has 1 460 and Malaysia with 1843 per million citizens (Du Toit & Roodt, 2009:1)

The water sector, as a technology orientated sector, is experiencing skills shortages in water professionals such as engineers, technologists, technicians and scientists. The sector also lacks suitable managerial skills to manage or run an efficient water business. Management skills, in particular those in the areas of finances and infrastructure development, are vital to service delivery initiatives. No amount of engineers and artisans can make a difference if they are not well-led, steered and inspired by a team of experienced and dedicated managers (DWA, 2009(d):28).

The majority of these professionals are attracted by high remuneration packages offered by the private sector of the economy. Indications are that salaries for professionals in the public sector have improved noticeably, but the skills constraint has still not been addressed though. This is further aggravated by the inefficient deployment of unqualified and inexperienced personnel in positions requiring a technical ability to deal with complex water challenges, such as pollution, ageing infrastructure and the climate change that the world is facing.

#### **2.10.6 Climate change**

The global climate change has very specific implications for South Africa, and is likely to reduce Southern Africa's water resources even further (Steele, 2012:8). Given the predictions associated with global and climate change, and the down-

scaled forecasts of increased temperatures across South Africa, a rise in air temperature of 2 degrees Celsius, will likely have far-reaching effects on the quality of water in river systems and water storage reservoirs. Higher water temperatures in particular will alter a water-gas equilibrium that will result in increased rates of the microbiological process, which will in turn accelerate nitrification, de-nitrification, respiration and methanogenesis (Oelofse & Strydom 2010:13).

Climate change is a global concern, as the countries are jointly trying to develop a holistic win-win approach to save the planet by introducing the green economy, South Africa, as part of the global community, has also initiated some joint efforts to come up with alternatives as far as the green economy is concerned. Water, as a scarce commodity, is life and it drives economic growth. One may have a great plan, but without water it boils down to nothing. As an integrated approach towards improving the quality of life of the South African citizens, the Government has adopted a vision (Vision 2030), also known as the National Development Plan.

### **2.11 National Development Plan Vision for 2030**

South Africa, through the National Planning Commission (NPC), has articulated Vision 2030, popularly known as the National Development Plan (NDP), which will direct the activities that the country will be undertaking under the current leadership and administration of President Jacob Zuma.

Between 2014 and 2030, the NPC through the NDP (2011:5-6), aims to achieve the following:

- Create jobs and livelihoods;
- Expand infrastructure;
- Transition to a low carbon economy;
- Transform urban and rural spaces;
- Improve education and training;
- Provide quality health care;
- Build a capable state;
- Fight corruption and enhance accountability; and
- Transform and unite society.

These objectives require a holistic, integrated, strategic approach in managing water resources. Against all odds, South African water utilities had strived to deliver this basic need (water) to its citizens at an affordable price to cover operational costs, yet ensuring sustainability. The water utility, as a business, needs to adopt a vision, mission, values and strategic objectives so that they could craft, implement and manage a strategies that will support the NDP's plans.

According to Medium Term Strategic Framework (MTSF) 2014-2019, 2013:5) following the adoption of the NDP, cabinet decided in 2013 that the 2014-2019 MTSF should form the five year implementation phase of the NDP and mandated work to begin on aligning the national and provincial, municipalities, public entities with the NDP vision and goals. The strategic objectives of the MTSF 2014-2019 are as follows:

**Table 2.3: Medium Term Strategic Framework (MTSF 2014-2019)**

| Medium Term Strategic Framework (MTSF 2014-2019)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>✓ Radical economic transformation, rapid economic growth and job creation;</li> <li>✓ Rural development, land and agrarian reform and food security;</li> <li>✓ Ensuring access to adequate human settlement and quality basic services;</li> <li>✓ Improving the quality of health care and expanding access to education and training;</li> <li>✓ Ensuring quality health care and social security for all citizens;</li> <li>✓ Fighting corruption and crime;</li> <li>✓ Contributing to a better Africa and better world;</li> <li>✓ Social cohesion and nation building.</li> </ul> |

(Source: Medium Term Strategic Framework (MTSF 2014-2019), 2013:6)

The DWA, as the national custodian of the water resources, had also developed its strategic objectives that support the NDP.

**Table 2.4: DWA Strategic objectives**

| <b>DWA Strategic objectives</b>                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>✓ Water support development and elimination of poverty and inequality;</li> <li>✓ Water contributes to the economy and job creation;</li> <li>✓ Water is protected, used, developed, conserved, and managed;</li> <li>✓ Water is controlled sustainably and equitably.</li> </ul> |

(Source: DWA, 2013(a):6)

## **2.12 Chapter summary**

Water resource management in the South African context, is characterised by its own challenges (climate change, raw water pollution, ageing infrastructure, etc). The DWA as the custodian of this scarce commodity, formulate, implement and regulate policies that are passed into law by the South African Parliament. The DWA utilises 3 legislations to govern its mandate, namely the Water Research Act, 1971 (Act No. 34 of 1971), the Water Services Act, 1997 (Act No.108 of 1997) and the National Water Act, 1998 (Act No. 36 of 1998).

As the country is striving to achieve the MDGs, one of them being accessibility to quality drinkable water to everybody living in South Africa, it is estimated that between 2014 and 2040 demand will outstrip supply, which is call for concern for an ambitious country. The conservation and preservation of the country's water resources are a daunting task for the DWA, due to the different role players in the water sector.

To manage and coordinate these conflicting relationships, the DWA has adopted an Integrated Water resource Management (IWRM) approach, which provides a more holistic approach to water resource management. The IWRM requires intensive planning to ensure the efficient, equitable and sustainable management of water resources and for coping with conflicting demands. The Water Services Act, 1997 (Act No.108 of 1997), clarifies the roles of the different role players in the value chain. The aim of the Act is to promote equitable usage of water and sustainability. The Act emphasizes the adoption of business plans or strategies specifically by the WSP, which will ultimately support the department or Government's mandates in supplying quality drinking water to South Africans.

## **Chapter 3**

### **Strategic management process in a South African water utility**

#### **3.1 Introduction**

For an organisation to cope with the forever changing business environment there is a need to continuously scan both the internal and external environment so that necessary adjustments can be made to strategic course of action going into the future (Kazmi, 2008). In the South African water industry context, the Water Boards and water utilities are required to adopt a 5 year business plan required upon establishment as per Water Services Act, 1997 (Act No. 108 of 1997) of South Africa.

Chapter VI Section 40(1) of the Water Services Act, 1997 (Act No. 108 of 1997) of South Africa, states that a Water Board must, no less than one month from commencement of each financial year, prepare and adopt a business plan relating to the following five years. The business plan must at least contain information regarding:

- Each specific primary and other activity to be undertaken and the performance targets for each;
- The tariff applicable to each service. The method by which it was determined, the motivation for the tariff and the estimated tariff income;
- Forecasts of capital expenditure for the primary and other activities for the next five years; and
- Any other information which the minister may prescribe from time to time.

The water industry is characterised by ageing infrastructure, non-revenue water, skills shortages, river pollution, high electricity costs, non-payments by the municipalities, and climate change. Taking into account that the industry is highly regulated and that the market or geographical area of the operations is gazetted and allocated by the DWA Minister, the water utilities as per the requirement of the water services act are required to prepare a business plan that will help to strive against these challenges. These factors require the water utilities to deploy strategies that will enhance their performance. The water industry is always referred to as a knowledge sharing industry. Water utilities are expected to come up with new and innovative ways in order to drive their cost down, and it can only be achieved by adopting strategies that will result in water utilities delivering sustainable drinkable quality water to industries and households at affordable prices. The concept of

strategy dates back to ancient Athens of 500 BC, and the documentation of Sun Tzu's *The Art of War*, written about 500 BC (Louw & Venter, 2010:9).

### 3.2 Brief history of strategy

The field of strategy has its foundations dating back 2,500 years ago with Sun Tzu and his writings, *The Art of War*, that consisted of thirteen chapters that helped to decode many of the fundamental concepts of strategy that are still important and applicable today (Bamford & West, 2008:19). The word, strategy derives from the Greek word *Strategos*, meaning a general. *Strategos*, in turn is derived from *stratos* (the army) and *agein* (to lead). Originally this was associated with the military - the art of leading an army. However, it was only in the twentieth century that it gained a reputation in the business world. Military and business exclusively share concepts, particularly tactics, which often referred to as a tactical plan for a specific action (Louw & Venter, 2010:11).

Table 3.1 illustrates the evolution of strategy since the beginning of the twentieth century all the way to the twenty-first century:

**Table 3.1: The development of strategic management since the beginning of the twentieth century until the twenty-first century**

| Period                       | Environment                                                                                            | Strategy and management development                                                                                                     |
|------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>The twentieth century</b> |                                                                                                        |                                                                                                                                         |
| 1900-1910                    | <ul style="list-style-type: none"> <li>Colonial wars</li> <li>Global trading of commodities</li> </ul> | <ul style="list-style-type: none"> <li>Beginning of the examination of the management task, e.g FW Taylor and Henri Ford</li> </ul>     |
| 1910-1930                    | <ul style="list-style-type: none"> <li>The World War and its legacy</li> </ul>                         | <ul style="list-style-type: none"> <li>Rise of larger organisations and the consequent need for increased management control</li> </ul> |
| 1930s                        | <ul style="list-style-type: none"> <li>Crash: trade barriers</li> </ul>                                | <ul style="list-style-type: none"> <li>Formal management control</li> </ul>                                                             |

|                                  |                                                                                                                                                                      |                                                                                                                                                                                                                  |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | erected to protect some countries                                                                                                                                    | mechanisms developed, e.g. budgeting and management accounting, particularly in the USA <ul style="list-style-type: none"> <li>• Early human resource experiments in the USA</li> </ul>                          |
| <b>The mid twentieth century</b> |                                                                                                                                                                      |                                                                                                                                                                                                                  |
| 1940s                            | <ul style="list-style-type: none"> <li>• The World War and its legacy</li> </ul>                                                                                     | <ul style="list-style-type: none"> <li>• Strong USA industry and the birth of a formal strategy</li> <li>• Beginning of the organisational theory</li> </ul>                                                     |
| 1950s                            | <ul style="list-style-type: none"> <li>• Sustained economic growth coupled with the first European trade and political block: European Economic Community</li> </ul> | <ul style="list-style-type: none"> <li>• First real strategy writings in a formal series of papers</li> <li>• Organisational theory is applied to management tasks</li> </ul>                                    |
| 1960                             | <ul style="list-style-type: none"> <li>• Continued growth until the first oil price rise late in the decade</li> </ul>                                               | <ul style="list-style-type: none"> <li>• Strategic Management techniques are researched</li> <li>• Separate parallel developments in the organisational research</li> </ul>                                      |
| <b>The twenty first century</b>  |                                                                                                                                                                      |                                                                                                                                                                                                                  |
| 1970s                            | <ul style="list-style-type: none"> <li>• Growth becomes more cyclical with another oil price shock</li> </ul>                                                        | <ul style="list-style-type: none"> <li>• Formal strategic management techniques are adopted</li> <li>• First research writings objecting to the same techniques</li> </ul>                                       |
| 1980s                            | <ul style="list-style-type: none"> <li>• Far East and global development</li> <li>• Computer data handling developed fast</li> </ul>                                 | <ul style="list-style-type: none"> <li>• Major strategic emphasis on the competitive aspects of formal strategic management</li> <li>• The search continues for new strategy concepts emphasising the</li> </ul> |

|       |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                   |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <ul style="list-style-type: none"> <li>Beginning of moves to privatise Government institutions</li> </ul>                                                                                                                                 | human rather than the competitive aspects of the process                                                                                                                                                                                                                                                                                                          |
| 1990s | <ul style="list-style-type: none"> <li>Telecommunications, global corporations, high volume growth in the Pacific Rim and currency problems in Japan</li> <li>Late 1990s – rise of Internet trading and business opportunities</li> </ul> | <ul style="list-style-type: none"> <li>Global concepts of strategy</li> <li>Greater emphasis placed on the organisations own resources rather than the competition as the basis for strategy development</li> <li>Business opportunities from Internet support new strategy concepts of fast moving markets, hyper-competition and learning mechanisms</li> </ul> |
| 2000s | <ul style="list-style-type: none"> <li>Global recession followed by recovery</li> <li>Asian economies, including China and India, begin to grow fast</li> <li>Collapse of Enron and other companies for ethical reasons</li> </ul>        | <ul style="list-style-type: none"> <li>New emphasis on innovation</li> <li>Strategists realise that low-wage economies coupled with mature technologies in some industries, like cars, require a new strategic approach</li> <li>Corporate social responsibility takes greater prominence in strategy</li> </ul>                                                  |

(Source: Lynch, 2009:33)

Strategy management in the early twentieth century can be traced back to the USA and Europe with industrial pioneers such as FW Taylor and Henri Ford (1908-1915), Alfred Sloan (1920-1935) from the USA: and Henri Fayol from France who started to research and write about strategy (Louw & Venter, 2010:12).

These pioneers revolutionised organisations like General Motors and Ford and so their legacies continue to live to date. During the mid-twentieth century, the Second World War took its toll with a demand for military equipment peaking in such a way that countries started to focus on industrialisation, with Japan and North American companies leading the field. Strategic management has become a permanent feature in the boardrooms during the twenty first century as organisations move into foreign territories (Lynch, 2009:34-35). Firms changed from domestic oriented strategies to a global orientation for numerous reasons. Pursuing global markets can reduce per-unit production costs by increasing volume. A global strategy can extend the life cycle of products from which the domestic markets may be declining (Parnell, 2014:169).

### **3.3 Strategy defined**

Strategy refers to a general plan of action for achieving one's goals and objectives (Nickols, 2011:4). Shim (2012:1) defines strategy as a course of action or a plan, including the specifications required for resources required, in order to achieve specific objectives. Bamford & West (2010:9) define strategy as the overall concept of how an organisation plans coordinates and executes its activities in order to conduct the business successfully, by outperforming competitors, and delivering better returns to shareholders.

An organisation's strategy consists of the competitive moves and business approaches management has developed to attract and please customers, conduct operations, grow the business, and achieve performance objectives (Hough *et al.*, 2011:9). In order for organisations to be sustainable, and survive the forever changing business environment there is a need to deploy strategies. Depending on the organisational size strategy consists of three levels that an organisation needs to craft, implement and manage.

#### **3.3.1 The levels of strategy**

The performance of the overall business depends on how integrated its departments are and how logical and synergetic the different departments deploy their strategies throughout the layers of the organisational hierarchy. According to Henry (2008:17),

strategy may be formulated at three levels, namely the corporate, the business and the operational while Parnell (2014:151) advocates that strategies exist at three levels in any organisation:

- The corporate or firm level;
- The business unit or competitive level; and
- The functional or tactical level.

The organisation needs to carefully plan and coordinate its activities in order to activities create value by ensuring that the three levels are in tandem, thereby creating synergy to the organisations` objectives.

### **3.3.2 Corporate level strategy**

Corporate strategy is the one that decides what business the organisation should be in, and how the overall group of activities should be structured and managed. Carpenter & Sanders (2014:220) advocate that corporate level strategies must address issues related to decisions about entering or exiting an industry, while it also deals with issues affecting the overall management of an enterprise to realise synergy. Pearce II & Robinson, Jr (2007:5) advocate that the corporate level executives determine what business the organisation should be in, and they set objectives and formulate strategies that span the activities and functional areas of the business. They do that by exploiting the firm's distinctive characteristics by formulating long-term plans, typically for a three to five year period. This plan should be cascaded to the middle layer of the strategy level, namely the business unit level strategy.

### **3.3.3 Business unit level strategy**

As the number and diversity of products increase the structure is likely to be centred upon divisions called the Strategic Business Units (SBU). The SBUs are individually responsible for developing, manufacturing and marketing their own product or group of product. According Pearce II and Robinson, Jr (2007:5) the managers at these levels need to translate statements of strategic intent and generated at the corporate level into objectives for respective SBUs. Function area strategies add details to the organisation's corporate level strategy, and specify what resources and

organisational capabilities are needed to put the organisations overall corporate strategy into action (Hough *et al.*, 2011:26).

### **3.3.4 Operational level strategy**

An operational level strategy formulates a long-term plan for using enterprise-wide resources to reach the strategic objectives. Operational level strategy aims to close the tactical gap between business strategy and implementation (Shim, 2012:122). According to Hough *et al.*, (2011: 27)' operational strategy concerns the relatively narrow strategic initiatives and approaches for managing key operating units (plants, distribution centres, and geographic units).

They are limited in scope but add further detail to the SBUs and the overall corporate strategy. The primary objective of the operational strategy is to eliminate inefficiency, and ineffectiveness in an organisation, so that the customer's expectations are met. It is the organisation executive's duty to ensure that strategies are crafted, executed managed and controlled to guide the organisation's vision and mission. Organisations follow a Strategic Management Process (SMP) in order to craft and implement strategies.

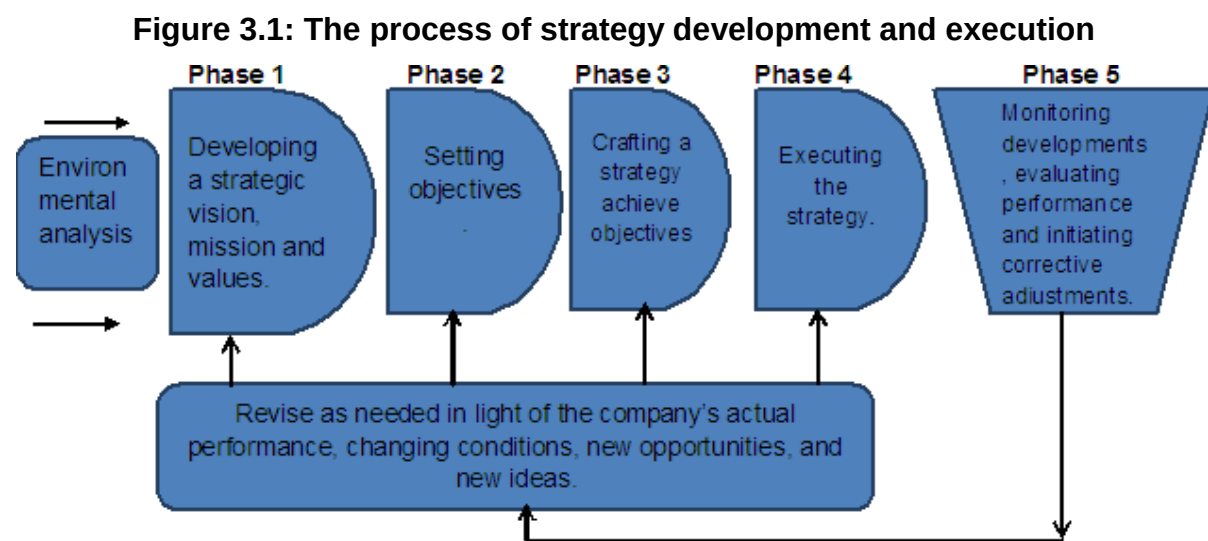
### **3.4 Strategic management**

Strategic management can be defined as a set of decisions and actions used to formulate and execute strategies that will provide a competitively superior fit between the organisation and its environment, so as to achieve organisational goals (Daft & Marcic, 2011:160). The concept of strategic management is however not new, and has been in practise for many decades. Strategic management is further defined by Kazmi (2008:19) as a dynamic process of formulation, implementation, evaluation and the control of strategies in order to realise the organisation's strategic direction.

External business contexts, such as world-wide crises, are rapidly changing, customers` needs and behaviour changes, competition is intensifying, and new information needs and technology are increasing the need for regular planning, flexibility, adaptability and the ability to change. Insightful diagnosis of organisations internal and external is a prerequisite for the executives to succeed in crafting and aligning a strategy that is an excellent fit with the organisations situation, is capable

of building competitive advantage and hold out prospects for boosting competitive performance (Hough *et al.*, 2011:56).

Crafting and executing strategies are the heart and soul of managing a business enterprise (Thompson *et al.*, 2012:69). The authors view Kazmi's (2008:19) definition of strategy only as part of strategy making and execution. They explain that there are five interrelated managerial phases involved in the process of crafting and executing an organisation's strategy. Figure 3.1 illustrates the processes of crafting and executing a company's strategy with the five main phases:



(Source: Hough *et al.*, 2011:19).

### 3.4.1 Environmental analysis

The environmental analysis of the organisation entails evaluating and analysing the external environment for possible opportunities and threats, and the internal environment for possible strength, weakness (Ehlers & Lazenby, 2010:9). The authors Barney & Hesterly (2010:80) advocated that by conducting an external analysis, an organisation identifies the critical threats and opportunities in its competitive environment. It also examines how competition in this environment is likely to evolve and what implications do the evolution has for the organisation.

The internal environment analysis helps the organisation to identify strength and weakness. It also helps the organisation to understand its own internal resources and capabilities which are the source for competitive advantage. SWOT, PESTEL, Mckinsys 7s model, Porter's 5 forces are some of the industry wide strategic tools used by organisations to scan the macro-environment and the micro-environment of the organisations. After the process of scanning the environment the organisation is now in position to exploit the opportunities, leveraging its strength and finally mitigating the threats and weaknesses.

### **3.4.2 Phase 1: Developing a strategic vision, mission and values**

#### **3.4.2.1 Developing a strategic vision**

The first phase of the strategic planning and management process is developing a strategic vision. The strategic vision provides a picture of how to fulfil the company's purpose: who and what the company envisage to become represents the highest priorities and allow the company to develop goals that act as yardsticks to measure the company's progress (Helin, 2012:19). In case of difficulty, the decision making managers can always refer to the vision statement for strategic decision making and for future direction of the company. The vision it's a long term goal that inform the day to day activities of the organisation. Without a vision the organisation is going nowhere.

#### **3.4.2.2 Developing a strategic mission**

According to Thompson *et al.*, (2012:74), the mission statement describes the enterprise's current business and purpose "who we are, what we do, and why we are here". The mission statement is a description of what an organisation actually does, what its business is and why it does it. Organisation mission is the statement that defines its core purpose or reason for being. It tells who a company is and what it does (Jurevicus, 2013). The mission directs the organisation towards attaining its vision, the mission can manoeuvred at any stage to accommodate changes that might arise.

#### **3.4.2.3 Developing strategic values**

Organisations should defined a set a values and align them with the mission and vision. Value statements of the organisation reflect the basic beliefs, values, aspirations and philosophical priorities to which strategic decision makers are committed in managing the organisation. The values should be internalised and utilised as decision criteria because when the same values are shared, quality in the organisation is built, and if such values are agreed upon, it does away the need for monitoring and control (Louw & Venter, 2010:120). Value statements are developed to guide behaviour of employees in conducting the organisation's business. Values are designated beliefs and desired ways of doing things at the organisation, and frequently relate to things, such as fair treatment, honour, integrity, ethical behaviour, innovativeness, team work, and passion for excellence, social responsibility and community citizenship (Gamble *et al.*, 2013:21).

#### **3.4.3 Phase 2: Setting strategic objectives**

The objectives should provide the organisation focus and direction. According to Strydom (2011:44), when formulating objectives, it is important that they are specific, measurable, achievable, relevant, and time bound (SMART). According to Nieuwenhuizen (2007:24) there are a number of objectives that the company may set for itself which includes: long-term (strategic objectives); medium-term (functional objectives); short-term (operational objectives); and personal objectives for employees. The objectives may further relate to the strategic performance or specifically to financial performance.

#### **3.4.4 Phase 3: Crafting a strategy to achieve objectives**

Crafting a strategy to achieve the objectives and vision is the third phase in the strategy formulation processes and management. According to Hiriappa (2013:17), middle level and front-end managers cannot be good strategy makers without understanding the organisations long-term direction and higher level strategies. Crafting of strategy entails how to attract and please customers, how to compete against rivals, how to position the organisation in the market place and capitalise on attractive opportunities to grow the business, how best to respond to changing economic and market conditions, how to manage functional piece of the business and how to achieve companywide performance targets (Gamble *et al.*, 2013:25). It is

therefore important for strategy to be understood by all levels of management as well as employees, in order for it to function effectively.

#### **3.4.5 Phase 4: Executing the strategy**

Once the strategy has been chosen, executives should start the route to achieving the targeted financial and strategic performance. Strategy means nothing if it cannot be properly executed, it is therefore important for each and every individual in the organisation to understand the direction the company is heading (Daughtry & Casselman, 2009:09). It is then logical to assume that strategy execution success depends on the entire organisation which is a team effort.

#### **3.4.6 Phase 5: Evaluating performance and initiating corrective adjustments**

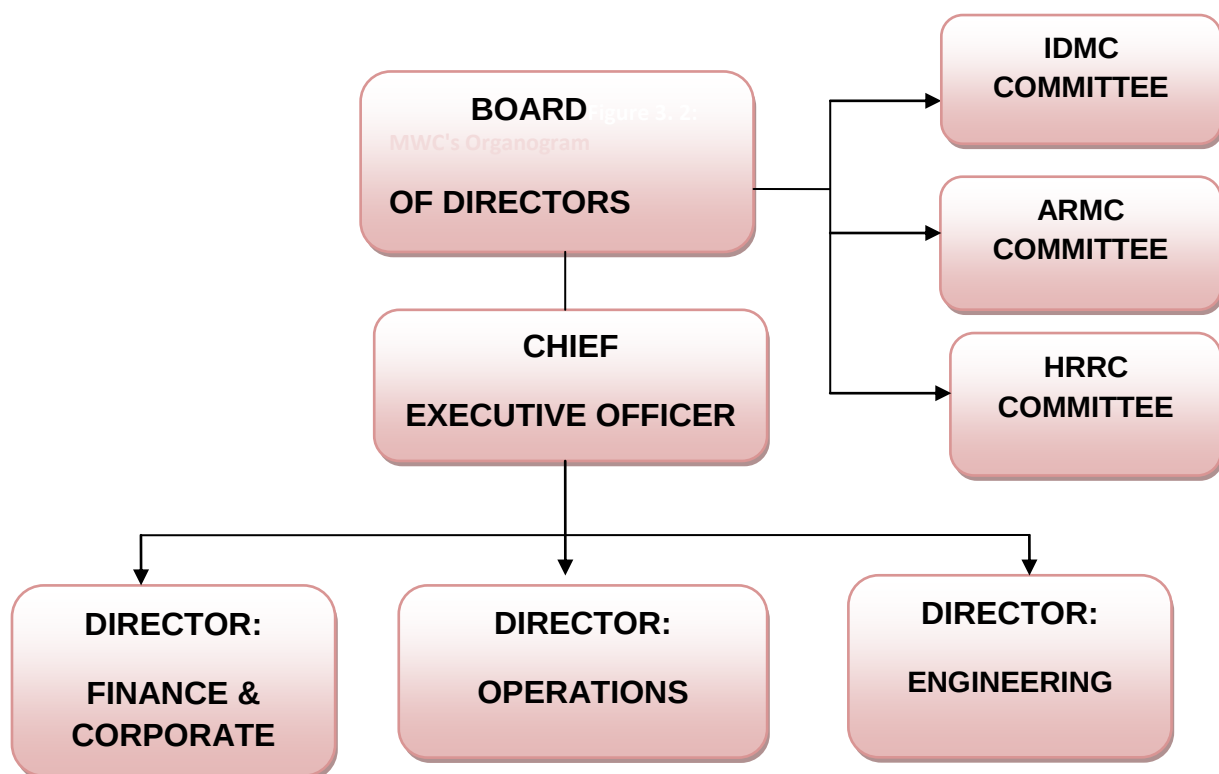
The fifth phase of the strategy management process entails monitoring new external development, evaluating the organisation progress, and making corrective adjustment is the trigger point for deciding whether to continue or change the organisations, objectives, strategy, or strategy execution methods (Hough *et al.*, 2011:47). At this stage the organisation should be in a position to identify bottlenecks that hinder performance and then fine-tune the identified gaps to ensure strategy success. Guarding whether the strategy is appropriate in challenging times and adjusting the strategy to meet current challenges then becomes core of making sure that the strategy remains relevant.

### **3.5 Strategic management process of MWC**

MWC is NPO operating under the umbrella of Section 21 as per Companies Act, (Act No. 71 of 2008) South Africa. The SMP of the water utility is driven by the CEO of the organisation who reports to the Board of Directors. The Board of Director's structure consists of ten non-executive board members, five of which are nominated by the local government and the remaining five members are nominated by the mining companies. Figure 3.2 depicts the current reporting structure of the water utility. The organisation currently has a staff complement 133, spread over 3 departments each headed by a director who reports to the chief executive officer (CEO), namely finance and corporate services, operations and engineering (MWC

Annual Report, 2012:21).The board established the following committees to oversee relevant matters: Infrastructure Development and Maintenance Committee (IDMC) Audit and Risk Management Committee (ARMC) Human Resources and Remuneration Committee (HRRC). These committees have specific terms of reference and assist the board to fulfil its fiduciary responsibilities (MWC Annual Report, 2013:8).

**Figure 3.2: MWC's organogram**



(Source: MWC's organogram, 2014.)

### 3.5.1 MWC Governance structure

The board of directors are appointed by the organisations or clients which have signed bulk water supply agreements with MWC; this can sometimes create conflict of interest. There is an urgent need to relook at the board's composition to ensure it is aligned with the Companies Act, (Act No. 71 of 2008) South Africa and prescripts

of King III report on corporate governance. King III report prescribes a 30 percent representation of independent members in the board the same goes for the ARMC (MWC strategic report, 2013:66). The water utility is operating in a service delivery spectrum which is characterised by stakeholders that have got vested interest in the organisation.

### **3.5.2 Stakeholder management**

There is a dual relationship between the most important stakeholders for the MWC. The major client CCMLM, who also happens to be the decision maker constitute the board of directors of the MWC. To date the CCMLM is in a region of R20Million in arrears in terms of their water bill. There is a need to streamline and enhance the debt collection process so that it is not unduly influenced by the participation of the clients in the company board (MWC strategic report, 2013:66).

The water sector is a highly unionised environment. The MWC has put in place a labour forum to effectively deal with issues emanating from this component of the business to avoid unnecessary industrial actions. This was done through labour federations, representatives or shop stewards from the two unions, the United Association of South Africa (UASA) and the South African Municipal Workers Union (SAMWU). However, the functioning of this forum has to be aligned with the strategies and goals of the MWC, thus involving the shop stewards in the process of the crafting, implementing and performance monitoring of the strategy, so that there could be buy-in. The MWC has adopted a 5 year strategic plan in 2013, after a three day strategic plan session which was facilitated by Ntiyiso Consulting. The strategic plan session included the board of directors, senior managers and middle managers. The session started with the delegates having to scan the internal and the external environment.

### **3.6 External environment analysis**

To conduct the analysis, various stakeholders in the MWC where involved namely: of the board directors, senior managers, middle management and labour federation representatives. Situational analysis of the organisation was conducted utilising various strategic tools like SWOT and PESTEL. External analysis focuses on the

political, economic, social, technological, environmental and legal issues (PESTEL) that have or may have impact an impact on the well-being of an organisation or the organisation's external environment, including major opportunities and threats: industry and competitors` analyses.

### 3.6.1 PESTEL analysis

Also referred to as macro-environment, PESTEL includes political-legal, economic, socio-cultural, demographic, technological, and natural forces at both the local and global level.

**Table 3.2: PESTEL Analysis for MWC**

#### Political.

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Elections</u>          | <ul style="list-style-type: none"> <li>• Business risk or nature: The need for maintaining proper liquidity was emphasised due to some probable negative repercussions during an election year.</li> <li>• Business impact: There might be some impact on collections and payments, and the CCMLM and the MWC will liaise closely to deal with the emerging situation in this regard.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Institutional realignment | <ul style="list-style-type: none"> <li>• Business nature or risk: The Government has already embarked on a process of institutional realignment within the water sector which may affect the MWC. It was announced by the DWA that the twelve water boards constituted under Water Services Act, 1997 (Act No. 108 of 1997) of which the MWC, being a water utility registered under the Companies Act. The MWC is not party to, will be realigned into nine regional water utilities.</li> <li>• Business impact: This may present the MWC with the opportunity to step in where a water board in the North West Province is disestablished and the regional water utility is not providing services. This may create some opportunities for the utility to expand its supply base. Should this happen, it will be good for the organisation to expand its business</li> </ul> |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>However, it is also possible that legislation may force the MWC to become a water board or merge into another board, thus losing its existence as an independent water utility. Notwithstanding, in terms of the current structure of the utility, this seems to be an unlikely and distant outcome, as the Minister of Water Affairs has no legal rights to exercise expropriation on the MWC's assets.</p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Economic**

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Unemployment                  | <ul style="list-style-type: none"> <li>• It was noted that the general unemployment within the area where the MWC is operating poses a risk to it.</li> <li>• High unemployment increases the risk of failure from rate payers not paying for services, including water. Having noted that the CCMLM is the single biggest customer of the MWC, its economic fortunes and misfortunes have a direct effect on the utility. The MWC therefore faces a financial risk in the medium to long-term if this (unemployment) problem continues to remain unresolved.</li> </ul>                                                                               |
| Municipality's ability to pay | <ul style="list-style-type: none"> <li>• Beyond the issue of unemployment, there are a number of factors which may affect the municipality's ability to pay the MWC. As indicated above, the MWC's economic fortunes and misfortunes have a direct effect on the MWC. The real risk in this regard therefore is that MWC is deriving at least 60 percent of its revenue from a single customer. This issue has its roots in the history of the utility itself, however, the risk is nonetheless real and requires addressing it urgently through better coordination combined with expansion of the area of operation, and diversification.</li> </ul> |
| Declining mining activity     | <ul style="list-style-type: none"> <li>• Linked to the issue above, is the fact that the mining industry within the area has declined rapidly over the past few years, due to diminished ore underground, progressively deeper level mining, rising costs and unstable metal prices.</li> </ul>                                                                                                                                                                                                                                                                                                                                                        |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | <ul style="list-style-type: none"> <li>It is estimated that within the next five years, the (mining) industry's contribution to the MWC's revenue, may show a significant decline. It is currently sitting at 38 percent, having accounted for more than 75 percent of its revenue at some point. The fact that the mining industry currently employs at least 10 000 people means that not only will the volume of purchases continue to decline with declining operations, but that unemployment will rise even higher.</li> </ul> |
| Agricultural Sector         | <ul style="list-style-type: none"> <li>Another business sector which has been keeping the usage of water high is the agricultural sector.</li> <li>Although this sector is not a direct buyer of water from the organisation, the fact that it continues to decline and instead of growing, will only add pressure to the MWC in the medium to long-term, possibly due to reduction in employment rates.</li> </ul>                                                                                                                  |
| Rising electricity tariff   | <ul style="list-style-type: none"> <li>The phenomenal rise in electricity tariff continues to significantly increase the cost of production, given that this (electricity) is a key input in water treatment and distribution.</li> </ul>                                                                                                                                                                                                                                                                                            |
| Cost of raw untreated water | <ul style="list-style-type: none"> <li>The cost of raw untreated water, from the source, Vaal River system is increasing. The TCTA levy has since been increased significantly to cover the cost of infrastructure at source, and this is adding more pressure MWC.</li> </ul>                                                                                                                                                                                                                                                       |
| Chemicals                   | <ul style="list-style-type: none"> <li>The level of consumption and the cost of chemicals have also risen. . This is mainly due to the rising levels of contamination of the river water from upstream in the Gauteng region.</li> <li>High levels of contamination mean more chemicals and other inputs in order to produce potable water of acceptable quality.</li> </ul>                                                                                                                                                         |
| Aging infrastructure        | <ul style="list-style-type: none"> <li>The MWC's infrastructure has been ageing. High steel prices and high inflation rates increase the cost of replacing the</li> </ul>                                                                                                                                                                                                                                                                                                                                                            |

|             |                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>ageing infrastructure.</p> <ul style="list-style-type: none"> <li>• Therefore it is becoming increasingly difficult for the MWC to be in a comfortable position to replace its aging infrastructure, to inadequate growth in sales, the inability to recover capital expenditure costs through tariffs and inadequate cash generation from operations to meet total costs.</li> </ul> |
| Labour cost | <ul style="list-style-type: none"> <li>• Labour costs have also been rising at a higher rate than inflation.</li> <li>• Rising labour costs add to the fixed component of the unit costs of water production.</li> </ul>                                                                                                                                                                 |

### **Social**

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Indigent Status of community members | <ul style="list-style-type: none"> <li>• The increasing unemployment rate in the local area due to declining mining activity and other economic variables will result in more people being classified as indigents. Indigents by law, qualify for free basic services.</li> <li>• An increased size of the indigent register will add more pressure on the CCMLM's finances in terms of their constitutional obligation to provide free basic services. An increased size of the indigent register will have an indirect negative impact on the MWC itself, especially if the CCMLM is unable to obtain an equitable share in proportion to the number of indigents, or alternatively generate additional revenue to cover the increased cost of free basic services.</li> </ul> |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vandalism | <ul style="list-style-type: none"> <li>Increased unemployment provides a breeding ground for criminal activities. The MWC faces vandalism and theft of property from criminal elements in the area.</li> <li>This will add pressure to the finances of the company as it will have to repair and replace vandalised and stolen assets. It will also have to increase security, which will come at an additional cost.</li> </ul> |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Technology

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New water processing technology | <ul style="list-style-type: none"> <li>The deep level mining activities in the area result in the need to abstract ground water to keep the operating shafts from flooding and destruction. While this water has traditionally not been utilised as an alternative source to blend with surface water for potable use, new technologies have come to the fore over the past few years, that are able to treat the deep mine water, cost effectively.</li> <li>The MWC can benefit from such technologies by being able to diversify its water sources and thus reduce the current dependence on the supply of water from the Vaal River System. It may also have some positive repercussions on the cost of such water, when compared with the cost of raw water from the Vaal River System.</li> </ul> |
| Asset Maintenance technology    | <ul style="list-style-type: none"> <li>Condition monitoring technologies, which are now available, can improve the quality of and cost of maintenance by providing early warnings and point out the exact location of defects in the infrastructure.</li> <li>New technologies in the water sector are able to help with minimising water losses in the water network.</li> <li>The municipality can also benefit in terms of minimising water losses and, unaccounted for water, and position itself better to improve operational efficiencies.</li> </ul>                                                                                                                                                                                                                                            |

## Environmental

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Raw water quality              | <ul style="list-style-type: none"> <li>• The MWC faces an environmental threat from polluted water coming into its areas from upstream (Gauteng).</li> <li>• The polluted water, results in higher treatment costs resulting from the higher volume of chemicals and additional processes needed to treat the water to a potable standard.</li> </ul>                                                                                       |
| Acid mine water drainage (AMD) | <ul style="list-style-type: none"> <li>• There is also a threat of acid mine-water drainage, whereby the acidic mine-water drained underground poses a threat to the water sourced from the Vaal River system. If this water seeps into the Vaal River, the cost of treatment will, in equal measure as in the case of pollution from upstream water, rise and consequently have negative financial repercussions on the MWC.</li> </ul>    |
| Climate change                 | <ul style="list-style-type: none"> <li>• Climate change has been confirmed by scientists as being the biggest threat to our environment. Under climate changes, there is a real risk of droughts, floods, and possible damage to the infrastructure, all of which may affect the availability and quality of water in the long run. Without being able to supply quality water, the MWC could face the risk of business closure.</li> </ul> |

## Legal

|                      |                                                                                                                                                                                                                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blue Drop Status     | <ul style="list-style-type: none"> <li>• The requirements to achieve and maintain the Blue Drop water status may, change and become prohibitive to the municipalities, causing an additional cost burden on MWC.</li> <li>• Failure to maintain Blue Drop status will affect the company's brand name</li> </ul> |
| Corporate Governance | <ul style="list-style-type: none"> <li>• The makeup and functioning of the MWC's governance structure, is currently not compliant with King III, with a perceived lack of independence, which requires</li> </ul>                                                                                                |

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                    | <p>participation of a number of independent directors on the board. Due to the history of the organisation from inception, the board of the MWC is made up mainly of representatives from its biggest customers, namely the municipality and the local mines. There is currently only one independent board member, who also chairs the board. Being a Section 21 utility, which enjoys certain benefits including tax exemption, compliance with good governance is the key for it being able to maintain the status and benefits thereof. There is therefore a need for the realignment of the board's composition in line with King III and the Companies Act 2008. The utility is required to be audited by external auditors and is also required to have an Audit and Risk Management Committee (ARMC). The Companies Act, 2008, stipulates that the Audit Committee should be constituted by the members of the board and, at least, that there should be three independent directors on the said committee. In particular, a few more independent directors need to be introduced into the board to ensure compliance with the King III report and the Companies Act, Act no 71 of 2008.</p> |
| Employment Equity Act, Act no 55 of 1998 South Africa (EEA)                        | <ul style="list-style-type: none"> <li>• EEA requires organisations to ensure that their staff demographics are representative of the boarder societal demographics and that disabled persons are also featured in the demographics.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Broad Based Black Economic Empowerment Act, Act no 53 of 2003 South Africa (BBBEE) | <ul style="list-style-type: none"> <li>• There is also the issue of Broad Based Black Economic Empowerment Act, 2003 Act no 53 of 2003, which requires that organisations must comply with a number of requirements, against which they are provided a BBBEE rating.</li> <li>• BBBEE status influences the company's ability to</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                     | supply new services and also influences the brand name of the company.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Labour Relations Act,1995 Act no 66 of 1995 South Africa (LRA) and Occupational Health and Safety Act, 1993 Act no 181 of 1993 South Africa (OHSA), | <ul style="list-style-type: none"> <li>• The Labour Relations Act,1995 Act no 66 of 1995 South Africa (LRA) and Occupational Health and Safety Act (OHSA), both of which are meant to protect workers, are, together with those laws meant to promote equity, the key to the MWC maintaining the status of a responsible corporate citizen. Thus, any strategic outlook that is based on the MWC doing more business with Government institutions makes compliant with these laws non-negotiable. While the MWC is generally compliant with most of these laws, there is a need to strengthen its position in this regard to ensure that it does not slip back.</li> </ul> |
| Raw water allocation                                                                                                                                | <ul style="list-style-type: none"> <li>• The MWC has a current allocation of 238 ML of water from the Vaal River System per day. However, only about half of it is being used due to declining sales volumes. While the company is hoping to expand its volume of supply to take advantage of the full allocation, there is a real threat that the DWA may decide to reallocate the surplus to other organisations, thus limiting any future growth prospects for the company.</li> </ul>                                                                                                                                                                                  |

(Source: MWC strategic report, 2013)

Table 3.2 depicts PESTEL analysis for the MWC, from a Political perspective elections are a risk to the business, with the transition in the CCMLM payments to the MWC are not done on time. This creates a cash flow problem for the MWC.

The economic outlook for MWC is characterised by its own challenges with the declining mining activity gives rise to unemployment and the resident's ability to pay the CCMLM for services rendered. The CCMLM's ability to pay the MWC also

becomes a challenge, like any other business the water utility has to generate enough cash to sustain the operation.

Apart from the much needed cash for capital replacements of aging infrastructure the water utility has operational costs that are incurred on a daily basis and they includes the following: electricity tariff, cost of raw, chemicals and Labour cost. Irrespective of the operational challenges the MWC also has to deal with social issues that are presented by the communities residing around the pipelines vandalising of assets has become a norm which hinders the ability of the utility to supply water. Another social factor is the registration of indigent status of community members who are not willing to come forward and register as indigent so that the CCMLM can get Governments rebates.

Under the technology aspect the MWC can benefit by exploiting new technology that will help to purify water from the mines. There is also room to adopt asset maintenance technology to keep the company in line with industry asset best practices.

River pollutants such as acid mine water drainage, sewage systems and agricultural run-offs are some of the environmental threat to the MWC. They increase the water utility's treatment cost, as more chemical are needed in the water treatment process in order to produce quality potable drinking quality water to meets SANS 241.

The MWC should maintain Blue Drop Status, the DWA as the custodian of water resources present these prestigious awards to WSP and WSAs that demonstrate excellence in institution management. The MWC also operate within the legal framework of South African business which is governed by the following Acts: Employment Equity Act, Act No. 55 of 1998, Broad Based Black Economic Environment Act, Act No. 53 of 2003; Labour Relations Act, Act No. 66 of 1995; Occupational Health Safety Act, Act No. 55 of 1993; Water Service Act, Act No 108 of 1997; National water Act, Act No. 36 of 1998 and the Company's Act, Act No. 71 of 2008. The macro-environment tool (PESTEL) cannot be used in isolation to identify opportunities and threats that exist within the organisation's environment, the organisation needs to also scan the internal environment as well.

### 3.6.2 The internal environment analysis

The internal analysis gives the organisation the opportunity to look into internal issues that have or can have an adverse effect on the day to day operations of the organisation. Strength, Weakness, Opportunity and Threats (SWOT) as strategy tool was conducted for the MWC.

#### 3.6.2.1 MWC SWOT analysis

A SWOT analysis is a simple but widely used tool that helps in understanding the strengths, weaknesses, opportunities and threats involved in a project or business activity. It starts by defining the objectives of the project or business activity and identifies the internal and external factors that are important to achieving that objective (Babatunde & Adebisi 2008:27).

SWOT conducted on the MWC reveals the following:

**Table 3.3: MWC's SWOT analysis**

| Strengths                                                                                                                                                                                                                                                                                                                                                             | Weaknesses                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Well functioning and populated organisational structure</li><li>• Well functioning and resourced internal operations</li><li>• Highly competent technical department</li><li>• Independence from Water Affairs (being a utility rather than a board)</li><li>• Tax benefits emanating from the company's NPO status</li></ul> | <ul style="list-style-type: none"><li>• Declining revenue base from the mining sector</li><li>• Increasing reliance on one client (municipality) as source of revenue</li><li>• Weaker financial position of the major client (municipality) and its inability to pay on time</li><li>• Rising cost of raw water from the Vaal River system</li><li>• Aged infrastructure that requires replacement</li><li>• Rising cost of water infrastructure</li></ul> |
| Opportunities                                                                                                                                                                                                                                                                                                                                                         | Threats                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"><li>• Expanding client base to other</li></ul>                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"><li>• Institutional realignment in the</li></ul>                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>municipalities</p> <ul style="list-style-type: none"> <li>• Having politically-active board members who can help unlock opportunities to expand supply to other municipalities in the surrounding areas</li> <li>• Growing the technical and training services portfolio to generate more income</li> <li>• Venturing into implementation agency services to expand revenue portfolio and strengthen the operational/financial position of its client base (the municipality) to achieve long term sustainability</li> <li>• Utilisation of underground mine water as new water source</li> <li>• Taking advantage of new condition monitoring technologies to reduce cost and consequence of maintenance issues</li> </ul> | <p>water sector (review of water boards and regionalisation)</p> <ul style="list-style-type: none"> <li>• Pollution of water resources from water coming from upstream (Gauteng)</li> <li>• Possible review of water allocation at the Vaal Dam due to under-utilisation</li> <li>• Poor corporate governance structure which might compromise the company, NPO status and benefits thereof</li> <li>• Conflict of interest in the governance structure which might limit or derail the company's debt management effort (since the board has to censor itself in this regard)</li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(Source: MWC Strategic Planning Report 2013: 31-32)

Strengths and weaknesses are usually internal to the organisation, while opportunities and threats are usually external. A SWOT analysis conducted at the MWC highlighted a stronger presence of both positive and negative internal as well as external factors that were utilised to craft the strategy. The MWC's SWOT analysis reveals that the revenue stream from the mining sector is declining, while their major client, the municipality's weak financial position is affecting the water utility (MWC strategic planning report, 2013:31).

The quality of the raw water in the Vaal River is also declining, thus increasing the input cost while the water utility is in need of capital to refurbish ageing infrastructure. The DWA has introduced an institution realignment process whereby regional water

schemes will be formed per province. By excluding the water utilities from the consultation process, the situation is aggravated through conflict of interest in the governance structure, which might limit or derail the company's debt management, effort hence the majority of the utility's Board of Directors are from the CCMLM. These threaten the water utilities' sustainability when it comes to expected future revenue to survive the water utility need to maintain a positive cash flow.

### **3.6.2.2 Expected future revenue for MWC**

The weaker an organisation's financial performance and market standing, the more its current strategy must be questioned (Hough *et al*, 2011:110). Assessing an organisation's financial statements is of interest to shareholders, creditors and the organisations own management (Megginson *et al*, 2010:39). The organisation has been experiencing declining water sales volumes which are adversely affecting the ability to generate revenue. Revenue from the CCMLM has been growing over the years, while revenue from mining companies has been declining continuously due to the downscaling of mining activities. The drive by the mining sector to rationalise, and cut costs, are also aimed at reducing the consumption of water for their operations with 10% annually; which reflected in continuously declining sales to this sector (MWC Annual report, 2011:11).

From a MWC's perspective, it is estimated that revenue from the mining sector will decrease further by another 20 to 30 % in the next 5 years, because of the continued decline in mining activities (MWC strategic planning report, 2013:26). In contrast, financial accounting primarily provides summaries of past financial transactions. These financial summaries may be useful for planning, but only to a certain point. The difficulty with summaries of the past is that the future is not simply a projection of what has happened in the past.

Changes are constantly taking place in economic conditions, customer needs and desires, competitive conditions, and so on. All of these changes demand that manager's planning be based to a large extent on an estimate of what will happen, rather than on summaries of what has already happened (Seal *et al*, 2012:7). Traditional financial measures alone do not adequately report results of the more complex competitive business environment of today, but the overall picture it paints

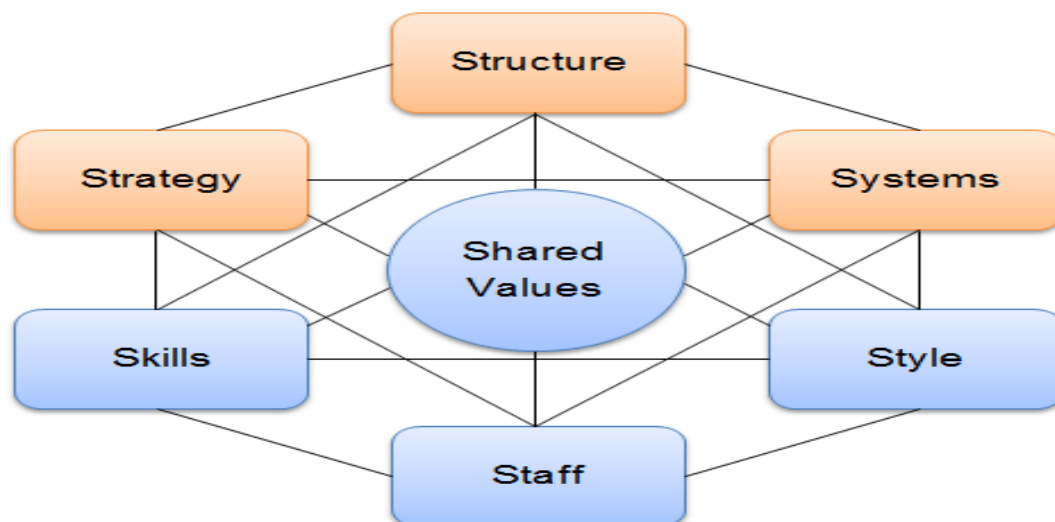
is that of historically strategic decisions that were made in the past. In order to meet strategic objectives, the organisation needs a capable, competent leadership structures that will guide the organisation. In addition to SWOT analysis the water utility utilised other strategic tools to analyse the environment. SWOT as a strategic tool cannot be utilised alone to analyse the environment of the water utility McKinsey 7 S's model as another strategic tool was deployed at MWC.

### 3.6.2.3 McKinsey 7 S's model

According to Jurevicius (2013), McKinsey 7S model is a tool that analyses the firm's organisational design, by looking at 7 key internal elements: strategy, structure, systems, shared values, style, staff and skills. The 7S model can be used in a wide variety of situations and is a valuable tool when the organisational design is in question. The most common uses of the framework are:

- To facilitate organisational change;
- To help implement new strategies;
- To identify how each area may change in a future; and
- To facilitate the merger of organisations.

**Figure 3.3: McKinsey 7S model**



(Source: Jurevicius, 2013)

Figure 3.3 depicts the model in operation, the elements are classified into two hard core derivatives (strategy, structure and systems), as well as soft core derivatives

(shared values, skills, staff, and style. In order for the organisation to function efficiently and effectively, the 7S's need to align.

The MWC utilised McKinsey 7S model as a strategic tool to conduct an internal organisational analysis to support the functions that cover Finance, Human Resources (HR) and Information Technology (IT). The same goes for the financial position of the organisation, the aim of the organisation is to be profitable and sustainable. Sustainability can be achieved if enough revenue is generated to meet current and future financial obligations. The micro and macro environmental issues that are affecting or would likely to affect the MWC were identified and understood by the Board of Directors senior and middle managers, the next step was then to go into the next phase of developing strategic vision, mission and values.

#### **3.6.2.4 Phase 1: Developing a strategic vision, mission and values**

As part of crafting a strategy, the organisation has also adopted the following as their vision, mission and values:

##### **3.6.2.5 Vision**

To be your preferred water services partner.

##### **3.6.2.6 Mission**

To provide effective and efficient water services in support of client needs.

##### **3.6.2.7 Values**

The Midvaal Water Company commits to live by the following values:

- Quality;
- Relationships;
- Service;
- Trustworthiness and Innovativeness.

### 3.6.2.8 Phase 2: Setting objectives

The strategic objectives seek to maintain and strengthen the MWC's position, at the same time, opening opportunities on its quest for long-term sustainability and profitability. The strategic objectives of the water utilities are supposed to be aligned to those of the DWA Minister's strategic objectives, which are informed by the Government's MTSF objectives. In this instance, the researcher could not verify alignment. The water utility has developed four strategic objectives which are not aligned to the DWA Ministry, it is implemented and run over a period of 5 years and they are presented as follows:

**Table 3.4 : MWC strategic objectives**

| <b>MWC strategic objectives</b>                                |
|----------------------------------------------------------------|
| 1.To ensure an effective water distribution                    |
| 2.To expand its client base                                    |
| 3.To ensure effective external water infrastructure management |
| 4. To ensure internal business excellence                      |

(Source: MWC Strategic planning report, 2013: 31)

**Table 3.5 DWA strategic objectives**

| <b>DWA strategic objectives</b>                                                          |
|------------------------------------------------------------------------------------------|
| 1. (To ensure that ) Water support development and elimination of poverty and inequality |
| 2. (To ensure that ) Water contributes to the economy and job creation                   |
| 3. (To ensure that ) Water is protected, used, developed, conserved, managed             |
| 4. (To ensure that ) Water is controlled sustainably and equitably                       |

(Source: DWA, 2013(a):6)

Table 3.4 and table 3.5 illustrate the strategic objectives of the water utilities that are suppose to be aligned to DWA Minister's strategic objectives which in turn informed by Government MTSF and inked to the NDP. In this instance the researcher could establish that strategic objectives of The MWC are not fully aligned to those of the DWA, the activities that the MWC is planning to undertake will to some degree help the DWA to meet its objectives.

**Table 3.6: DWA strategic objectives**

| <b>DWA strategic objectives</b>                                              |
|------------------------------------------------------------------------------|
| 1.To ensure an effective water distribution                                  |
| 2. (To ensure that ) Water contributes to the economy and job creation       |
| 3. (To ensure that ) Water is protected, used, developed, conserved, managed |
| 4. (To ensure that ) Water is controlled sustainably and equitably           |

(Source: DWA, 2013(a):6)

**Table 3.7: MTSF objectives**

| <b>(MTSF 2014-2019) objectives</b>                                                 |
|------------------------------------------------------------------------------------|
| 1.Radical economic transformation, rapid economic growth and job creation          |
| 2.Ensuring access to adequate human settlement and quality basic services          |
| 2.Improving the quality health care and expanding access to education and training |
| 2.Ensuring quality health care and social security for all citizens                |
| 3.Fighting corruption and crime                                                    |
| Contributing to a better Africa and better world                                   |
| 3.Social cohesion and nation building                                              |

(Source: MTSF 2014-2019, 2013:5)

Table 3.6 and Table 3.7 indicates the DWA strategic objectives and the MTSF 2014-2019 objectives, the DWA's strategic objectives are aligned with the MTSF objectives. According to Medium Term Strategic Framework (MTSF) 2014-2019, 2013:5) following the adoption of the NDP, cabinet decided in 2013 that the 2014-2019 MTSF should form a 5 year implementation phase of the NDP and mandated work to begin on aligning the national and provincial, municipalities, public entities with the NDP vision and goals. Alignment of strategic objectives of different departments in Governments and the water utilities will enhances the process of services delivery which is water in this case.

### **3.6.2.9 Phase 3: Crafting a strategy to achieve objectives**

The water utility has a successful track record of generating sufficient funds through its operations to cover operational, major refurbishment and capital replacement costs. The MWC has also been successful in its mission to consistently deliver reliable services to its valued customers. The utility has an operating capacity to purify and distribute 250 mega litres of potable water per day, and an installed capacity of 320 mega litres of water per day. However, due to down scaling and rationalisation of mines in the KOSH region, the average daily supply of water is only 130 mega litres of water per day (MWC, 2013).

After some deliberation and benchmarking with other Water Boards, and water utilities the MWC has opted to pursue a “Low cost provider strategy”. According to Hough *et al.*, (2011:149) Low-cost provider strategy is striving to achieve lower overall costs than rivals and appealing to a broad spectrum of customers, usually by under-pricing rivals. The idea is to expand clients to include municipalities such as Mqohaka Local Municipality in the Free State province, the Tlokwe local Municipality in Potchefstroom, which are currently not allocated to any Water Board or water utilities, but operating their own water purification and distribution plant. Due to factors such as ageing infrastructure, restriction of their Water Use Licence (WUL), and the deteriorating raw water quality on the municipality’s side, the MWC is planning to capitalise on these opportunities by offering clean potable water at the low cost and thus increasing its economy of scale to offset its operational cost.

### **3.6.2.10 Implementation and executing the strategy at MWC**

A 5 year programme was developed to deliver the strategic objectives. The programme defines the strategic objectives, strategic goals, performance indicators, responsible persons, targets/outcome, baseline and timeframes for all objectives over the 5 year period. This strategic outline seeks to maintain and strengthen what the MWC already has, while at the same time, opening up new opportunities for its long-term sustainability. The strategy was adopted by the Board of Directors, and rolled out the water utility’s three directorates. Quarterly and annual reviews are conducted by the Board of Directors with feedback cascaded down to the three directorates.

### 3.6.2.11 Evaluating performance and initiating corrective adjustments.

There are different kinds of tools and models in the market that can help executives in measuring an organisation's current position and identifying a course of action going into the future. The analysis follows a more structured and meaningful conversation with employees, offering executives a deeper insight into their need, thus helping them to provide business and strategic solutions.

The MWC has adopted key performance indicators (KPIs) that are weighted and measured as part of their strategy plan, a regular review of the water utility performance is conducted, and measures taken against targets. It is easy to lose direction and focus only on the day to day development of a business, but longer term and more strategic planning is necessary to get the most out of a business. The plan is reviewed quarterly by the Board of Directors together with the Chief Executive officer (CEO) and the three directorates, the necessary adjustments are made to accommodate the forever changing business environment.

### 3.7 MWC's performance indicators

Key performance indicators as adopted by the MWC, and they form part of the 5 year strategic plan:

**Table 3.8: MWC's performance indicators**

| <b>Performance Indicators</b>                                                        |
|--------------------------------------------------------------------------------------|
| Serviceable infrastructure required versus available (index)                         |
| Minimum required reservoir levels vs. actual levels (% of minimum requirements)      |
| Non reservoir supplied water required versus availability (%)                        |
| Own price versus other utilities' price (%) drawing water from the Vaal River system |
| Utilization of plant capacity (mega litres per day)                                  |
| Manage supply of water (%)                                                           |
| Infrastructure availability to meet the demand                                       |
| % water loss                                                                         |
| Maintain Blue Drop certification requirements at plant level(% targets met)          |
| Compliance to SANS 241 (% targets met)                                               |
| Planned Water Output expansion (mega litres per annum)                               |
| Infrastructure expansion projects completed as a % of planned                        |
| Infrastructure maintenance projects completed as a % of planned                      |
| Business targets met (%)                                                             |
|                                                                                      |

|                                                                               |
|-------------------------------------------------------------------------------|
| <b>Performance Indicators continues...</b>                                    |
| Conducive culture /climate / employee satisfaction rating (%)                 |
| Audit Management report issues resolved as a % of reported                    |
| Compliance with legal requirements                                            |
| Decision made by board vs. successfully implemented                           |
| Compliance against risk management plan                                       |
| Adoption of a new compliant Memorandum of Incorporation by target date        |
| Submission to CIPRO of new Memorandum of Incorporation                        |
| Compliance with corporate governance policy including King II & III           |
| HR policies available vs. required                                            |
| All up to date policies available on server                                   |
| Labour cases favourable outcome as a % of Total labour cases                  |
| Compliance with skills development plan                                       |
| Compliance with equity plan                                                   |
| Employee enhancement targets achieved as a % of planned                       |
| Performance review frequency per annum                                        |
| Variance on budget spent (%)                                                  |
| Financial reports available timeously vs. required (%)                        |
| Unqualified audit report                                                      |
| Audit queries rectified versus received (%)                                   |
| Bad debts as a % of debtors book                                              |
| Days taken for debtors invoices to be paid                                    |
| Days taken for creditors invoices to be paid                                  |
| Server availability                                                           |
| Number of failures per annum                                                  |
| Compliance with SCM regulations and policy                                    |
| Compliance with BBBEE regulations and policy                                  |
| Compliance to terms and conditions of contracts, agreements, MOU's            |
| Development and compliance with Stakeholder Relationship Management protocols |

(Source: MWC strategic report, 2013)

Table 3.8 depict the key performance indicators (KPIs) utilised by MWC to measure performance. The KPI's are distributed evenly throughout the three directorate, with the CEO being the accounting officer of the water utility. The indicators are reviewed by the board of directors quarterly, necessary adjustment are conducted to ensure relevance. The KPIs covers the whole spectrum of the organisations business model operation which are: water abstraction, water treatment, water distribution, scientific services, engineering, health, safety, security and environment, financial management and supply chain management. Against all odds MWC has strived against challenges presented by the industry and excelled in some of the areas.

### 3.8 MWC's achievements

The achievements of MWC from 2011 to 2013 is summarised in table 3.9 below:

**Table 3.9: MWC's achievements**

| 2011                                                                                                                                            | 2012                                                                                                                               | 2013                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                 |                                                                                                                                    |                                                                                                                                   |
| The implementation of the Enterprise Assets Management System (Maximo), for asset maintenance and asset procurement.                            | Golden Arrow 2012 leaders and achievers award and was rated Excellent 1st overall in the water providing sector in the North west. | Silver Arrow 2013 leaders and achievers award and was rated Excellent 2nd overall in the water providing sector in the North west |
| Completion project for the power factor correction and the implementation of the MARS                                                           | The Blue drop certification of the CCMLM and MWC for 2012                                                                          | The Blue drop certification of the CCMLM and MWC for 2013                                                                         |
| The re-structuring of the Operations Department was completed with specific focus on the structure of the Company's Scientific Services section | Commissioning of the waste water recycling system to reduce water loss                                                             | The company started supplying water for Vierfontein in the Free State province                                                    |

|                                                                                                                                                                                                                                             |                                                                                                                                                   |                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The implementation of the VIP Payroll System and HR Information System was completed in the first quarter of 2011 as per target.                                                                                                            | Diversity intervention and cultural rejuvenation was introduced Siyakha Consulting were appointed as the service provider to lead the activities. | Diversity intervention and cultural rejuvenation by Siyakha Consulting complete the Project and cultural champion are appointed in the organisation to take the initiative forward |
| The Learnership in Water Treatment Process Operations at NQF level 2 was approved by EWSETA towards the end of 2011 after regular follow-ups and the agreements signed by the 27 learners were submitted. The program will commence in 2012 | Local Labour Forum (LLF) Was established at MWC where the two Unions and Management held regular meeting to discuss issues of mutual interest.    | The Workflow In Maximo arrangement to increase processing of transaction electronically without manual intervention where complete in 2013                                         |
| The extension of the Laboratory facilities was completed successfully during 2011.                                                                                                                                                          | Implementation of a VIP performance management system                                                                                             | A saving of R360 000 was achieved through Eskom`s DSM Incentive.                                                                                                                   |
| 5-Star grading for the health, safety and environmental practices was maintain                                                                                                                                                              | 23 learners completed NQF level 2 water treatment leanership                                                                                      | Pipe line maintenance team was established to improve pipeline maintenance through                                                                                                 |

|                                                                                                                                                                                                                                                   |                                                                                                                                 |                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| and 2,71 million accident free kilometres. It was, however, unfortunate that our record of two million accident free hours was disrupted as a Contractor on site had a reportable accident.                                                       |                                                                                                                                 | proactive intervention rather than reactive                                                              |
| Jointly with CCMLM achieved Blue Drop Status for 2010 for the first time since the implementation of this program in 2009.                                                                                                                        | Refurbishment of the North filters at a cost of R 47Million that will increase the water purification capacity by 90 ML/per     | 5 Star rating for HSSE for the 8th year in succession and 2,71million accident free kilometres travelled |
| Through voluntary testing and support of the Company's stakeholders, it became possible to have a HIV and AIDS profile for the Company, which showed around 6% level of infection that compared favourably with national and regional statistics. | Incorporation of Vierfontein Distribution system and the construction of a booster pump-station at a cost of R5,38Million       | Supply Chain management policy which aimed to support emerging entrepreneurs                             |
| Refurbishment of the North Filters at a cost of R 47 million and the upgrade of the North Pipeline at a cost of R 15,00 million and were                                                                                                          | Introduction of an employee wellness programme which provide a total life to employees an their immediate families through ICAS |                                                                                                          |

|                                               |                                                                                                              |  |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------|--|
| funded by the internally generated resources. |                                                                                                              |  |
|                                               | 5 Star rating for HSSE for the seventh year in succession and 2,71million accident free kilometres travelled |  |

(Source: The MWC Annual reports, 2011– 2013)

Table 3.9 depict the achievements of MWC from the year 2011 to 2013, from the asset point of view the utility has successfully completed multimillion rand project to increase plant capacity and refurbishment of the aging infrastructure. Some of the projects that were concluded by the utility includes: the refurbishment of the North filters to a tune of R47Million, the incorporation of Vierfontein community by building a booster pump-station to a tune of R5,38Million, the refurbishment of the North main pipeline to a tune of R 15,00 million and the extension of the laboratory. Maximo the enterprise asset management system was also implemented to plan, schedule maintenance of all assets.

For the HR function the utility has implementation of VIP payroll system and HR information system was completed in 2011. Siyakha Consulting were appointed to facilitate diversity intervention to rejuvenate cultural differences, learnership programmes in water purification were also undertaken to up-skill employees at NQF level 1 and level 2. The local labour forum was also introduced to create a platform whereby the 2 union UASA and SAMWU can discuss issues of mutual interest with the employer. Independent Counselling and Advisory Services (ICAS) was also appointing as part of employee wellness programme which provide a total life to employees and their immediate families. Through voluntary testing and support of the Company's stakeholders, it became possible to have a HIV and AIDS profile for the utility.

Other achievements include the joint Blue Drop certification of the CCMLM and MWC for 2011 and 2012. The PMR Golden Arrow 2012 leaders and achievers award, the PMR Silver Arrow leaders and achievers award for 2013 and the

achievement of 5-Star grading for the health, safety and environmental practices was maintain and 2,71 million accident free kilometres.

### **3.9 Chapter Summary**

In order for an organisation to be sustainable, there is a need to deploy strategy that will guide its activities to achieve its goals. In this chapter strategy and the strategic management process of an organisation was discussed in context. The latter was followed by the assessment of the SMP that water utilities follow when crafting, implementing and evaluating strategies.

The chapter highlights the important factors that affect the successful implementation of strategy therefore it is evident that, in order for a strategy to perform, there is a need to articulate a vision, mission, values and SMART objectives that will be cascaded from the CEO throughout the different layers of the organisation down to the floor level employees. In that way, synergy will be created, whereby all persons involved will do their parts in terms of contributing to the organisation's success. The chapter also looked into some of the strategic management tools that the water utility is utilises to scan the internal as well as the external environment and dash boards that are utilised to manage performance.

## **Chapter 4**

### **Empirical Research**

#### **4.1 Introduction**

The objective of the study was to assess the SMP at a water utility in the South African context. In the previous chapters (Chapter 2 and Chapter 3), literature study was conducted, relevant to the phenomenon water resource management and strategy as a business tool that water utilities utilise to ensure profitability and sustainability in South Africa.

From a theoretical point of view it was established that South Africa is classified as a water scarce country, that the water industry is a highly regulated environment, that there are many role players in the water value chain, and that the industry is characterised by challenges which hinder the delivery of water to industries and households. The market also reveals that water utilities, like any other business, should adopt strategies to deal with challenges. This chapter will also provide an overview through empirical study of the SMP of water utility from the respondents' point of view.

#### **4.2 Research methodology**

The study was based on a qualitative research approach. Qualitative researchers are interested in understanding the meaning people have constructed, that is, how people make sense of their world and the experiences they have in the world (Merriam, 2009:13). A questionnaire with 5-point Likert scale will be utilised to collect data. This will enable the findings to be categorized, compared and relationships identified instead of quantifying variation. However, a qualitative research approach was required by the researcher to create a thorough understanding of the research's objectives that adopted. To eliminate this short-sight, the data will be sent to NWU statistical consulting services where SAS version 9.3 will be utilised to conduct an analysis of the data.

The questionnaire that was utilised to gather data was divided into the following sections:

#### **4.2.1 Cover letter**

This section outlined the purpose of the research, what the research was meant for, and it secondly stated that results would be available to respondents upon request, and also guaranteed confidentiality for the respondents.

#### **4.2.2 Section A: Biographical information**

Section A dealt with personal information which covered age, group, ethnicity, organisation demographics, business units, managerial category, employment status, gender, educational level, and questionnaire coding. The aim for this section is to get an overall biographical information of the target population that will address secondary objective of the study which is to determine the water utility's demographics (age, gender, educational qualifications, and race).

#### **4.2.3 Section B: Strategy formulation**

In Section B a 5-point Likert scale was introduced to rate questions relating to vision, mission, values, strategic tools, SMART strategic objectives and review the alignment thereof. This section consisted of 18 questions (B1 to B18).

#### **4.2.4 Section C: Strategy implementation**

Section C continued with a 5-point Likert scale whereby questions relating to policies that support strategy were asked whether these were in place; whether the organisation provided resources like finance and human resources to implement strategy; probing management ownership when it came to strategy; organisational change readiness; the assignment of roles for strategic plans; and lastly rewards for successful implementation of the strategy. The section consisted of 17 questions (C1 to C17).

#### **4.2.5 Section D: Strategy evaluation**

Section D also utilises a 5-point Likert scale to capture answers relating to the setting of KPAs, KPIs and the measurement of actual implementation thereof utilising tools like the balanced scorecard vs. goals. The questions also probed the organisation's readiness to adapt a failing strategy; management's commitment to evaluating strategy, communication of the results to the employees; and the frequency of review of strategic initiatives. The section consisted of 11 questions (D1 to D11).

#### **4.2.6 Section E: present performance of the organisation**

Through the 5-point Likert Scale, the first four questions Section E (E1 to E4), looked into sales growth, successful innovation, customer satisfaction, and employee development. The second part of the questions (E5 to E8) took care of customer satisfaction and whether market orientation drove the strategy these were closed questions (yes/no). Question E9 and E10 request the respondents to evaluate whether the current strategy is performing well or not, and the opportunity to comment/suggest as to how the water utility could improve on its performance. A descriptive statistics method was utilised to arrange data for ease of analysis.

### **4.3 Research design**

Research design addresses a question that is considered key, what type of study could be undertaken to provide acceptable answers to the research questions or problem (Mouton, 2008:49). In this study a research questionnaire with five sections on a 5-point Likert scale will be formulated and distributed to the target population. Permission to perform such a research will be requested by means of a letter that will be addressed to the water utilities CEO. Once data is collected will be captured on SAS and be subjected to validity and reliability test like: Cronbach Alpha coefficient, and stated factor patterns. The results will be interpreted and conclusion will be drawn from the data.

#### **4.3.1 Research participants**

The target population consists of 133 employees, spread over 3 departments each headed by a director who reports to the Chief Executive Officer (CEO), namely finance and administration, and operations and engineering (MWC Annual report, 2012:21). The water utility operates a South Africa National Standards Accreditation System (SANAS) accredited and well-equipped laboratory which provides both analytical and consulting services concerning water purification, underground water and effluents. This includes analyzing and evaluating samples; recommending treatment processes, determining water suitability for different uses and training operators for water treatment plants and sewage purification works (MWC strategic planning report, 2013:6).

The study population was extended to include projects or contractors that are offered on short to medium-term contract from 6 months to 18 months in major refurbishment and capital projects. These contracts can accommodate up to 50 employees depending on the nature of the projects, for the purpose of the study Cycads pipelines who were replacing a section of a pipeline for MWC were included in the research. The research was extended to CCMLM water section, unfortunately only 6 questionnaires were received back. These might be attributed to the fact that the director of engineering was serving a resignation notice therefore he was not engaged in the job.

Permission was also requested from Sedibeng Water Board in Bothaville Free State province to partake in the study unfortunately they didn't respond to the invitation, follow up was done through e-mail and phone calls but still permission was not granted. This might be attributed to the DWA's institutional arrangement whereby Sedibeng Water Board is rumored to be the institution of choice to be the regional water utility for North West Province, Free State Province and parts of the Northern Cape Province. In total the available population for the purpose of the study equated to 200 employees. A pilot study was conducted at the Laboratory section, whereby 15 questions were distributed to the respondents. Ultimately the response rate of the targeted population tallied to 174 received questionnaires.

#### 4.3.2 Questionnaire

A questionnaire with five sections Section A: Bibliographical information; Section B: Strategy formulation; Section C: Strategy implementation; Section D: Strategy evaluation; and Section E: Present performance of the organisation was drafted and distributed to the target population of the MWC, contractors working on the MWC projects and the CCMLM water section for them to complete. The questionnaires were sent to Wilma Breytenbach of the North West University Potchefstroom Campus Statistic Consulting Services for analysis utilizing Statistical Analysis System (SAS) version 9.3 Software. A 5-point Likert scale was used to measure Section B to Section D while Section E of the questionnaire included some close-ended questions (yes) or (no) as well as open-ended questions. The aim was to afford respondents an opportunity to make their inputs into how they can improve the SMP.

#### 4.3.3 Measuring instruments

A five-point Likert scale was utilised to rate the questions asked to the respondents.

|                                               |                                      |                                     |                                   |                                            |
|-----------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------|
| <b>1 =</b><br><b><i>Strongly disagree</i></b> | <b>2 =</b><br><b><i>Disagree</i></b> | <b>3 =</b><br><b><i>Neutral</i></b> | <b>4 =</b><br><b><i>Agree</i></b> | <b>5 =</b><br><b><i>Strongly agree</i></b> |
|-----------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------|

#### 4.3.4 Ethical considerations

The following key ethical considerations were identified and used during this study:

- Respect for those who developed the literature research that was studied and reviewed. Self-interpretation was limited and kept to a minimum where it could be supported by other research;
- Informed consent, whereby people were informed about what it meant to participate in the research so that they could decide in a conscious and deliberate way whether they wanted to participate or not;
- Respondents were not allowed to complete the questionnaires during office hours, except during their tea or lunch breaks, so as to not sacrifice the employer's time; and
- Protection of the respondent's confidentiality.

#### **4.3.5 Data collection**

A questionnaire was developed and distributed through the three departments of the MWC (See figure 3.2 for MWC organogram), the Board of Directors were also included in the research. The questionnaire was extended to the water section of the CCMLM and contractors working on MWC capital and major maintenance projects with an objective of analyzing the SMP.

#### **4.3.6 Data analysis**

The data was analyzed by means of the SAS Version 9.3 Software and the expertise from the Statistical Consultation Services of the North-West University, Potchefstroom campus.

#### **4.3.7 Limitations**

The researcher would have been extended to other private water utilities and Water Boards in the country but, elements such time, cost and distances to travel to these water utilities and Water Boards and the willingness for these institutions to grant permissions to conduct the research are some of the limitations to the study. Although the recommendations of the study cannot be exactly rolled-out as it is to other water utilities and Water Boards due to the nature of *modus operandi* of MWC, benchmarks and best practices can be derived, customized to suits these institutions SMP.

#### **4.3.8 Research procedure**

On the 26 May 2014, a letter (see annexure B) of request for permission to conduct the study was sent to the Engineering Director of the MWC (Mr FE Ellis) who gave the approval. Another was letter sent to the Engineering Director of CCMLM on the 29 August 2014 (see annexure C) followed by a visit on the 1<sup>st</sup> September 2014. A third letter was sent to the office of the CEO of the Sedibeng Water Board on the 1<sup>st</sup> September 2014 (see annexure D) who did not respond to the request. Questionnaires (244 copies) were distributed by means of e-mail and hard copies to the target population of MWC employees including contractors working on projects, the CCMLM and 174 questionnaires where received by the researcher.

#### **4.3.9 Pilot testing of the questionnaire**

After conducting a literature review for the study, a SMP survey questionnaire was drafted specifically for the research purpose. The questionnaire was also discussed with Ms Wilma Breytenbach, senior Subject Specialist at North-West University's Statistical Consultation Services, to get her perceptive as to whether the questions asked would meet the objectives of the study. The questionnaires (15) were distributed to the MWC laboratory employees for testing; the researcher received all 15 filled questionnaires from the respondents. Minor alteration was done on the questionnaire like the removal of marital status that the researcher felt that it was irrelevant for the research purpose.

#### **4.4 Research findings**

After gathering the questionnaires from the respondents, these questionnaires were sent to the North-West University's Potchefstroom Campus whereby a Statistical Consultant from the Statistical Consultation Services carried out statistical analyses on the questionnaires. The statistical analyses of results were further discussed with the researcher and the study leader. The software that was utilised to carry out the statistical analyses was SAS Version 9.3.

##### **4.4.1 Descriptive statistics**

Descriptive statistics are concerned with the description and or summary of the data obtained from a group of individual units for analysis (Welman *et al.*, 2005:231). Descriptive statistics was the first step of data analysis that was conducted; the goal was to create a qualitative dataset. Data was visually presented as box plots, bar graphs, pie charts, histograms, scatter plots. As part of the descriptive statistics, frequencies, and factor analysis were conducted on the gathered dataset. The data was also subjected to reliability and validity tests.

#### **4.4.2 Reliability and validity**

The reliability of a scale indicates how free it is from a random error. In most cases reliability is tested together with validity (Pallant 2007:6). Pallant (2007:7) also advocates that validity refers to the degree to which it measures what it is supposed to be measured. Cronbach Alpha coefficient, and stated factor patterns was utilised to probe the data. In order to get correlations between the data set, data reduction was performed utilising exploratory factor analysis statistical method.

#### **4.4.3 Factor analysis**

Factor analysis is statistical method used to find a small set of unobserved variables (also called latent variables, or factors) which can account for the covariance among larger set of observed variables (also called manifest variable) (Park & Albright, 2009:2). Factor analysis is used widely for data reduction purposes to get a small set of variables from large set of variables and to create indexes with variables that measure similar things conceptually. For the research purpose factor analysis will be tested for appropriateness using Kaiser's Measure of Sample Adequacy (MSA).

#### **4.4.4 Kaiser's measure of sample adequacy (MSA)**

In order to determine whether a factor analysis may be appropriate, Kaiser's Measure of Sample Adequacy (MSA), which gives an indication of the inter-correlations among variables, should be determined MSA values indicate how strongly a single variable is correlated with all the other variables combined. Values above 0.5 are generally considered acceptable (Tabachnick & Fidell, 2007). This index ranges from 0 to 1, reaching 1 when each variable is perfectly predicted by the other variables. According to Hair *et al.*, (1998); the measure can be interpreted with the following guidelines:

**Table 4.1: Kaiser's measure of sample adequacy**

| Limits      | Description  |
|-------------|--------------|
| $\geq 0.80$ | Meritorious  |
| 0.70        | Middling     |
| 0.60:       | Mediocre     |
| 0.50:       | Miserable    |
| $< 0.50$ :  | Unacceptable |

For the purpose of the research MSA value below 0.50 will not be considered hence it is regarded as unacceptable.

#### **4.4.5 Communalities**

Once the extraction of factors is complete, 'Communalities' is examined. Communalities indicate how much of the variance in each of the original variables is explained by the extracted factors (Field, 2009:637). Higher communalities are desirable. If the communality for a variable is less than 50%, it can therefore be excluded from the analysis, because the factor solution contains less than half of the variance in the original variable, and the explanatory power of that variable might be better represented by the individual variable.

#### **4.4.6 Percentage of explained variance**

A popular and insightful index of goodness of fit in multivariate data analysis is the percentage of explained variance: the higher the percentage of variance a proposed model manages to explain, the more valid the model seems to be (Lorenzo-Seva 2013:2). The data will also be subjected to Cronbach Alpha coefficient to determine internal consistence of the survey.

#### 4.4.7 Cronbach Alpha coefficient

Cronbach Alpha coefficient is a widely used tool in the statistics and research communities to determine the internal consistency or average correlation of items in a survey. To gauge its reliability, Cronbach Alpha coefficient utilises a scale from 0 to 1. Cronbach Alpha coefficient was used to assess the reliability of the constructs that are measured in this study. Obtaining a Cronbach Alpha coefficient equal to or greater than 0.6, is an acceptable indicator of a reliable scale or reliability in the study undertaken (Mohsen & Dennick, 2011:53).

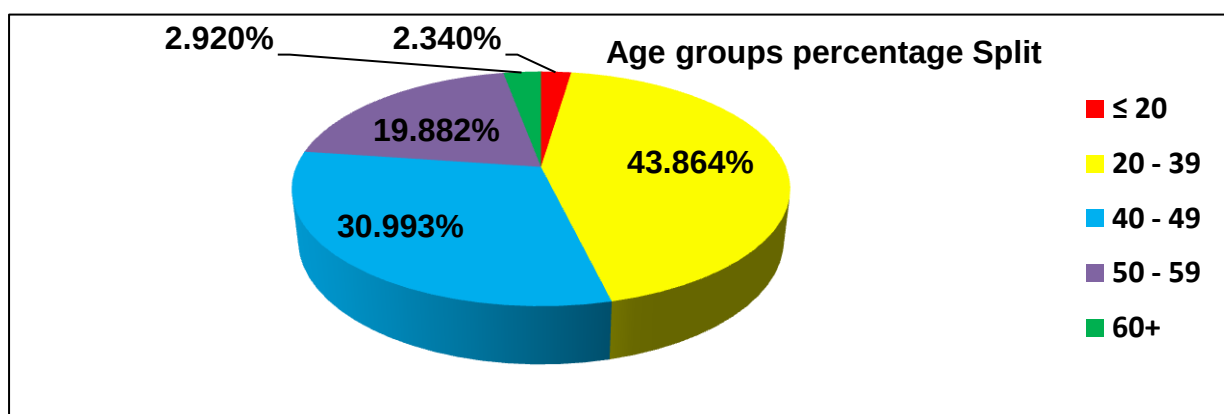
#### 4.5 Results and findings from the empirical investigation

In this section the results from the empirical investigation will be discussed in detail.

##### 4.5.1 Section A: Biographic information

The response per the biographic information category can be summarised as follows:

**Figure 4.1: Biographic information**



(Source: own compilation)

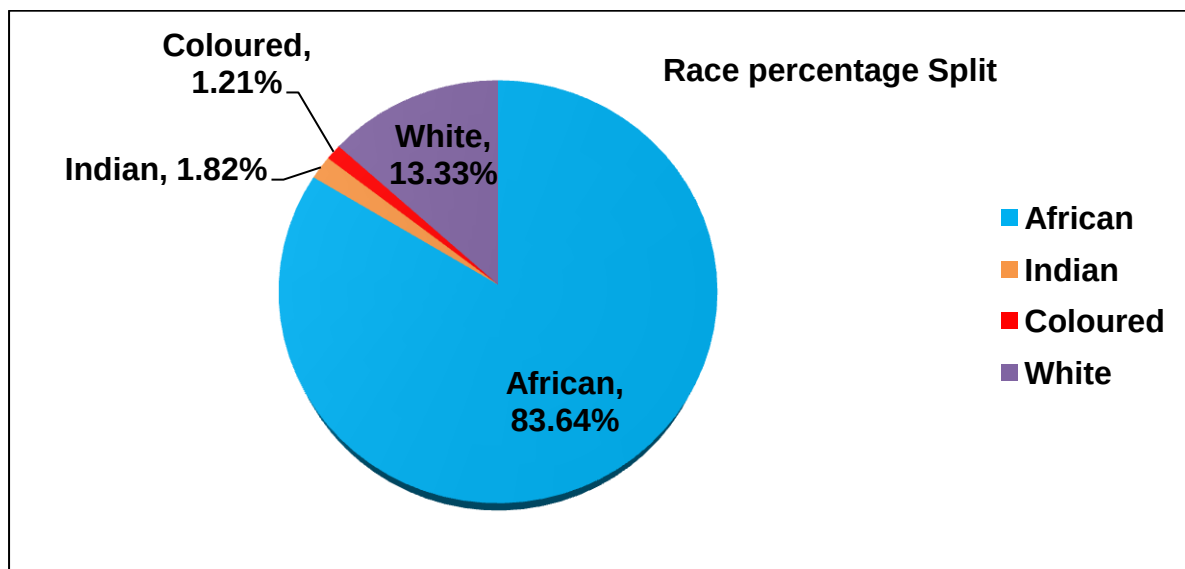
In terms of the target population the highest age group was the 20 to 39 years at 43.86 percent. The 40 to 49 years age group came second with 30.99 percent. The 50 to 59 years age group comes third with 19.88 percent. The 60+ year age group

follows with 2.92 percent and finally the  $\leq 20$  years age group is the lowest at 2.34 percent. The target population indicate a mix of fairly young workforce which gradually increase to the next age group, these might attributed to low staff turn over, employee fringe benefits. The water utility has a responsibility to adopt career progression and mentorship plans to impart tacit knowledge from the aging workforce so that the younger workforce can take the utility into the future.

#### 4.5.2 Ethnicity

The response per the Ethnicity category represents the multicultural demographics of the country and they are as follows:

**Figure 4.2: The Ethnicity of the respondents**



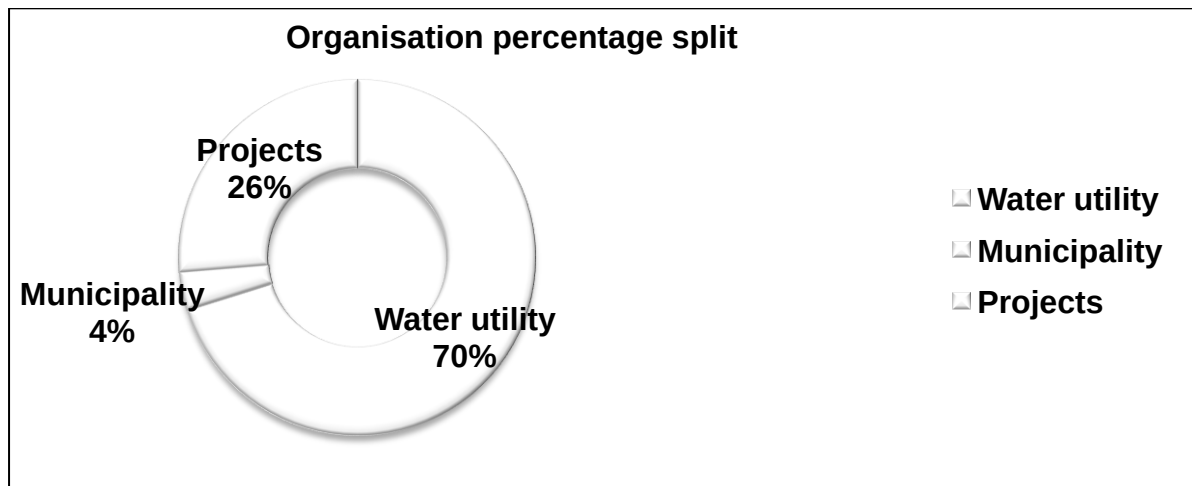
(Source: Own compilation)

The majority of the respondents were Africans accounting 83.64 percent of the targeted population. The groups that followed was the Whites at 13.33 percent, Indians at 1.82 percent. Lastly the remaining balance of the ethnic groups are Coloureds, who accounted for 1.21 percent.

### 4.5.3 Organisation

The respondents come from different stakeholders and are represented as follows:

**Figure 4.3: Organisation**



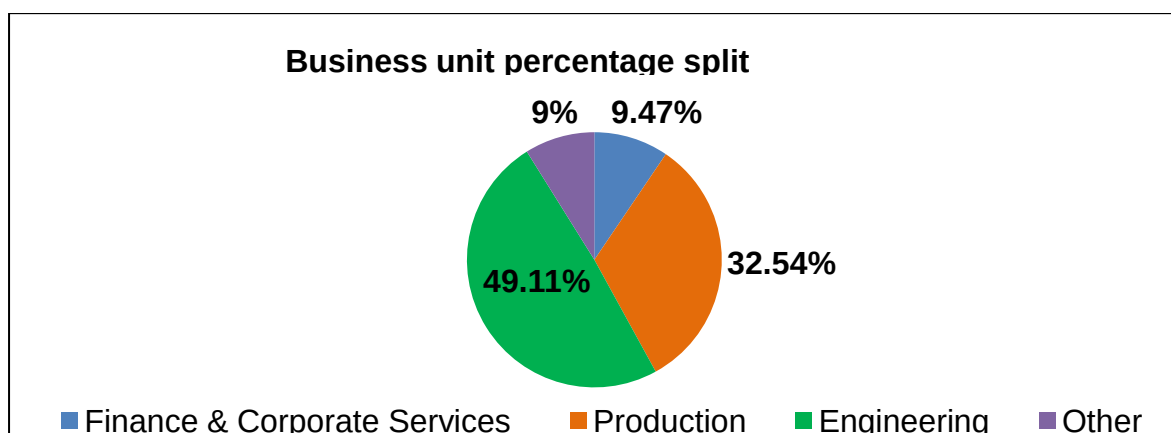
(Source: own compilation)

The target population is dominated by the water utility employees that accounts for 70 percent of the target population, followed by 26 percent from projects and the remaining dismal balance of 4 percent coming from the municipality.

### 4.5.4 Business units

Respondents are from different business units and they are distributed as follows:

**Figure 4.4: Business units**



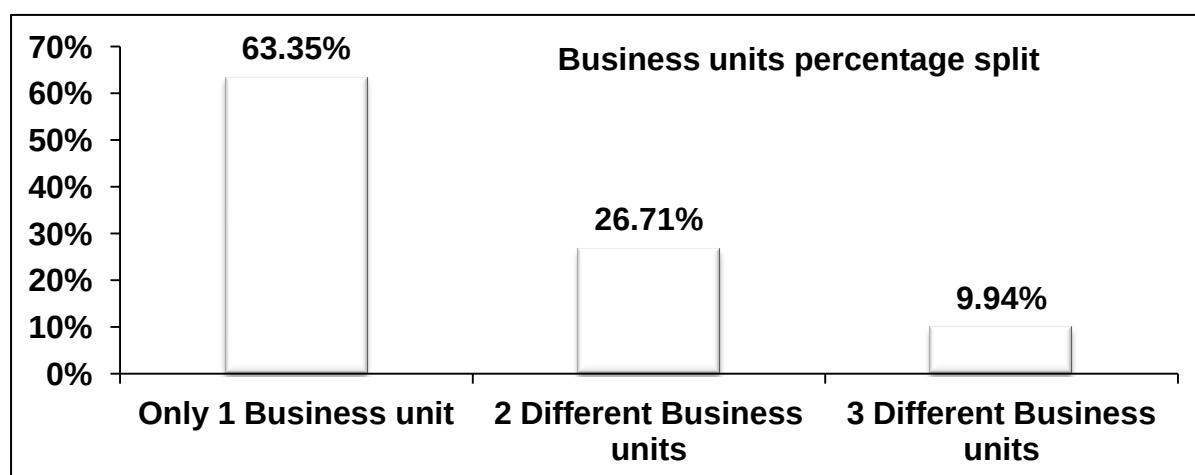
(Source: own compilation)

The highest percentage of respondents are from the engineering department at 49.11 percent. The engineering department is followed by the production department at 32.54 percent. Finance and corporate services is in third position at 9.47 percent. Lastly in the other department the 9 percent is attributed to the Board of Directors and respondents who do not fall in any of the listed. The “Other” department section there is incompatibility in organisational structure with the questionnaire hence it was developed with the MWC in mind, contractors working on capital projects and the municipality might be having a different structure to that of the water utility.

#### 4.5.5 Number of years of experience in different business unit

Regarding the number of years of working experience the respondents are summarised as follows:

**Figure 4.5: No of years of experience in different business unit**



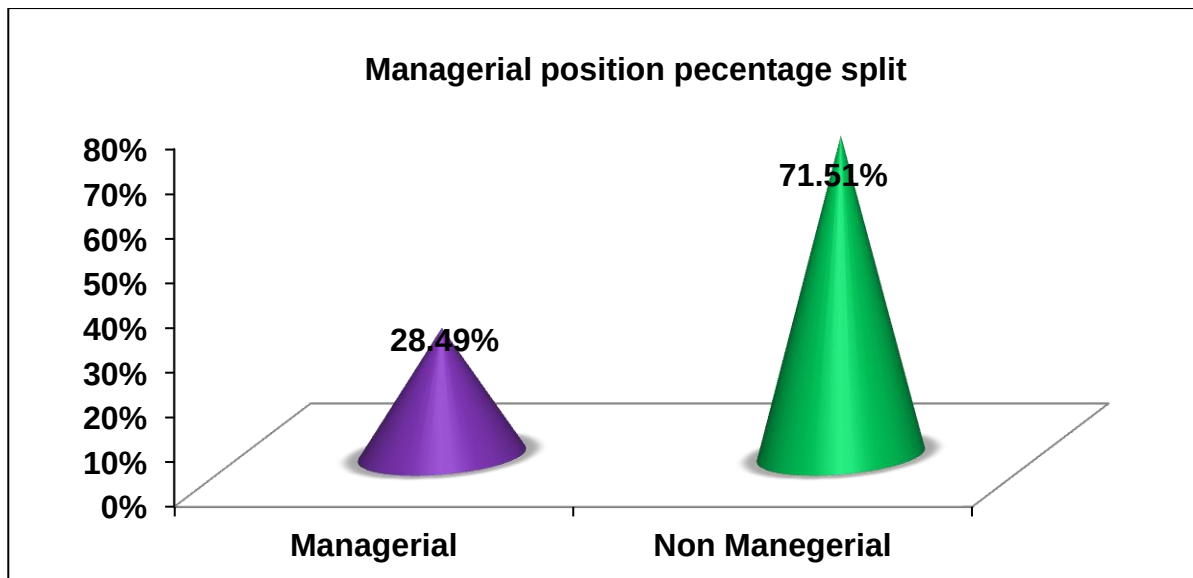
(Source: own compilation)

The highest percentage of respondents have only worked in one business unit and the category accounts for 63.35 percent of the target population, followed by 26.71 percent of the respondents having worked for two different business units. The third place 9.94 percent of the respondent have only worked in 3 different business units which can be attributed to the small size of the organisation whereby the prospects of inter-departmental transfer is limited and the specialised nature of the business.

#### 4.5.6 Managerial position

Respondents representing managerial and non-managerial positions are presented as follows:

**Figure 4.6: Managerial position**



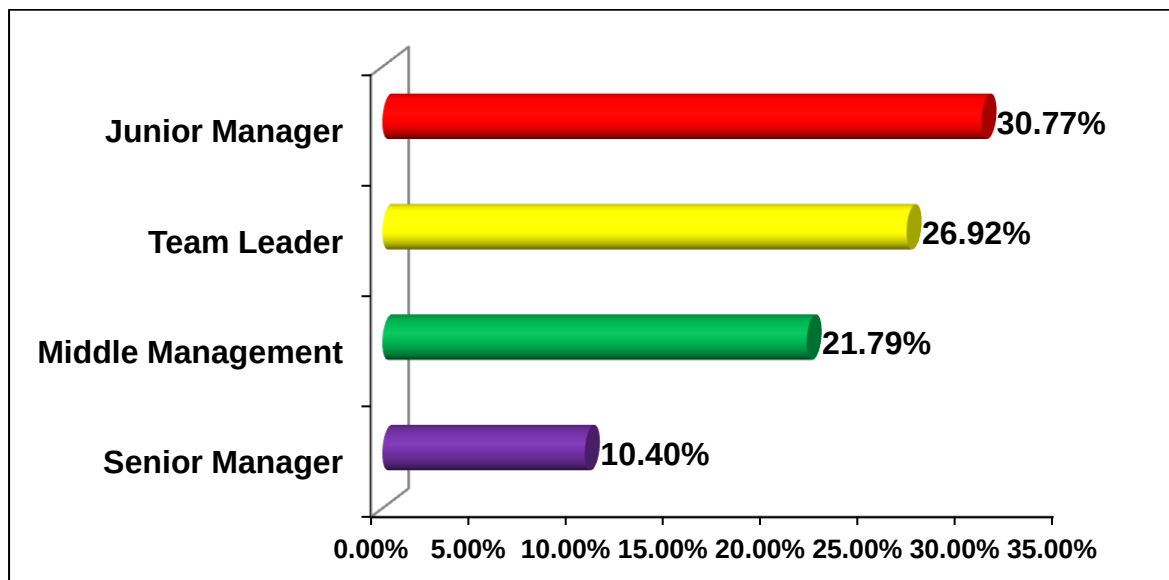
(Source: own compilation)

The managerial position in the organisation is the lowest at 28.49 percent of the respondents as compared to 71.51 percent of respondents that are in non-managerial positions. The managerial position refers to Frontline/Junior manager, Supervisor/Team Leader, Middle Management and Senior Management/Director. However there seems to be a contradiction with the section that follows (Question A7) whereby there are a total of 88 respondents that falls within the managerial category. This confusion might be attributed to respondents not understanding the managerial layers of the organisation or understanding of the questionnaire might be a problem.

#### 4.5.7 Managerial category

In terms of respondents from the different managerial categories, the categories are distributed as follows:

**Figure 4.7: Managerial categories**



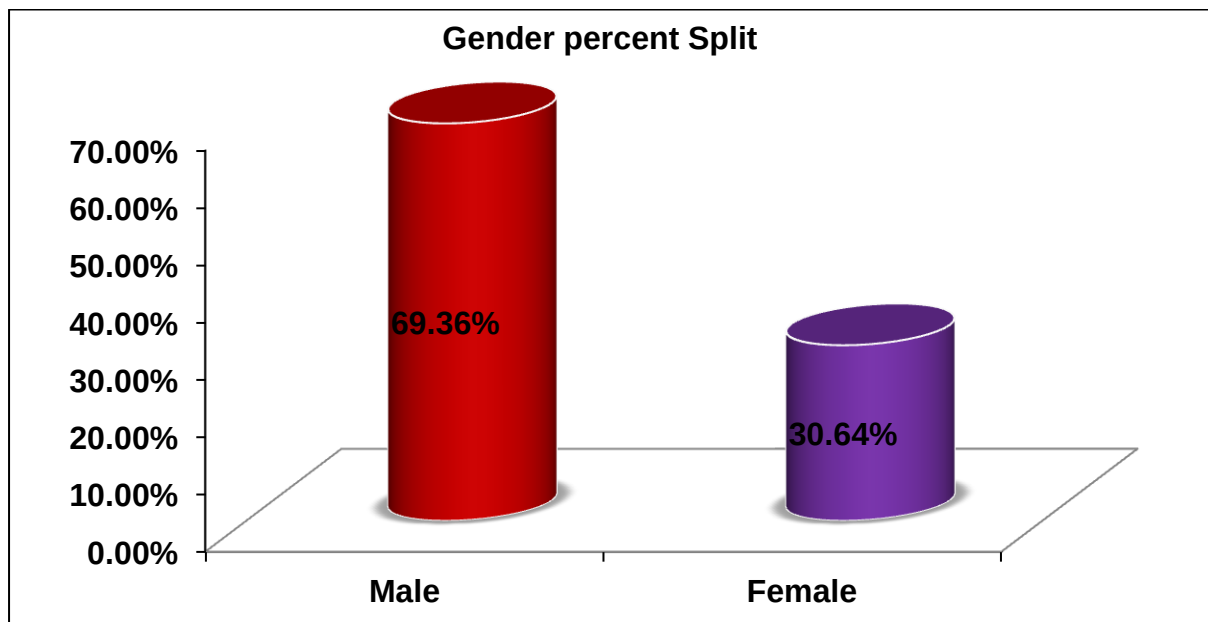
Source: own compilation

Managerial categories for respondents were divided into 4 categories that ranges from Junior managers, Team leaders, Middle management and Senior management. The highest percentage of the managerial category was recorded at Junior manager category at 30.77 percent, followed by the Team leader category at 26.92 percent. Middle management category follows Team leader category at 21.79 percent and lastly Senior Management is at 20.51 percent. These section contradict with Question A7 whereby only 49 of the respondents were recorded as managers. This section reveals that there are 78 managerial positions recorded resulting in an increase of 29 managers from question A7 these might be attributed to the fact that respondents view management as someone who hold or categorised as Senior management/Director position in these research.

#### 4.5.8 Gender

The respondents gender can be summarised as follows:

**Figure 4.8: Gender**



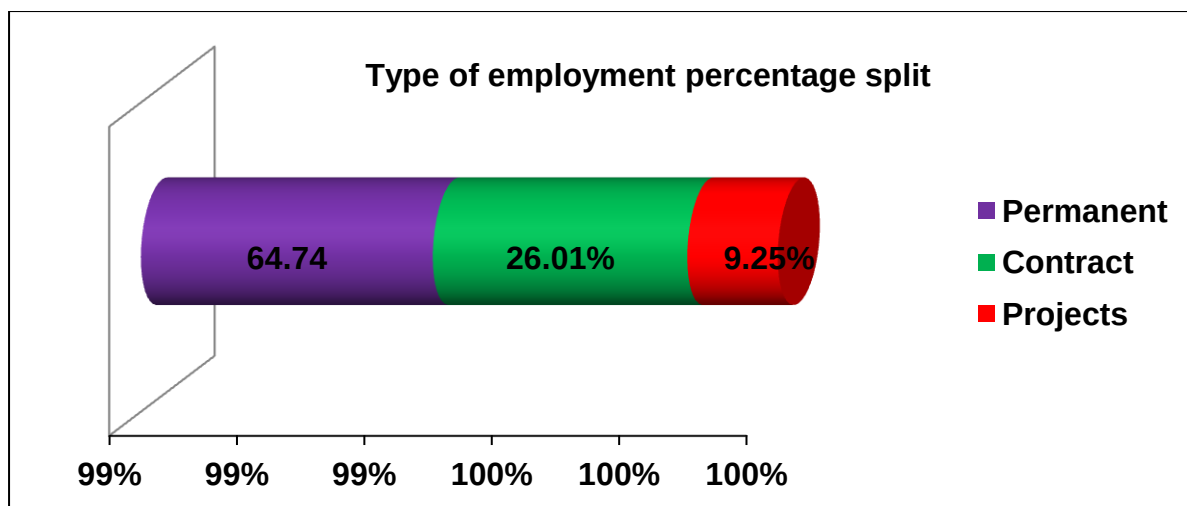
(Source: own compilation)

In terms of the gender of the respondents males are the highest at 69.36 percent of and 30.64 percent being females. This indicates that there is still an imbalance of gender demographics in the utility whereby women are not empowered or given equal opportunities with their male counterparts. The entry level jobs at the water utility are labour intensive thus creating room to employ more men than women. There is still a perception that men are more productive than women when it comes to manual labour thus creating more employment opportunities for men than women.

#### 4.5.9 Employment Type

The respondents are employed in different stakeholders and are represented as follows:

**Figure 4.9: Type of employment**



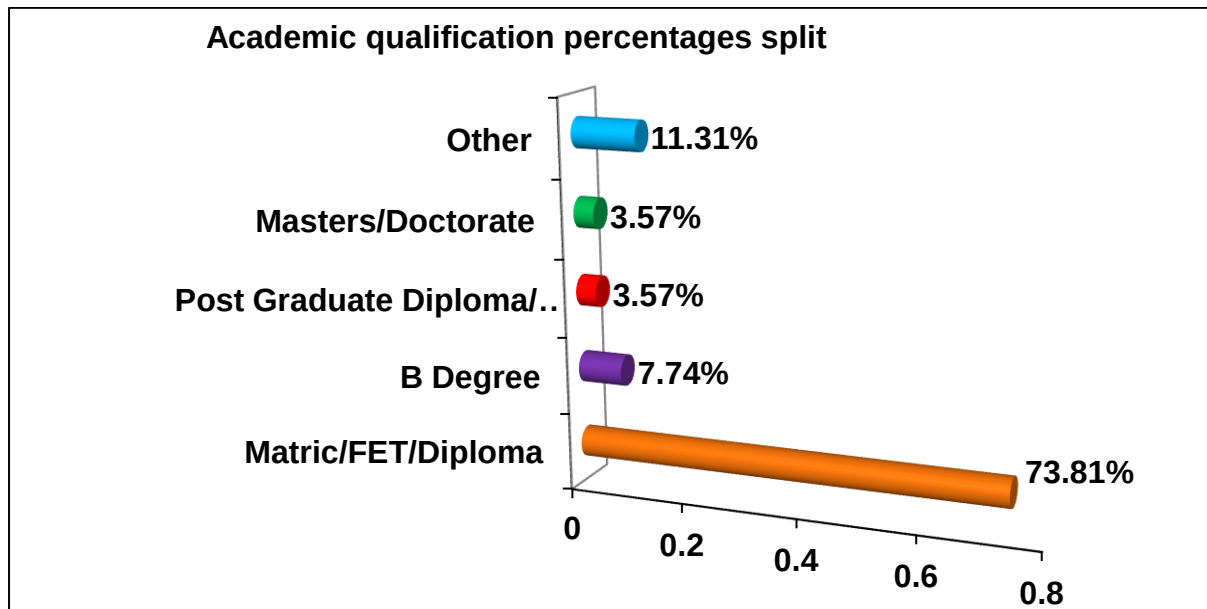
(Source: own compilation)

In terms of the type of employment the highest respondents were recorded permanent at 64.74 percent of the target population. Contract employees account for 26.01 percent of the targeted population, these numbers include contractors working on short to long term project 6 to 18 months and also Board of Directors that are contracted for a period of 5 years. MWC hires temporary employees on limited duration contract, in-service training and external learner-ship students are also included in these categories. The remaining 9.25 percentage of the respondents are employed permanently by contractors that are working on projects.

#### 4.5.10 Highest academic qualification

The respondents are employed in different stakeholders their qualifications are presented as follows:

**Figure 4.10: Highest academic qualification**



(Source: own compilation)

The highest number of qualifications was recorded at Matric/FET/Diploma category that accounts for 73.81 percent of the target population with other qualification coming second at 11.31 percent of the target population. B degree follows with 7.74 percent of the target population while Masters/Doctorate degree and Post graduate diploma/Honours degrees finally comes last equally with 3.57 percent. The results indicates that the work place is dominated by employees with lower qualifications Matric/FET/Diploma, which leaves a room for employee development for future career aspirations. The water utility has a pool of trainable employees that can be developed further to close the skills gaps that the water sector is experiencing at the moment.

#### 4.6 Section B: Strategy formulation

Data reduction method was applied in this section, whereby the goal was to aggregate the information from the dataset. Exploratory factor analysis as a data

reduction techniques was conducted, its validity was tested utilising Kaiser's Measure of Sample Adequacy (MSA) with the result at 96%, that gave an indication of inter correlations among variables (refer to table 4.1 for MSA under *Meritorious* category).

#### 4.6.1 Section B Factor analysis

This section revealed that 2 factors or constructs were retained, 18 questions were asked in this section B8,B9,B10,B11,B12,B13,B14,B15,B16,B17 and B18 classified as "strategic objectives and tools" were clustered under a Factor 1 while questions B1,B2,B3,B4,B5,B6 and B7 grouped as "Vision and mission" were clustered under a Factor 2.

**Table 4.2: Section B Factor analysis**

| Number of factors | Percentage variance explained | Communalities | MSA  |
|-------------------|-------------------------------|---------------|------|
| 2                 | 66.35                         | [0.48;0.79]   | 0.96 |

Section B Factor analysis indicates that two factors are retained ("strategic objectives and tools" and, "Vision and mission"). The Percentage variance explained for the section is 66.35% which indicates validity of the model as described in paragraph 4.4.6 above. The communalities range for the retained factors ranges from (0.48 to 0.79), although communalities of above 50% are desirable (See paragraph 4.4.5) the section results are within acceptable range. The Kaiser's measure of sample adequacy (MSA) for section B indicates a *meritorious* range of 0.96 which proved a valid sample.

#### 4.6.2 Section B Cronbach Alpha coefficient test

The two factors in Section B (Mission and vision, Strategic objectives and tools) were subjected to Cronbach Alpha coefficient test and the results were as follows:

**Table 4.3: Section B Cronbach Alpha coefficient test**

| <b>Construct</b>                                                                | <b>N</b> | <b>Cronbach Alpha coefficient</b> |
|---------------------------------------------------------------------------------|----------|-----------------------------------|
| Mission and vision (B1,B2,B3,B4,B5,B6 and B7)                                   | 166      | 0.93                              |
| Strategic objectives and tools (B8, B9,B10,B11,B12,B13,B14,B15,B16,B17 and B18) | 156      | 0.94                              |

The Cronbach`s Alpha coefficient for the constructs: vision mission and (B1,B2,B3,B4,B5,B6 and B7) and Strategic objectives and Strategic tools (B8, B9,B10,B11,B12,B13,B14,B15,B16,B17 and B18) were found to be reliable at 0.93 and 0.94 respectively. It could be concluded that the questionnaire scale utilised was found to be reliable.

#### **4.7 Section C: Strategy Implementation**

A data reduction technique was applied in this section, whereby the goal was to aggregate the information from the dataset. Exploratory Factor analysis was conducted as a data reduction method, while its validity was tested utilising MSA a result of 96% was obtained, which proved a valid sample (refer to table 4.1 for MSA under *Meritorious* category).

##### **4.7.1 Section C Factor analysis**

The analysis of this section revealed that there was only one factor for questions: C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16 and C17 under the category Strategy implementation.

**Table 4.4: Section C Factor analysis**

| Number of factors | Percentage variance explained | Communalities | MSA  |
|-------------------|-------------------------------|---------------|------|
| 1                 | 65.4                          | [0.46;0.75]   | 0.96 |

The Factor analysis for Section C indicates that only one factor was retained (“Strategy implementation”). Percentage variance explained for Section C yielded 65.4% which also indicates validity of the model as described in paragraph 4.4.6 above. The communalities range for the factors ranges from (0.46 to 0.75) which are acceptable (See paragraph 4.4.5 for communalities). Section C was also subjected to Kaiser`s measure of sample adequacy (MSA) which indicates a *meritorious* range of 0.96 which is considered acceptable statistically.

#### **4.7.2 Section C Cronbach Alpha coefficient test**

Section C contains only one factors (Strategy implementation). Cronbach Alpha coefficient test was conducted on these construct and the results were as follows:

**Table 4.5: Section C Cronbach Alpha Coefficient test**

| Construct                                                                                               | N   | Cronbach Alpha coefficient |
|---------------------------------------------------------------------------------------------------------|-----|----------------------------|
| Strategy implementation (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16 and C17) | 157 | 0.97                       |

The Cranach Alpha coefficient for the construct: Strategy implementation (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16 and C17), proved to be acceptable at 0.97. It could be concluded that the questionnaire scale utilised was found to be of a reliable magnitude.

## 4.8 Section D: Strategy Evaluation

The data reduction technique was applied in this section whereby the goal was to aggregate the information from the dataset. Exploratory factor analysis was conducted as a data reduction method, while its validity was tested utilising MSA a result of 94% (refer to table 4.1 for MSA under *Meritorious* category) which proved a valid sample.

### 4.8.1 Section D Factor analysis

This section also revealed that questions D5, D6, D7, D8, D9, D10 and D11 fell under the construct: Strategy review, while questions D1, D2, D3 and D4 are grouped together under the same group: Performance management.

**Table 4.6: Section D Factor analysis**

| Number of factors | Percentage variance explained | Communalities | MSA  |
|-------------------|-------------------------------|---------------|------|
| 2                 | 72.7                          | [0.60;0.83]   | 0.94 |

Section D Factor analysis has only one factor that was retained titled ("Performance management"). Percentage variance explained for the section yielded 72.7% which also indicates validity of the model as described in paragraph 4.4.6 above. The communalities range for the factor ranges from (0.60 to 0.83), which is way above desired or acceptable communalities of above 50% as described in paragraph 4.4.5). The Kaiser's measure of sample adequacy (MSA) for Section D indicates a *meritorious* range of 0.94 which proved a valid sample.

#### 4.8.2 Section D Cronbach Alpha coefficient test

Section D has 2 Factors Strategy review and Performance management the constructs were subjected to Cronbach Alpha coefficient test the results were recorded as follows:

**Table 4.7: Section D Cronbach Alpha coefficient test**

| Construct                                          | N   | Cronbach Alpha coefficient |
|----------------------------------------------------|-----|----------------------------|
| Strategy review: (D5, D6, D7, D8, D9, D10 and D11) | 170 | 0.92                       |
| Performance management: (D1, D2, D3 and D4)        | 169 | 0.89                       |

The Cronbachs Alphas coefficient for the constructs: Strategy review (D5, D6, D7, D8, D9, D10 and D11), and Performance management (D1, D2, D3 and D4) confirm to be acceptable at 0.92 and 0.89 respectively. It could be concluded that the questionnaire scale utilised was found to be of a reliable calibre.

#### 4.9 Section E: Present Performance of the organisation

The data reduction technique was applied in this section whereby the goal was to aggregate the information from the dataset. Exploratory factor analysis was conducted as a data reduction method, its validity was tested utilising Kaiser's measure of sample adequacy (MSA) at 78% (refer to table 4.1 for MSA *Middling* category) which proved a valid sample.

##### 4.9.1 Section E Factor analysis

This section also reveal that questions E2, E3, E1 and E4 falls under the group: Present organisational performance.

**Table 4.8: Section E Factor analysis**

| Number of factors | Percentage variance explained | Communalities | MSA  |
|-------------------|-------------------------------|---------------|------|
| 1                 | 0.74                          | [0.51;0.87]   | 0.78 |

Factor analysis for Section E has only one factor retained (“Present organisational performance”). Percentage variance explained for the section yielded 74% which also indicates validity of the model as described in paragraph 4.4.6 above. The communalities range for the factor ranges from (0.51 to 0.87), which is within acceptable communalities of above 50% as described in paragraph 4.4.5). The Kaiser’s measure of sample adequacy (MSA) for Section D indicates a *middling* range of 0.78 which proved a valid sample.

#### **4.9.2 Section E Cronbach Alpha coefficient test**

Section E has got only 1 factor: Present organisational performance the constructs was also subjected to Cronbach Alpha coefficient test the results were recorded as follows:

**Table 4.9: Section E Cronbach Alpha coefficient test**

| Construct                                             | N   | Cronbach Alpha coefficient |
|-------------------------------------------------------|-----|----------------------------|
| Present organisational performance: E2, E3, E1 and E4 | 170 | 0.87                       |

The Cronbach’s Alpha coefficient for the constructs: Present organisational performance: E2, E3, E1 and E4 confirm to be acceptable at 0.87. It can be concluded that the questionnaire scale utilized was found to be reliable.

#### 4.26 Means of Constructs

The mean and the standard deviation of the construct are reported as follows:

**Table 4.10: Means of Constructs for the sample**

| Constructs                    | N   | Mean      | Std Dev   | Minimum  | Maximum   |
|-------------------------------|-----|-----------|-----------|----------|-----------|
|                               |     |           |           |          |           |
| Vision and mission            | 174 | 3.5012999 | 0.9224369 | 1.00000  | 5.0000000 |
| Strategy objectives and tools | 174 | 3.4178509 | 0.8521715 | 1.00000  | 4.9090909 |
| Strategy implementation       | 174 | 3.1950375 | 0.8922780 | 1.00000  | 4.9411765 |
| Strategy review               | 174 | 3.1508210 | 0.8677007 | 1.00000  | 4.7142857 |
| Performance management        | 174 | 3.1115900 | 0.9156150 | 1.000000 | 5.0000000 |
| Present performance           | 171 | 3.4926901 | 0.9680282 | 1.000000 | 5.0000000 |

The respondents are of an opinion that the water utility is doing well in three areas as per the constructs: vision and mission, strategic objectives and tools, and the organisation's present performance. When placed on a 5-point Likert scale the three constructs indicated that the organisation is doing well (Constructs are above the mean (3)).

The respondents are of an opinion that the remaining three constructs need an urgent attention. In terms of Strategy implementation, strategy review and, performance management the water utility just made it above the mean. In order to improve the SMP at the MWC, the water utility need to put more effort to improve in these areas.

#### **4.11 Chapter Summary**

In this chapter, results from the empirical study are presented using statistical tools. After collecting the questionnaires from the respondents, questionnaires were sent to North West University Statistical Consulting Services whereby an analysis was conducted using SAS version 9.3 Software. Section A results were presented graphically by means of pie-charts, histograms and tables.

Data reduction technique was conducted for Section B, Section C, Section D and Section E of the questionnaire. Factor analysis as a data reduction method was conducted, its validity was tested utilising Kaiser's measure of sample adequacy (MSA). The section where also subjected to Factor analysis; Cronbach Alpha coefficient test and mean of Constructs, which proved the reliability and validity of the sample.

The results indicate that the organisation is doing well in some arrears of the SMP. The respondents are of an opinion that the water utility is doing well in three areas as per the constructs: vision and mission, strategic objectives and tools, and the organisation's present performance. The water utility is not doing well in the following SMP areas that need attention going into the future: Strategy implementation; Strategy review; and, Performance management.

## **Chapter 5**

### **Conclusions and recommendations**

#### **5.1 Introduction**

In this chapter, the researcher finally makes conclusions based on the empirical study undertaken and supported by the literature review conducted in chapter 2 and chapter 3. Recommendations to support the successful implementation of the strategic management process as given by respondents and interpreted by the researcher are outlined. The achievement of the study's objectives is determined and suggestions for future research are discussed.

#### **5.2 Main findings from the study**

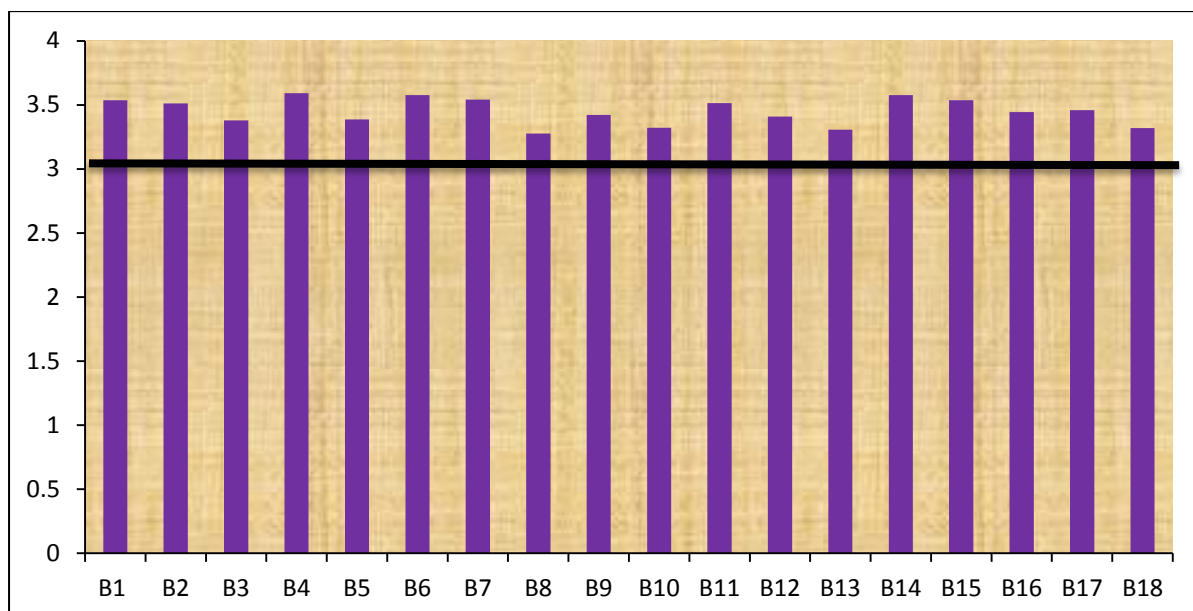
The MWC seems to be doing well in certain area of their SMP, the water utility has crafted and implemented a 5 year strategic plan that is been utilised to direct the organisational activities. However there are some areas of concern that were detected through this research whereby the water utility can still improve in order to realise the full benefits of strategy.

##### **5.2.1 Strategy formulation**

There is mixed reactions from the respondents when it comes to the issue of the water utility having a written short term 1 year and long term 3 to 5 years strategic objectives. From the empirical study, 31.98 percent of the target population agrees to the fact that the water utility has a written short term and long term strategic objectives while on the other hand another 31.98 percent of the target population seems to be neutral as to whether there are short term and long term objectives. Strategic objectives relates to strategic performance of an organisation in order to measure the performance of the organisation strategic objectives are measured, that is the reason why objectives are suppose to be specific, measurable, achievable,

relevant and time bound (SMART). Another area of concern is the alignment of the water utilities' strategic objective to that of the DWA Minister, the highest number of respondents 31.98 percent of the target population are of an opinion that the water utilities' strategic objectives are not aligned to those of the DWA Minister. The strategic objectives of the water utility should be aligned to that of the DWA. The DWA's strategic objectives are aligned to those of the presidents of South African through MTSF strategic objectives. These do not only create synergy but ensure that the process of government's service delivery mandate is realised through institutions like the water utility.

**Figure 5.1: Section B: Strategy formulation questions response comparison with the average**



(Source: own compilation)

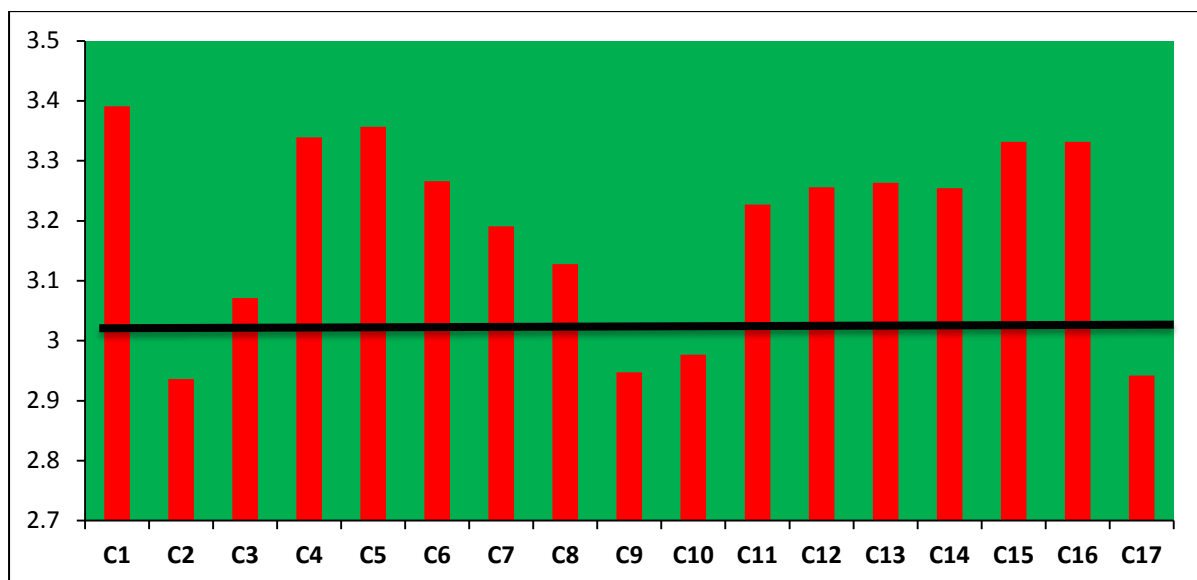
Figure 5.1 illustrate the respondent's average score per question in relation to the mean (3) of a 5pont Likert scale. Under this section when considering the mean the water utility seems to be doing well in all aspects measured

## 5.2.2 Strategy implementation

The water utility has managed to implement strategy with 48.28 percent of the respondents agreeing that organisation has also got the financial and strategic plans supported by high level management to implement strategies. However there is

division among respondents with regards to the utilisation of strategic (situational) diagnosis tools in formulating strategy. From the empirical study 34.50 percent of the target population agrees to the fact that the water utility uses strategic (situational) diagnosis in formulating strategy while another 35.50 percent of the target population seems to be neutral as to whether the water utility utilises strategic (situational) diagnosis in formulating strategy. It is a call for a concern for 50 percent of the respondents to be reserved about SMP diagnosis tools. These might be attributed to lack of respondents exposure when it comes to the whole process of crafting, implementation, and review of strategy which is only handled management.

**Figure 5.2: Section C: Strategy implementation questions response comparison with the average or mean**



Source: (own compilation)

Figure 5.2 illustrate the average respondents per questions asked in section C, looking at the mean or average (3), Question C2 indicate that the organisations policies are not being updated on a regular basis which is a call for concern when it come to SMP, policies governs the way in which things are done if outdated policies are used the chances are that they will hinder strategy initiatives.

In terms of Question C3 management and high level staff members can do more to be role models in applying and living according to the policies of the organisation,

although the response to this question is above the mean (3) management and high level staff members are not doing enough to lead by example.

Question C9 is also lagging below the mean or average, the water utility's willingness to accept change seems to be a challenge. For strategic initiatives to work an organisation needs to be ready to accept change the water utility seems to be doing bad in terms of these aspect.

In Question C10 the water utility's Human Resources (HR) department seem to be incapable of handling change initiatives, this aspect is lagging below the average. For the water utility to able to manage change initiatives there is need to also employ a strong management team with relevant skills to champion and deliver the required strategic changes without any hindrance to support the water utilities initiatives.

In question C17 the empirical study reveals that there are no incentives in the water utility for individual that are responsible for the formulation and implementation of the strategy. Employees can perform more if there are rewarded for outstanding performance or for going and extra mile, rewards might not be in the form of monetary, giving an employee paid days off after a successful implementation of a strategy initiatives can go a long way in motivating other employees to go an extra mile as well.

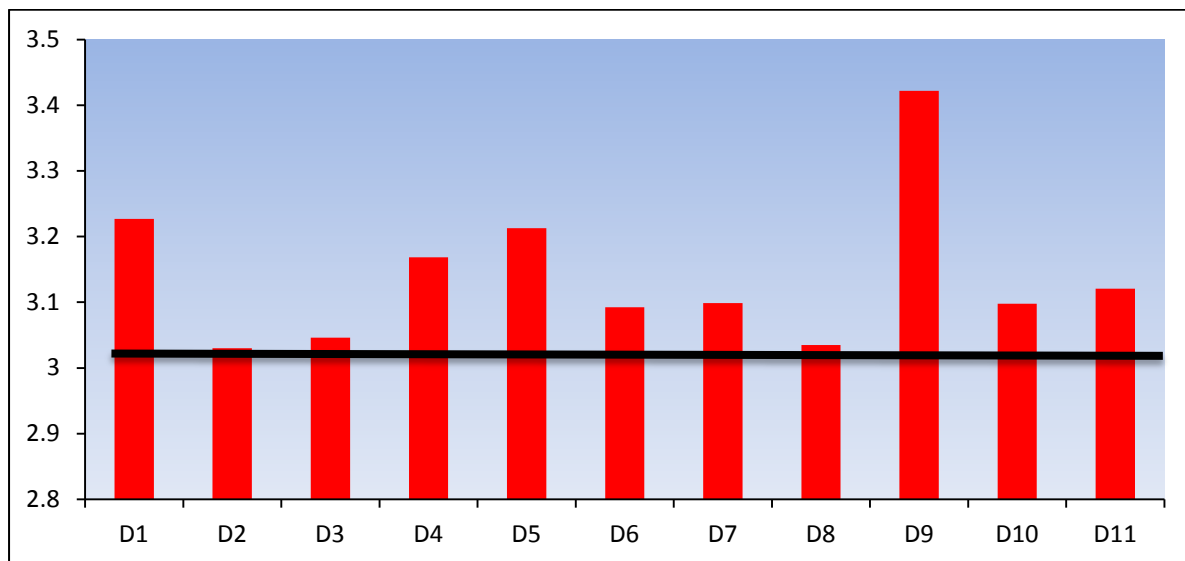
### **5.2.3 Strategy evaluation**

There is a challenge with performance management (question D2) of the water utility, the highest number of respondents 59 or 34.68 percent of the target population are neutral about the fact that the organisation has a system in place to measure actual performance against goals, the same goes for questions D3, D4 and D5. The issue has a direct correlation with question B14 of Section B: Strategy formulation, whereby respondents were also neutral about the water utility having written short term and long term strategic objectives. If respondents are not aware of the strategic objectives, they will not have an idea how to measure performance because it measures their objectives

In terms of the turnaround time of failing strategy Question D7 the highest numbers of respondents 68 or 39.53 percent of the target population are also neutral. These

might also be attributed to the level of involvement of the respondents in the SMP hence it is a management prerogative to come up with a rescue plan for an ailing or failing strategy. But succession planning and organisational continuity capable respondents should be identified and educated or involved in the SMP.

**Figure 5.3: Section D: Strategy Evaluation questions response comparison with the average or mean**



Source: (own compilation)

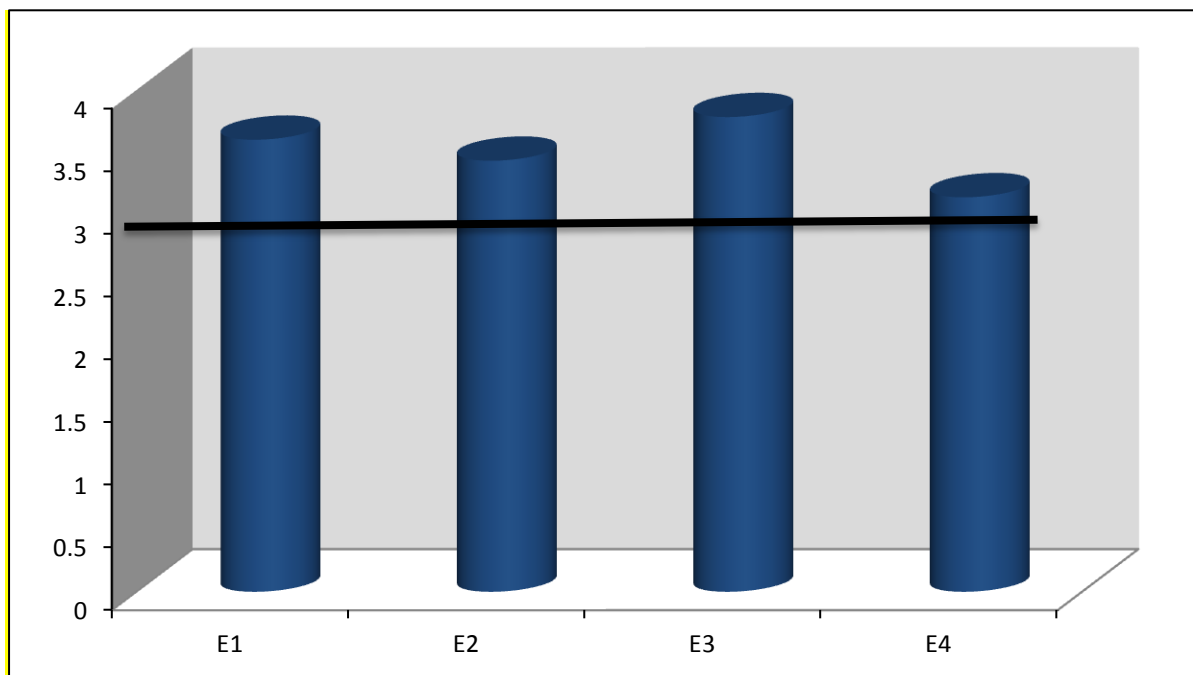
Figure 5.3 depicts the average respondents per questions asked in section D, looking at the mean or average (3), Question D2 indicate that respondents are familiar with the Balanced score card (BSC) as strategy systematic measurement tool for performance against set targets. There is still room for improvement for BSC to lean away from the mean.

In question D8 the mechanism of evaluating impact of changes proved to be in operation as respondents performing above average. There also room for improvement in this section.

#### 5.2.4 Present performance of the organisation

The respondents are of an opinion that the organisation is doing well in terms of the following deliverables: sales revenue growth, successful technological innovation, and customer satisfaction and employee development.

**Figure 5.4: Section E: Present performance of the organisation questions response comparison with the average or mean**



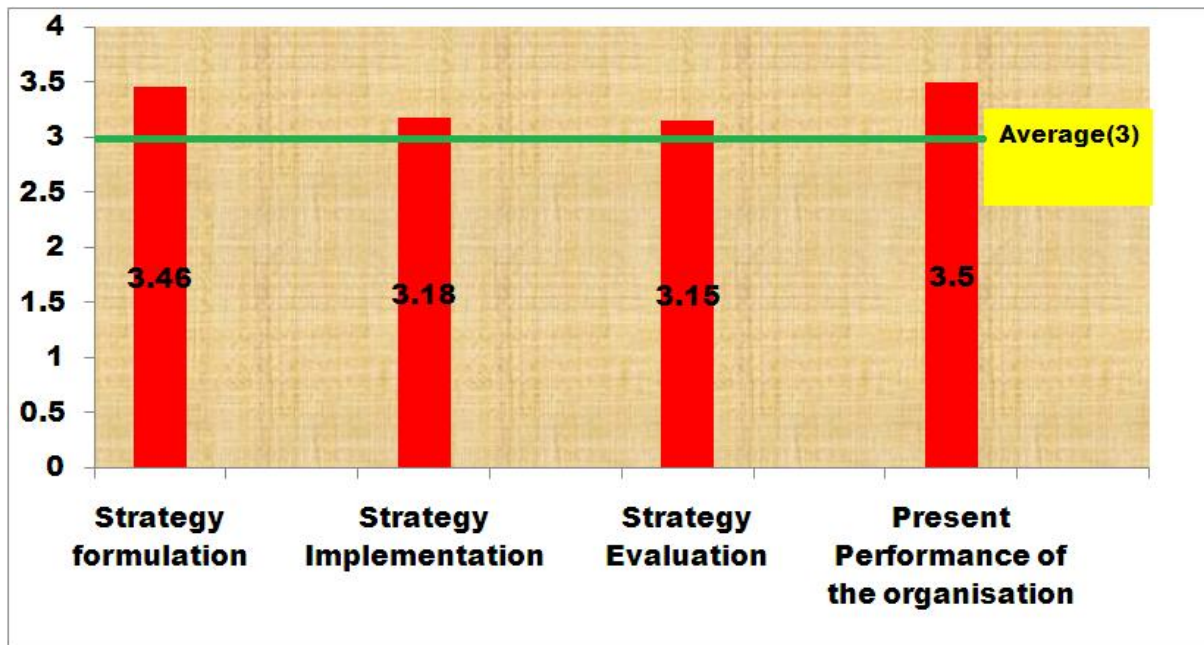
Source: (own compilation)

Figure 5.4 shows the depicts the average respondents per questions asked in section E, In Question E4 employee development seems to be a problematic areas a compared to the other questions, although the response is above the mean the water utility can still do more to close these gab taking into consideration that learning and growth form part of the pillars of the BSC.

### 5.2.5 Findings summary

The overall performance of the water utility SMP is within the average borderline (see fig 5.5), necessary adjustment as per the recommendations can elevate the water utilities SMP position into a comfortable position.

**Figure 5.5 Findings summary**



Source: (own compilation)

### 5.3 Research evaluation

Like any other system performance measure the success is determined by measuring deliverables against set objectives. The success of this study is subjected to it meeting the primary and secondary objectives as outlined in this chapter.

### 5.4 Achievement of the study's objectives

#### 5.4.1 The primary objective

The primary objective of the study was to assess SMP at a water utility in South Africa. In order to achieve primary objectives the research introduced chapter 1 as a

roadmap and foundation for how the research was going to be conducted. Primary and secondary objectives were also introduced in the chapter.

Chapter 2 looked into the water resources management in the South African context which included an in depth discussion of the different stakeholders and their roles in the water value chain. Legislation governing the water industry in South Africa was also discussed the latter was followed by the challenges encountered by the different role players in the industry.

In Chapter 3 a literature review was conducted with regards to the SMP in general followed by the conceptualisation of the SMP to MWC, area of interest included strategic alignment of MWC, DWA and MTSF objectives.

Chapter 4 a questionnaire was developed and distributed to the MWC and its stakeholders to probe the SMP. The questionnaires were sent to North-West University Potchefstroom Campus whereby Statistical Consultant from the Statistical Consultation Services carried out statistical analyses. The validity and reliability of the data was tested utilising tools like Cronbach Alpha coefficient, T test, Factor analysis and Kaiser's measure of sample adequacy (MSA) which all proved to be reliable.

Chapter 5 conclusions were drawn from the empirical study and recommendations were made to the water utility

Based on these facts it can be concluded that the primary objectives of the study were achieved which can be attributed to a detailed analysis (literature review and empirical study) of the SMP within the MWC context. Although a number of good practices were derived, shortfall were also documented and presented as recommendations to address these pitfalls.

#### **5.4.2 Secondary objectives**

- To assess the organisational level of knowledge or awareness in terms of SMP;
- To determine alignment of Medium Term Strategic Framework (MTSF), DWA and MWC objectives; and

- To determine the water utility's demographics (age, gender, educational qualifications, and race).

In Section C of the questionnaire the research reveals that the water utility's policies that are been used to make decisions are outdated thus putting the company at risk. This is also institutional memory whereby the level of accepting change hinders progress as far as change management is concerned. For the SMP to be affective the level of change acceptance should be rapid to shorten the turnaround time to minimise impact of a failing strategy. The HR department as the pillar of support for line functions is suppose to be championing change initiatives; this could go a long in helping the organisation to achieve its objectives. However respondents are of an opinion that the HR department in not capable of leading the organisation through change. It also became apparent that the water utility is not rewarding employees for implementing strategy. Incentives normally motives employees to do more, through the SMP of the MWC the element is lacking, as a recommendation management will have to look into moving forward. It can be concluded that the respondents of level of awareness or knowledge is there, responded could demonstrate articulation of issues that are relevant to SMP.

Through the questionnaire SMP for the MWC was scrutinised paying particular attention to the following aspects: Strategic formulation whereby the responded agrees to the fact that the organisation has articulated vision, mission, values and strategic objectives to support its mandate. Vision, mission, and values are the pillars that direct the organisation in terms of were its heading (vision), how the organisation is going to achieve the vision (mission) and finally values that shape desired behaviour for the organisation to realise the vision. Strategic objectives are classified as activities that the organisation will be focus on in short term 1 year, and in the long term 3 to 5 years.

The strategic objectives of the water utility are suppose to be aligned to those of the DWA Minister, in Section B of the questionnaire, question B15 that specifically interrogate the respondents level of knowledge of alignment of the DWA strategic objectives and those of the MWC. The highest percentage of respondents 31.18% or 53 respondents are neutral about the issue which indicate that there is an urgent attention to address the alignment of objectives with DWA. The water utility can

benefit as an project implementing agent on behalf of DWA on infrastructure roll out plan such as Regional Bulk Infrastructure Grant (RBIG), Accelerated Community Infrastructure Programme (ACIP), and Municipal Water Infrastructure Grant (MWIG). It can be concluded that secondary objective 2 was achieved, in chapter 3 under Table 3.4 and Table 3.5, DWA strategic objectives and MWC were compared and were found to be aligned to a certain degree. The latter was probed in Section B question B15 of the questionnaire.

The demographic information can be utilised to prepare succession planning diversity interventions plans to address multiculturalism, which form part of SMP. In order for an organisation to craft and implement strategies there is a need to asses the organisational capabilities and shortfalls. In Chapter 3, literature review for internal environment analysis of the organisation was conducted. Strategic tools such as SWOT, Mckinsey 7s model etc were utilised to evaluate the water utilities internal capabilities. The strategic tools were also probed in the empirical study, through a questionnaire. Section A of questionnaire covers the demographics of the target population while Section B: questions B9 and B13 explicitly interrogate the respondents regarding the utilisations of strategic capability assessment tools. Based on these facts it could be concluded that objective 3 of the secondary objective was achieved.

## **5.5 Recommendations and conclusions**

From the empirical study it can be inferred that the water utility has crafted and implemented strategy to support its mandate, however there are some management elements (strategic objectives, performance management, operational policies, change management, HR capabilities, employee development and rewards) that needs urgent attention going into the future. The research also reveals that management of the organisation are of an opinion that they have done everything that needs to be done to the last detail of crafting, implementing, evaluating, performance monitoring of the strategy while rest of the respondents feels that a lot still need to be done to ensure that the strategic objectives of the organisation are met.

In terms of the short term and long term strategic objectives the water utility needs to consult both DWA and MTSF strategic objectives and ensure that they start incorporation strategic objectives or goals that will align their objectives with the latter. It is recommended that the water utilities three directorates ( see figure 3.2 ) to formulate SBU plans that will support the existing corporate strategy level strategy, these should be followed by the operational level strategy at the directorate sub-departments. The three should be aligned, supported by individual performance contract and job descriptions. Continuous reviews and appraisals should be conducted on the three strategies and on the individual employees as part of the performance management process.

The research could not establish that of all the water utility's strategic objectives are aligned to that of DWA. It will worth a while for the water utility to conduct a comprehensive exercise to determine the facts. There is a high possibility that some of the water utilities strategic objectives are aligned with that of DWA if that is not the case then the water utility in their quarterly strategy reviews can start to slowly incorporate initiatives that will ensure alignment.

The water utility can benefit as a project implementing agent on behalf of DWA on infrastructure roll out plan like Regional Bulk Infrastructure Grant (RBIG), Accelerated Community Infrastructure Programme (ACIP), and Municipal Water Infrastructure Grant (MWIG). The benefits also include the possibility of being allocated some of the DWA infrastructure to operate and maintain on behalf of DWA to enhance service delivery and also the likelihood of increasing the geographical area of operation.

It was established that policies that are been utilised to govern the day to day operations of the water utility are outdated and that management and high level staff are not living up to these policies. These do not only create confusion when addressing behavioural issues in the workplace but also expose the water utility to risk of being challenged in the labour or criminal court for minor to serious misconduct. Policies are also a support system for strategy execution therefore, if they are not reflecting relevance strategy initiatives will suffer as well.

The LRA, BCE, BBBEE and EE Act are some of the Acts that are been amended from time to time, it is essential that the water utilities policies are current and

reflecting compliant to these Acts thereof. It is recommended that the board of directors as a starting point develops terms of reference for policy review task team. If expertise cannot be sources internally labour law or policy expert can be sources to facilitate the policy review process to review all policies that are currently been used. Once all the policies have been reviewed the board is to streamline the current system and document policy review process, allocate responsibilities and frequency of review to prevent further deterioration. It is also advisable that HR department conduct regular policy awareness sessions with employees so that the water utility can have an informed performing workforce.

In order for the organisation to measure and manage performance accurately the utility needs to adopt a single standard across the board. To achieve these it is recommended that the company introduce performance contracts. Performance contracts have been used in organisation for a very long time and they have proven to be effecting in helping organisation to monitor performance. As a starting point the line managers or supervisors would have start by reviewing job descriptions of their respective subordinates based on the KPA, KPI and the inherent requirement of the job.

The second stage would then be the drafting of the performance contract that will be agreed to by the line manager or supervisor preferably at the beginning of the year. Both parties would sign the contract, quarterly reviews will be conduct to identify the gabs so that interventions are put in place to help employees in delivering performance. The last performance appraisal will be conducted at the end of the year whereby the line manager and the supervisor will sit and discuss the overall performance of the individual employee. The latter can be linked to incentives or rewards if the water utility can afford that leverage.

The Board of Directors should also consider incorporating the Balanced Score Card (BSC) to manage the strategic plan performance. BSC is a performance measurement framework that has added strategic non-financial performance measures to traditional financial metrics in order to give managers and executives a more “balanced” view of organisational performance. The BSC is a strategic planning and management tool that is used extensively in businesses worldwide to align business activities with the vision, mission and strategy. The BSC is utilised to

improve internal and external communications, and monitor the organisation's performance against its strategic goals. The real benefit of the BSC is that it provides a link between strategy and implementation (Lynch, 2009:511).

The water utility is currently rewarding employee for cost saving, if there is cost savings per quarter the saving gets to be distributed evenly according to the job groups. The problem with this scheme is that some employees are rewarded for doing nothing thereby not contributing to the cost saving initiatives. The research reveals that individuals are not rewarded for successful formulation and implementation of strategy. It is recommended that after implementing performance contracts and performance management system cost saving funds be allocated to good performers only. These will not motivate good performers to do go an extra mile but will motivate all employees to start performance hence they know they will get rewarded for putting the effort in helping the organisation to achieve its objectives.

In addressing the challenge of failing strategy it became evident that respondents are concerned with the turnaround time for failing strategy which they believe is not effective. The challenge is aggravated by the fact that the water utilities willingness to accept change is somehow non existence. The respondents are also of an opinion that the HR department is not capable of handling change initiatives that enhances new strategic direction. Due to the organisational culture, it will take long for the utility to realise, and acknowledge that the strategy is failing. It recommended that the utility continue to engage in diversity intervention with Siyakha Consulting to diffuse the culture of us (employees) and them (management). Managerial layers of the water utility needs to be trained so that they are confidence in change managing change initiatives

Employee development is a challenge even though strategy crafting is a management prerogative that said strategic tools are been utilised by management to craft the strategy, from the study it can be deduced that the respondents in non-managerial positions lacks the knowledge in terms of utilising strategic tools, on this note its is recommended to the water utility consider succession planning, by identifying potential future leaders within the ranks, and including this young leaders

in future strategic planning session. These can help the water utility in preparing future leaders, courses like Management Development Programmes (MDP) can be add value in terms of addressing the knowledge gap.

The water utility has developed a set of KPIs (see table: 3.8) that covers the whole organisations KPAs. The individual KPIs should be aligned to departmental KPIs, which will in turn align to the corporate KPIs so that the water utility can achieve synergy and strategic objectives. As a recommendation to management the organisation needs to consider adopting dashboards that will be displayed in the main offices, and different section of the departments in the operational areas. An awareness session should follow, whereby all employees are taken through the dashboards so that they can familiarise themselves with their contribution to the dashboard. These will motivate them to increases their productivity.

## **5.6 Areas of future research**

A research topic cannot cover all avenues with regard to the subject matter. There is always going to be areas that can be further explored. Some of the possible future areas of research in SMP are as follows:

- Factors influencing strategy management process;
- Assessing the role of Board of Directors, and Board Committees in strategy management process;
- Assessing the alignment of DWA and water utilities strategic plan;
- Evaluating the role NDP in the water utilities strategic framework;
- Service delivery in South Africa; and
- Strategic assessment of the water value chain in South Africa

## **5.7 Conclusion**

It can be concluded from the analysis performed in this chapter that the SMP of the water utility has challenges and there is a lot that needs to be done in order to successfully implement and meet the strategic objectives. Successful implementation of strategy requires both leadership and employee commitment. More effort needs to be put in place to ensure that there is an understanding of company values mission and vision.

As part of the succession planning the water utilities should consider succession planning as a tool to develop future leaders, by identifying future potential leaders and involving them in the strategy crafting process can help in creating a pool of competent future leaders. Strategic objectives of the water utility must be aligned with those of DWA that are in turn aligned to the NDP through Government MTSF the idea is to create synergy and help government to achieve its NDP vision 2030. There is also a need to address performance management in the water utility, by ensuring that all employees have KPI that are aligned to the strategic objectives the latter should include regular feedback and reviews which must be communicated properly and continuously monitored and proper feedback needs to be given to all the relevant employees.

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## Annexure A: Questionnaire.

The purpose of this questionnaire is to assess the strategic management process at a water utility in South Africa. The research is undertaken as partial fulfilment of successful completion of a Masters Degree in Business Administration at North West University. Recommendations will be made available on request. All information will be treated as CONFIDENTIAL and your anonymous opinion is important to the researcher.

### SECTION A: PERSONAL INFORMATION

The following information is needed to help us with the statistical analysis of the data for comparisons among different demographic variables. We appreciate your help in providing this important information.

Mark the applicable block with a cross (X). Complete the applicable information.

|           |                                                                              |                              |                            |                            |                        |       |
|-----------|------------------------------------------------------------------------------|------------------------------|----------------------------|----------------------------|------------------------|-------|
| <b>A1</b> | What is your age group?                                                      | ≤ 20                         | 20 - 39                    | 40 - 49                    | 50 - 59                | 60+   |
|           |                                                                              | (01)                         | (02)                       | (03)                       | (04)                   | (05)  |
| <b>A2</b> | What is your race?                                                           | African                      | Indian                     | Coloured                   | White                  | Other |
|           |                                                                              | (01)                         | (02)                       | (03)                       | (04)                   | (05)  |
| <b>A3</b> | What is your organisation?                                                   | Water utility                | Municipality               | Project                    |                        |       |
|           |                                                                              | (01)                         | (02)                       | (03)                       |                        |       |
| <b>A4</b> | What is your current business unit?                                          | Finance & Corporate Services | Production                 | Engineering                | Other (please specify) |       |
|           |                                                                              | (01)                         | (02)                       | (03)                       | (04)                   |       |
| <b>A5</b> | How many years of experience in different business unit of the same company? | Only 1 Business unit         | 2 Different Business units | 3 Different Business units |                        |       |
|           |                                                                              | (01)                         | (02)                       | (03)                       |                        |       |
| <b>A6</b> | Are you in management?                                                       | Yes                          | No                         |                            |                        |       |
|           |                                                                              | (01)                         | (02)                       |                            |                        |       |
| <b>A7</b> | Indicate your managerial category?                                           | Junior manager               | Team Leader                | Middle manager             | Senior manager         |       |

|           | (01)                 | (02) | (03)   | (04) |
|-----------|----------------------|------|--------|------|
| <b>A8</b> | What is your Gender? | Male | Female |      |

(01)

(02)

|           |                               |           |          |          |
|-----------|-------------------------------|-----------|----------|----------|
| <b>A9</b> | What is your employment Type? | Permanent | Contract | Projects |
|-----------|-------------------------------|-----------|----------|----------|

(01)

(02)

(03)

|            |                                                                                               |  |  |  |
|------------|-----------------------------------------------------------------------------------------------|--|--|--|
| <b>A10</b> | <b>State your highest academic qualification. Mark the applicable block with a cross (X).</b> |  |  |  |
| (01)       | Matric/FET/Diploma                                                                            |  |  |  |
| (02)       | B Degree                                                                                      |  |  |  |
| (03)       | Post Graduate Diploma/ Honours                                                                |  |  |  |
| (04)       | Masters/Doctorate                                                                             |  |  |  |
| (05)       | Other (Please specify)                                                                        |  |  |  |

Please utilize the scale below to rank the questions related to strategic management process at the utility asked for Section B to Section E

| Please rate the extent to which you agree or disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement. |                               |                              |                            |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|----------------------------|-------------------------------------|
| <b>1 =</b><br><b>Strongly disagree</b>                                                                                                                                            | <b>2 =</b><br><b>Disagree</b> | <b>3 =</b><br><b>Neutral</b> | <b>4 =</b><br><b>Agree</b> | <b>5 =</b><br><b>Strongly agree</b> |

### Section B: Strategy formulation

|           | STATEMENT                                                                                                                | SCALE |   |   |   |   |
|-----------|--------------------------------------------------------------------------------------------------------------------------|-------|---|---|---|---|
| <b>B1</b> | Has your organisation articulated a vision to support its mandate?                                                       | 1     | 2 | 3 | 4 | 5 |
| <b>B2</b> | Is the vision relevant to the organisations activities?                                                                  | 1     | 2 | 3 | 4 | 5 |
| <b>B3</b> | Senior Managers/Directors ensures that there is sufficient awareness of the vision?                                      | 1     | 2 | 3 | 4 | 5 |
| <b>B4</b> | Has your organisation developed a mission statement?                                                                     | 1     | 2 | 3 | 4 | 5 |
| <b>B5</b> | Do you feel that your current mission statement is compatible with the activities being carried out by the organisation? | 1     | 2 | 3 | 4 | 5 |
| <b>B6</b> | Are all management and higher-level staff aware of the mission?                                                          | 1     | 2 | 3 | 4 | 5 |
| <b>B7</b> | Has your organisation defined a set of value statements?                                                                 | 1     | 2 | 3 | 4 | 5 |

|            |                                                                                                                                                |   |   |   |   |   |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| <b>B8</b>  | Does the organisation periodically gather and analyze data about market and other external factors which affect the business?                  | 1 | 2 | 3 | 4 | 5 |
| <b>B9</b>  | Does your organisation use tools like SWOT, PESTEL etc to analyse its environment                                                              | 1 | 2 | 3 | 4 | 5 |
| <b>B10</b> | Does the organisation benchmark with other water utilities?                                                                                    | 1 | 2 | 3 | 4 | 5 |
| <b>B11</b> | Does the organisation consider business enhancements options, e.g., cost reduction, alternative suppliers, production improvements, etc.?      | 1 | 2 | 3 | 4 | 5 |
| <b>B12</b> | Does the organisation assess the industry as a whole in terms of new technologies, procurement practices, price trends, labor practices, etc.? | 1 | 2 | 3 | 4 | 5 |
| <b>B13</b> | Has the organisation assess its capability to execute the strategy?                                                                            | 1 | 2 | 3 | 4 | 5 |
| <b>B14</b> | Does the water utility have written longer-term (3-5 years) and short term (1-year) strategic objectives?                                      | 1 | 2 | 3 | 4 | 5 |
| <b>B15</b> | Are the strategic objectives of the organisation aligned to the Minister of Department of water affairs                                        | 1 | 2 | 3 | 4 | 5 |
| <b>B16</b> | Are the organisation `s objectives (SMART) Specific Measurable Achievable Relevant and Time bound?                                             | 1 | 2 | 3 | 4 | 5 |
| <b>B17</b> | Does the board and higher-level staff whose responsibilities are affected participate in setting objectives?                                   | 1 | 2 | 3 | 4 | 5 |
| <b>B18</b> | Does the organisation review the objectives on regular basis?                                                                                  | 1 | 2 | 3 | 4 | 5 |

### Section C: Strategy Implementation

|                                        |                               |                              |                            |                                     |
|----------------------------------------|-------------------------------|------------------------------|----------------------------|-------------------------------------|
| <b>1 =</b><br><b>Strongly disagree</b> | <b>2 =</b><br><b>Disagree</b> | <b>3 =</b><br><b>Neutral</b> | <b>4 =</b><br><b>Agree</b> | <b>5 =</b><br><b>Strongly agree</b> |
|----------------------------------------|-------------------------------|------------------------------|----------------------------|-------------------------------------|

|           | STATEMENT                                                                           | SCALE |   |   |   |   |
|-----------|-------------------------------------------------------------------------------------|-------|---|---|---|---|
| <b>C1</b> | Does the organisation maintain policy manuals                                       | 1     | 2 | 3 | 4 | 5 |
| <b>C2</b> | Are the organisations policies updated on a regular basis?                          | 1     | 2 | 3 | 4 | 5 |
| <b>C3</b> | Does management and higher-level live to these policies                             | 1     | 2 | 3 | 4 | 5 |
| <b>C4</b> | Does the organisation allocate financial and human resources to implement strategy? | 1     | 2 | 3 | 4 | 5 |
| <b>C5</b> | Does the management and higher-level take ownership to implement strategy           | 1     | 2 | 3 | 4 | 5 |

|            |                                                                                                                                 |   |   |   |   |   |
|------------|---------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| <b>C6</b>  | Does the management and higher-level support strategy implement initiatives?                                                    | 1 | 2 | 3 | 4 | 5 |
| <b>C7</b>  | Does the current organisational structure adequate to implement strategy initiatives?                                           | 1 | 2 | 3 | 4 | 5 |
| <b>C8</b>  | Is you organisation ready to implement strategic changes?                                                                       | 1 | 2 | 3 | 4 | 5 |
| <b>C9</b>  | Is the organisation willing to accept change?                                                                                   | 1 | 2 | 3 | 4 | 5 |
| <b>C10</b> | Is your human resource department capable of managing changes?                                                                  | 1 | 2 | 3 | 4 | 5 |
| <b>C11</b> | Is the organisation staff competent to plan, manage and implement strategy initiatives?                                         | 1 | 2 | 3 | 4 | 5 |
| <b>C12</b> | Does the organisation make strategic decisions (implementation action plans) based upon the strategic plan?                     | 1 | 2 | 3 | 4 | 5 |
| <b>C13</b> | Does the organisation use the strategic (situational) diagnosis to formulate strategic plan options?                            | 1 | 2 | 3 | 4 | 5 |
| <b>C14</b> | Does it consider organisation and management options, e.g., restructuring, purchasing competitive businesses?                   | 1 | 2 | 3 | 4 | 5 |
| <b>C15</b> | Does the organisation decide its strategic plan(s) based on feasibility and risk/return criteria?                               | 1 | 2 | 3 | 4 | 5 |
| <b>C16</b> | Does the organisation clearly assign lead responsibility for action plan implementation to a person or, alternately, to a team? | 1 | 2 | 3 | 4 | 5 |
| <b>C17</b> | Are individuals responsible for strategic formulation and implementation rewarded?                                              | 1 | 2 | 3 | 4 | 5 |

#### Section D: Strategy Evaluation

|                                               |                                      |                                     |                                   |                                            |
|-----------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------|
| <b>1 =</b><br><b><i>Strongly disagree</i></b> | <b>2 =</b><br><b><i>Disagree</i></b> | <b>3 =</b><br><b><i>Neutral</i></b> | <b>4 =</b><br><b><i>Agree</i></b> | <b>5 =</b><br><b><i>Strongly agree</i></b> |
|-----------------------------------------------|--------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------|

|           | <b>STATEMENT</b>                                                                                                             | <b>SCALE</b> |   |   |   |   |
|-----------|------------------------------------------------------------------------------------------------------------------------------|--------------|---|---|---|---|
| <b>D1</b> | Has the organisation developed key performance area's (KPA`s) and key performance indicators (KPI`s) to measure performance? | 1            | 2 | 3 | 4 | 5 |
| <b>D2</b> | Has the organisation adopted a strategy performance management tool like the Balanced score card etc?                        | 1            | 2 | 3 | 4 | 5 |
| <b>D3</b> | Does the organisation systematically measure actual performance vs. goals?                                                   | 1            | 2 | 3 | 4 | 5 |

|            |                                                                                                         |   |   |   |   |   |
|------------|---------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| <b>D4</b>  | Does the organisation set clearly defined and measurable performance standards for each plan element?   | 1 | 2 | 3 | 4 | 5 |
| <b>D5</b>  | Are the business performance and operational characteristics compared with those of other organisation? | 1 | 2 | 3 | 4 | 5 |
| <b>D6</b>  | Does the organisation review monitoring data regularly, and revise strategic decisions as appropriate?  | 1 | 2 | 3 | 4 | 5 |
| <b>D7</b>  | Is the organisation turnaround time for failing strategy effective?                                     | 1 | 2 | 3 | 4 | 5 |
| <b>D8</b>  | Is the organisations mechanism of evaluating impact of changes effective?                               | 1 | 2 | 3 | 4 | 5 |
| <b>D9</b>  | Are the Directors or Senior managers involved in strategy evaluation?                                   | 1 | 2 | 3 | 4 | 5 |
| <b>D10</b> | Is the organisations performance communicated throughout the organisation?                              | 1 | 2 | 3 | 4 | 5 |
| <b>D11</b> | Does the organisation conduct ongoing reviews relating to strategic initiatives?                        | 1 | 2 | 3 | 4 | 5 |

#### Section E: Present Performance of the organisation

| Referring to the current situation, rate how good your organization is performing in terms of the following |                              |   |   |   |   |   |
|-------------------------------------------------------------------------------------------------------------|------------------------------|---|---|---|---|---|
| <b>E1</b>                                                                                                   | <i>Sales revenue growth</i>  | 1 | 2 | 3 | 4 | 5 |
| <b>E2</b>                                                                                                   | <i>Successful innovation</i> | 1 | 2 | 3 | 4 | 5 |
| <b>E3</b>                                                                                                   | <i>Customer satisfaction</i> | 1 | 2 | 3 | 4 | 5 |
| <b>E4</b>                                                                                                   | <i>Employee development</i>  | 1 | 2 | 3 | 4 | 5 |

(01) (02)

|           |                                                                                         |     |    |
|-----------|-----------------------------------------------------------------------------------------|-----|----|
| <b>E5</b> | Our business objectives are driven primarily by customer satisfaction                   | Yes | No |
| <b>E6</b> | Our strategy for competitive advantage is based on our understanding of customer needs? | Yes | No |
| <b>E7</b> | We are more customer focused                                                            | Yes | No |
| <b>E8</b> | Market orientation forms the foundation of our strategy                                 | Yes | No |

|           |                                                             |    |            |
|-----------|-------------------------------------------------------------|----|------------|
| <b>E9</b> | Do you think the current strategy is delivering performance |    |            |
|           | Yes                                                         | No | Don't know |

(01)

(02)

(03)

Please explain shortly.

---

|     |                                                                                     |
|-----|-------------------------------------------------------------------------------------|
| E10 | Any recommendation you would like to give to the utility to improve its performance |
|     |                                                                                     |

**THANK YOU FOR YOUR TIME.**

**Annexure B: Letter for request of permission to conduct research  
Midvaal Water Company**

P O Box 31

Stilfontein

2550

Cell: 0837049845

[Sellom@midvaalwater.co.za](mailto:Sellom@midvaalwater.co.za)

Attention: F Ellis

The Engineering Director

Midvaal Water Company

443lp Farm Buffelsfontein

Stilfontein

2550

15.01.2014

Dear Sir

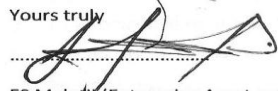
Request for permission to conduct an MBA research at your organisation

I am requesting permission to conduct an MBA research topic for my dissertation (An analysis for Strategy Management process for a water utility in South Africa).

I am currently an MBA student at the North West University Potchefstroom campus and Funded by Midvaal Water Company.

Your assistance will be highly appreciated. Looking forward in hearing from you.

Yours truly



ES Malatji (Enterprise Asset manager)

## **Annexure C: Request for permission to conduct research at CCMLM**

29.08.2014

Director Technical Services  
City of Matlosana

For attention: Mr R Mukondeleli

**REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN THE WATER DIVISION**

Dear Mr R Mukondeleli

My name is Erven Sello Malatji, and I am the Enterprise Asset manager for Midvaal Water Company and a student at the North West University Potchefstroom Campus. The research I wish to conduct for my Master's dissertation involves: analysis of the effect strategy on the business performance of a water utility in South Africa. This project will be conducted under the supervision of **Proff Ronnie Lotriet** (North West University Potchefstroom business school).

I am hereby seeking your consent to distribute and collect +/-100 questionnaires in your water and sanitation division for my analysis. I have provided you with a copy of my draft questionnaire which includes will be utilising to conduct the survey.

Upon completion of the study, I undertake to provide the municipality with a bound copy of the full research report. If you require any further information, please do not hesitate to contact me on [083 704 9845, [sellom@midvaalwater.co.za](mailto:sellom@midvaalwater.co.za)].

Thanking you in advance for your time and consideration in this matter.

Yours sincerely,

Erven Sello Malatji



29/08/14

## Annexure D: Request for permission to conduct research at Sedibeng Water Board

P O Box 31  
Stilfontein  
2550  
01.09.2014

The CEO of Sedibeng Water Board  
Private Bag X5  
Bothaville  
9660

### REQUEST FOR PERMISSION TO CONDUCT AN MBA RESEARCH TOPIC

Dear Mr RT Takalani

My name is Erven Sello Malatji, and I am the Enterprise Asset Manager for Midvaal Water Company and student at North West University Potchefstroom business school. The research I wish to conduct for my Master's dissertation; involves Analysis of the effect of strategy on business performance of a water utility in South Africa.

This project will be conducted under the supervision of Proff Ronnie Lotriet North West University Potchefstroom business school.

I am hereby seeking your consent to distribute and collect +/- 100 questionnaires in your organisation. I have provided you with a copy of my draft questionnaires which includes will be utilising to conduct the survey.

Upon completion of the study, I undertake to provide your organisation a bound copy of the full research report. If you require any further information, please do not hesitate to contact me on 083 704 9845, sellom@midvaalwater.co.za Thank you for your time and consideration in this matter.

Yours sincerely,  
Erven Sello Malatji



1/9/14

## Annexure E: Descriptive statistics

Descriptive Statistics

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The FREQ Procedure

| NO | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 1         | 0.57    | 1                       | 0.57                  |
| 2  | 1         | 0.57    | 2                       | 1.15                  |
| 3  | 1         | 0.57    | 3                       | 1.72                  |
| 4  | 1         | 0.57    | 4                       | 2.30                  |
| 5  | 1         | 0.57    | 5                       | 2.87                  |
| 6  | 1         | 0.57    | 6                       | 3.45                  |
| 7  | 1         | 0.57    | 7                       | 4.02                  |
| 8  | 1         | 0.57    | 8                       | 4.60                  |
| 9  | 1         | 0.57    | 9                       | 5.17                  |
| 10 | 1         | 0.57    | 10                      | 5.75                  |
| 11 | 1         | 0.57    | 11                      | 6.32                  |
| 12 | 1         | 0.57    | 12                      | 6.90                  |
| 13 | 1         | 0.57    | 13                      | 7.47                  |
| 14 | 1         | 0.57    | 14                      | 8.05                  |
| 15 | 1         | 0.57    | 15                      | 8.62                  |
| 16 | 1         | 0.57    | 16                      | 9.20                  |
| 17 | 1         | 0.57    | 17                      | 9.77                  |
| 18 | 1         | 0.57    | 18                      | 10.34                 |
| 19 | 1         | 0.57    | 19                      | 10.92                 |
| 20 | 1         | 0.57    | 20                      | 11.49                 |
| 21 | 1         | 0.57    | 21                      | 12.07                 |
| 22 | 1         | 0.57    | 22                      | 12.64                 |
| 23 | 1         | 0.57    | 23                      | 13.22                 |
| 24 | 1         | 0.57    | 24                      | 13.79                 |
| 25 | 1         | 0.57    | 25                      | 14.37                 |
| 26 | 1         | 0.57    | 26                      | 14.94                 |
| 27 | 1         | 0.57    | 27                      | 15.52                 |
| 28 | 1         | 0.57    | 28                      | 16.09                 |
| 29 | 1         | 0.57    | 29                      | 16.67                 |
| 30 | 1         | 0.57    | 30                      | 17.24                 |
| 31 | 1         | 0.57    | 31                      | 17.82                 |
| 32 | 1         | 0.57    | 32                      | 18.39                 |
| 33 | 1         | 0.57    | 33                      | 18.97                 |
| 34 | 1         | 0.57    | 34                      | 19.54                 |
| 35 | 1         | 0.57    | 35                      | 20.11                 |
| 36 | 1         | 0.57    | 36                      | 20.69                 |
| 37 | 1         | 0.57    | 37                      | 21.26                 |
| 38 | 1         | 0.57    | 38                      | 21.84                 |
| 39 | 1         | 0.57    | 39                      | 22.41                 |
| 40 | 1         | 0.57    | 40                      | 22.99                 |
| 41 | 1         | 0.57    | 41                      | 23.56                 |
| 42 | 1         | 0.57    | 42                      | 24.14                 |
| 43 | 1         | 0.57    | 43                      | 24.71                 |
| 44 | 1         | 0.57    | 44                      | 25.29                 |
| 45 | 1         | 0.57    | 45                      | 25.86                 |
| 46 | 1         | 0.57    | 46                      | 26.44                 |
| 47 | 1         | 0.57    | 47                      | 27.01                 |

Descriptive Statistics

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The FREQ Procedure

| NO | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 48 | 1         | 0.57    | 48                      | 27.59                 |
| 49 | 1         | 0.57    | 49                      | 28.16                 |
| 50 | 1         | 0.57    | 50                      | 28.74                 |
| 51 | 1         | 0.57    | 51                      | 29.31                 |
| 52 | 1         | 0.57    | 52                      | 29.89                 |

|    |   |      |    |       |
|----|---|------|----|-------|
| 53 | 1 | 0.57 | 53 | 30.46 |
| 54 | 1 | 0.57 | 54 | 31.03 |
| 55 | 1 | 0.57 | 55 | 31.61 |
| 56 | 1 | 0.57 | 56 | 32.18 |
| 57 | 1 | 0.57 | 57 | 32.76 |
| 58 | 1 | 0.57 | 58 | 33.33 |
| 59 | 1 | 0.57 | 59 | 33.91 |
| 60 | 1 | 0.57 | 60 | 34.48 |
| 61 | 1 | 0.57 | 61 | 35.06 |
| 62 | 1 | 0.57 | 62 | 35.63 |
| 63 | 1 | 0.57 | 63 | 36.21 |
| 64 | 1 | 0.57 | 64 | 36.78 |
| 65 | 1 | 0.57 | 65 | 37.36 |
| 66 | 1 | 0.57 | 66 | 37.93 |
| 67 | 1 | 0.57 | 67 | 38.51 |
| 68 | 1 | 0.57 | 68 | 39.08 |
| 69 | 1 | 0.57 | 69 | 39.66 |
| 70 | 1 | 0.57 | 70 | 40.23 |
| 71 | 1 | 0.57 | 71 | 40.80 |
| 72 | 1 | 0.57 | 72 | 41.38 |
| 73 | 1 | 0.57 | 73 | 41.95 |
| 74 | 1 | 0.57 | 74 | 42.53 |
| 75 | 1 | 0.57 | 75 | 43.10 |
| 76 | 1 | 0.57 | 76 | 43.68 |
| 77 | 1 | 0.57 | 77 | 44.25 |
| 78 | 1 | 0.57 | 78 | 44.83 |
| 79 | 1 | 0.57 | 79 | 45.40 |
| 80 | 1 | 0.57 | 80 | 45.98 |
| 81 | 1 | 0.57 | 81 | 46.55 |
| 82 | 1 | 0.57 | 82 | 47.13 |
| 83 | 1 | 0.57 | 83 | 47.70 |
| 84 | 1 | 0.57 | 84 | 48.28 |
| 85 | 1 | 0.57 | 85 | 48.85 |
| 86 | 1 | 0.57 | 86 | 49.43 |
| 87 | 1 | 0.57 | 87 | 50.00 |
| 88 | 1 | 0.57 | 88 | 50.57 |
| 89 | 1 | 0.57 | 89 | 51.15 |
| 90 | 1 | 0.57 | 90 | 51.72 |
| 91 | 1 | 0.57 | 91 | 52.30 |
| 92 | 1 | 0.57 | 92 | 52.87 |
| 93 | 1 | 0.57 | 93 | 53.45 |
| 94 | 1 | 0.57 | 94 | 54.02 |

#### Descriptive Statistics

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#### The FREQ Procedure

| NO  | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 95  | 1         | 0.57    | 95                      | 54.60                 |
| 96  | 1         | 0.57    | 96                      | 55.17                 |
| 97  | 1         | 0.57    | 97                      | 55.75                 |
| 98  | 1         | 0.57    | 98                      | 56.32                 |
| 99  | 1         | 0.57    | 99                      | 56.90                 |
| 100 | 1         | 0.57    | 100                     | 57.47                 |
| 101 | 1         | 0.57    | 101                     | 58.05                 |
| 102 | 1         | 0.57    | 102                     | 58.62                 |
| 103 | 1         | 0.57    | 103                     | 59.20                 |
| 104 | 1         | 0.57    | 104                     | 59.77                 |
| 105 | 1         | 0.57    | 105                     | 60.34                 |
| 106 | 1         | 0.57    | 106                     | 60.92                 |
| 107 | 1         | 0.57    | 107                     | 61.49                 |
| 108 | 1         | 0.57    | 108                     | 62.07                 |
| 109 | 1         | 0.57    | 109                     | 62.64                 |
| 110 | 1         | 0.57    | 110                     | 63.22                 |
| 111 | 1         | 0.57    | 111                     | 63.79                 |
| 112 | 1         | 0.57    | 112                     | 64.37                 |
| 113 | 1         | 0.57    | 113                     | 64.94                 |
| 114 | 1         | 0.57    | 114                     | 65.52                 |
| 115 | 1         | 0.57    | 115                     | 66.09                 |
| 116 | 1         | 0.57    | 116                     | 66.67                 |
| 117 | 1         | 0.57    | 117                     | 67.24                 |
| 118 | 1         | 0.57    | 118                     | 67.82                 |

|     |   |      |     |       |
|-----|---|------|-----|-------|
| 119 | 1 | 0.57 | 119 | 68.39 |
| 120 | 1 | 0.57 | 120 | 68.97 |
| 121 | 1 | 0.57 | 121 | 69.54 |
| 122 | 1 | 0.57 | 122 | 70.11 |
| 123 | 1 | 0.57 | 123 | 70.69 |
| 124 | 1 | 0.57 | 124 | 71.26 |
| 125 | 1 | 0.57 | 125 | 71.84 |
| 126 | 1 | 0.57 | 126 | 72.41 |
| 127 | 1 | 0.57 | 127 | 72.99 |
| 128 | 1 | 0.57 | 128 | 73.56 |
| 129 | 1 | 0.57 | 129 | 74.14 |
| 130 | 1 | 0.57 | 130 | 74.71 |
| 131 | 1 | 0.57 | 131 | 75.29 |
| 132 | 1 | 0.57 | 132 | 75.86 |
| 133 | 1 | 0.57 | 133 | 76.44 |
| 134 | 1 | 0.57 | 134 | 77.01 |
| 135 | 1 | 0.57 | 135 | 77.59 |
| 136 | 1 | 0.57 | 136 | 78.16 |
| 137 | 1 | 0.57 | 137 | 78.74 |
| 138 | 1 | 0.57 | 138 | 79.31 |
| 139 | 1 | 0.57 | 139 | 79.89 |
| 140 | 1 | 0.57 | 140 | 80.46 |
| 141 | 1 | 0.57 | 141 | 81.03 |

#### Descriptive Statistics

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#### The FREQ Procedure

| NO                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 142                                                              | 1         | 0.57    | 142                     | 81.61                 |
| 143                                                              | 1         | 0.57    | 143                     | 82.18                 |
| 144                                                              | 1         | 0.57    | 144                     | 82.76                 |
| 145                                                              | 1         | 0.57    | 145                     | 83.33                 |
| 146                                                              | 1         | 0.57    | 146                     | 83.91                 |
| 147                                                              | 1         | 0.57    | 147                     | 84.48                 |
| 148                                                              | 1         | 0.57    | 148                     | 85.06                 |
| 149                                                              | 1         | 0.57    | 149                     | 85.63                 |
| 150                                                              | 1         | 0.57    | 150                     | 86.21                 |
| 151                                                              | 1         | 0.57    | 151                     | 86.78                 |
| 152                                                              | 1         | 0.57    | 152                     | 87.36                 |
| 153                                                              | 1         | 0.57    | 153                     | 87.93                 |
| 154                                                              | 1         | 0.57    | 154                     | 88.51                 |
| 155                                                              | 1         | 0.57    | 155                     | 89.08                 |
| 156                                                              | 1         | 0.57    | 156                     | 89.66                 |
| 157                                                              | 1         | 0.57    | 157                     | 90.23                 |
| 158                                                              | 1         | 0.57    | 158                     | 90.80                 |
| 159                                                              | 1         | 0.57    | 159                     | 91.38                 |
| 160                                                              | 1         | 0.57    | 160                     | 91.95                 |
| 161                                                              | 1         | 0.57    | 161                     | 92.53                 |
| 162                                                              | 1         | 0.57    | 162                     | 93.10                 |
| 163                                                              | 1         | 0.57    | 163                     | 93.68                 |
| 164                                                              | 1         | 0.57    | 164                     | 94.25                 |
| 165                                                              | 1         | 0.57    | 165                     | 94.83                 |
| 166                                                              | 1         | 0.57    | 166                     | 95.40                 |
| 167                                                              | 1         | 0.57    | 167                     | 95.98                 |
| 168                                                              | 1         | 0.57    | 168                     | 96.55                 |
| 169                                                              | 1         | 0.57    | 169                     | 97.13                 |
| 170                                                              | 1         | 0.57    | 170                     | 97.70                 |
| 171                                                              | 1         | 0.57    | 171                     | 98.28                 |
| 172                                                              | 1         | 0.57    | 172                     | 98.85                 |
| 173                                                              | 1         | 0.57    | 173                     | 99.43                 |
| 174                                                              | 1         | 0.57    | 174                     | 100.00                |

| A1                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 4         | 2.34    | 4                       | 2.34                  |
| 2                                                                | 75        | 43.86   | 79                      | 46.20                 |
| 3                                                                | 53        | 30.99   | 132                     | 77.19                 |
| 4                                                                | 34        | 19.88   | 166                     | 97.08                 |
| 5                                                                | 5         | 2.92    | 171                     | 100.00                |

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Frequency Missing = 3  
Descriptive Statistics

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The FREQ Procedure

| A2                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 138       | 83.64   | 138                     | 83.64                 |
| 2                                                                | 3         | 1.82    | 141                     | 85.45                 |
| 3                                                                | 2         | 1.21    | 143                     | 86.67                 |
| 4                                                                | 22        | 13.33   | 165                     | 100.00                |

Frequency Missing = 9

| A3                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 120       | 70.18   | 120                     | 70.18                 |
| 2                                                                | 6         | 3.51    | 126                     | 73.68                 |
| 3                                                                | 45        | 26.32   | 171                     | 100.00                |

Frequency Missing = 3

| A4                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 16        | 9.47    | 16                      | 9.47                  |
| 2                                                                | 55        | 32.54   | 71                      | 42.01                 |
| 3                                                                | 83        | 49.11   | 154                     | 91.12                 |
| 4                                                                | 15        | 8.88    | 169                     | 100.00                |

Frequency Missing = 5

| A5                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 102       | 63.35   | 102                     | 63.35                 |
| 2                                                                | 43        | 26.71   | 145                     | 90.06                 |
| 3                                                                | 16        | 9.94    | 161                     | 100.00                |

Frequency Missing = 13

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The FREQ Procedure

| A6                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 49        | 28.49   | 49                      | 28.49                 |
| 2                                                                | 123       | 71.51   | 172                     | 100.00                |

Frequency Missing = 2

| A7                                                               | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|------------------------------------------------------------------|-----------|---------|-------------------------|-----------------------|
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |           |         |                         |                       |
| 1                                                                | 24        | 30.77   | 24                      | 30.77                 |
| 2                                                                | 21        | 26.92   | 45                      | 57.69                 |
| 3                                                                | 17        | 21.79   | 62                      | 79.49                 |
| 4                                                                | 16        | 20.51   | 78                      | 100.00                |

Frequency Missing = 96

| A8 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 120       | 69.36   | 120                     | 69.36                 |
| 2  | 53        | 30.64   | 173                     | 100.00                |

Frequency Missing = 1

| A9 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 112       | 64.74   | 112                     | 64.74                 |
| 2  | 45        | 26.01   | 157                     | 90.75                 |
| 3  | 16        | 9.25    | 173                     | 100.00                |

Frequency Missing = 1

Descriptive Statistics

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The FREQ Procedure

| A10 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 124       | 73.81   | 124                     | 73.81                 |
| 2   | 13        | 7.74    | 137                     | 81.55                 |
| 3   | 6         | 3.57    | 143                     | 85.12                 |
| 4   | 6         | 3.57    | 149                     | 88.69                 |
| 5   | 19        | 11.31   | 168                     | 100.00                |

Frequency Missing = 6

| B1 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 10        | 5.78    | 10                      | 5.78                  |
| 2  | 15        | 8.67    | 25                      | 14.45                 |
| 3  | 45        | 26.01   | 70                      | 40.46                 |
| 4  | 78        | 45.09   | 148                     | 85.55                 |
| 5  | 25        | 14.45   | 173                     | 100.00                |

Frequency Missing = 1

| B2 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 11        | 6.32    | 11                      | 6.32                  |
| 2  | 19        | 10.92   | 30                      | 17.24                 |
| 3  | 41        | 23.56   | 71                      | 40.80                 |
| 4  | 76        | 43.68   | 147                     | 84.48                 |
| 5  | 27        | 15.52   | 174                     | 100.00                |

| B3 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 19        | 11.05   | 19                      | 11.05                 |
| 2  | 19        | 11.05   | 38                      | 22.09                 |
| 3  | 43        | 25.00   | 81                      | 47.09                 |
| 4  | 60        | 34.88   | 141                     | 81.98                 |
| 5  | 31        | 18.02   | 172                     | 100.00                |

Frequency Missing = 2

Descriptive Statistics

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## The FREQ Procedure

| B4 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 11        | 6.43    | 11                      | 6.43                  |
| 2  | 21        | 12.28   | 32                      | 18.71                 |
| 3  | 35        | 20.47   | 67                      | 39.18                 |
| 4  | 64        | 37.43   | 131                     | 76.61                 |
| 5  | 40        | 23.39   | 171                     | 100.00                |

Frequency Missing = 3

| B5 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 7         | 4.09    | 7                       | 4.09                  |
| 2  | 35        | 20.47   | 42                      | 24.56                 |
| 3  | 41        | 23.98   | 83                      | 48.54                 |
| 4  | 61        | 35.67   | 144                     | 84.21                 |
| 5  | 27        | 15.79   | 171                     | 100.00                |

Frequency Missing = 3

| B6 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 7         | 4.07    | 7                       | 4.07                  |
| 2  | 24        | 13.95   | 31                      | 18.02                 |
| 3  | 43        | 25.00   | 74                      | 43.02                 |
| 4  | 59        | 34.30   | 133                     | 77.33                 |
| 5  | 39        | 22.67   | 172                     | 100.00                |

Frequency Missing = 2

| B7 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 7         | 4.02    | 7                       | 4.02                  |
| 2  | 18        | 10.34   | 25                      | 14.37                 |
| 3  | 50        | 28.74   | 75                      | 43.10                 |
| 4  | 72        | 41.38   | 147                     | 84.48                 |
| 5  | 27        | 15.52   | 174                     | 100.00                |

Descriptive Statistics

## The FREQ Procedure

| B8 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 16        | 9.25    | 16                      | 9.25                  |
| 2  | 25        | 14.45   | 41                      | 23.70                 |
| 3  | 45        | 26.01   | 86                      | 49.71                 |
| 4  | 69        | 39.88   | 155                     | 89.60                 |
| 5  | 18        | 10.40   | 173                     | 100.00                |

Frequency Missing = 1

| B9 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 11        | 6.43    | 11                      | 6.43                  |
| 2  | 27        | 15.79   | 38                      | 22.22                 |
| 3  | 47        | 27.49   | 85                      | 49.71                 |
| 4  | 51        | 29.82   | 136                     | 79.53                 |
| 5  | 35        | 20.47   | 171                     | 100.00                |

Frequency Missing = 3

| B10 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 15        | 8.77    | 15                      | 8.77                  |
| 2   | 25        | 14.62   | 40                      | 23.39                 |
| 3   | 49        | 28.65   | 89                      | 52.05                 |
| 4   | 54        | 31.58   | 143                     | 83.63                 |
| 5   | 28        | 16.37   | 171                     | 100.00                |

Frequency Missing = 3

| B11 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 11        | 6.36    | 11                      | 6.36                  |
| 2   | 18        | 10.40   | 29                      | 16.76                 |
| 3   | 46        | 26.59   | 75                      | 43.35                 |
| 4   | 67        | 38.73   | 142                     | 82.08                 |
| 5   | 31        | 17.92   | 173                     | 100.00                |

Frequency Missing = 1

Descriptive Statistics

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The FREQ Procedure

| B12 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 15        | 8.62    | 15                      | 8.62                  |
| 2   | 18        | 10.34   | 33                      | 18.97                 |
| 3   | 50        | 28.74   | 83                      | 47.70                 |
| 4   | 63        | 36.21   | 146                     | 83.91                 |
| 5   | 28        | 16.09   | 174                     | 100.00                |

| B13 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 12        | 6.94    | 12                      | 6.94                  |
| 2   | 24        | 13.87   | 36                      | 20.81                 |
| 3   | 52        | 30.06   | 88                      | 50.87                 |
| 4   | 69        | 39.88   | 157                     | 90.75                 |
| 5   | 16        | 9.25    | 173                     | 100.00                |

Frequency Missing = 1

| B14 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 5         | 2.91    | 5                       | 2.91                  |
| 2   | 20        | 11.63   | 25                      | 14.53                 |
| 3   | 55        | 31.98   | 80                      | 46.51                 |
| 4   | 55        | 31.98   | 135                     | 78.49                 |
| 5   | 37        | 21.51   | 172                     | 100.00                |

Frequency Missing = 2

| B15 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 7         | 4.12    | 7                       | 4.12                  |
| 2   | 21        | 12.35   | 28                      | 16.47                 |
| 3   | 53        | 31.18   | 81                      | 47.65                 |
| 4   | 52        | 30.59   | 133                     | 78.24                 |
| 5   | 37        | 21.76   | 170                     | 100.00                |

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Frequency Missing = 4

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| B16 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 6         | 3.51    | 6                       | 3.51                  |
| 2   | 26        | 15.20   | 32                      | 18.71                 |
| 3   | 44        | 25.73   | 76                      | 44.44                 |
| 4   | 76        | 44.44   | 152                     | 88.89                 |
| 5   | 19        | 11.11   | 171                     | 100.00                |

Frequency Missing = 3

| B17 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 9         | 5.17    | 9                       | 5.17                  |
| 2   | 21        | 12.07   | 30                      | 17.24                 |
| 3   | 52        | 29.89   | 82                      | 47.13                 |
| 4   | 65        | 37.36   | 147                     | 84.48                 |
| 5   | 27        | 15.52   | 174                     | 100.00                |

| B18 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 7         | 4.05    | 7                       | 4.05                  |
| 2   | 30        | 17.34   | 37                      | 21.39                 |
| 3   | 53        | 30.64   | 90                      | 52.02                 |
| 4   | 67        | 38.73   | 157                     | 90.75                 |
| 5   | 16        | 9.25    | 173                     | 100.00                |

Frequency Missing = 1

| C1 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 14        | 8.05    | 14                      | 8.05                  |
| 2  | 22        | 12.64   | 36                      | 20.69                 |
| 3  | 37        | 21.26   | 73                      | 41.95                 |
| 4  | 84        | 48.28   | 157                     | 90.23                 |
| 5  | 17        | 9.77    | 174                     | 100.00                |

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| C2 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 20        | 11.63   | 20                      | 11.63                 |
| 2  | 48        | 27.91   | 68                      | 39.53                 |
| 3  | 37        | 21.51   | 105                     | 61.05                 |
| 4  | 57        | 33.14   | 162                     | 94.19                 |
| 5  | 10        | 5.81    | 172                     | 100.00                |

Frequency Missing = 2

| C3 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 22        | 13.02   | 22                      | 13.02                 |
| 2  | 37        | 21.89   | 59                      | 34.91                 |
| 3  | 34        | 20.12   | 93                      | 55.03                 |

|   |    |       |     |        |
|---|----|-------|-----|--------|
| 4 | 59 | 34.91 | 152 | 89.94  |
| 5 | 17 | 10.06 | 169 | 100.00 |

Frequency Missing = 5

| C4 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 17        | 9.77    | 17                      | 9.77                  |
| 2  | 24        | 13.79   | 41                      | 23.56                 |
| 3  | 42        | 24.14   | 83                      | 47.70                 |
| 4  | 65        | 37.36   | 148                     | 85.06                 |
| 5  | 26        | 14.94   | 174                     | 100.00                |

| C5 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 15        | 8.77    | 15                      | 8.77                  |
| 2  | 19        | 11.11   | 34                      | 19.88                 |
| 3  | 48        | 28.07   | 82                      | 47.95                 |
| 4  | 68        | 39.77   | 150                     | 87.72                 |
| 5  | 21        | 12.28   | 171                     | 100.00                |

Frequency Missing = 3

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| C6 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 18        | 10.40   | 18                      | 10.40                 |
| 2  | 19        | 10.98   | 37                      | 21.39                 |
| 3  | 52        | 30.06   | 89                      | 51.45                 |
| 4  | 67        | 38.73   | 156                     | 90.17                 |
| 5  | 17        | 9.83    | 173                     | 100.00                |

Frequency Missing = 1

| C7 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 13        | 7.51    | 13                      | 7.51                  |
| 2  | 31        | 17.92   | 44                      | 25.43                 |
| 3  | 53        | 30.64   | 97                      | 56.07                 |
| 4  | 62        | 35.84   | 159                     | 91.91                 |
| 5  | 14        | 8.09    | 173                     | 100.00                |

Frequency Missing = 1

| C8 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 18        | 10.47   | 18                      | 10.47                 |
| 2  | 32        | 18.60   | 50                      | 29.07                 |
| 3  | 48        | 27.91   | 98                      | 56.98                 |
| 4  | 58        | 33.72   | 156                     | 90.70                 |
| 5  | 16        | 9.30    | 172                     | 100.00                |

Frequency Missing = 2

| C9 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 25        | 14.62   | 25                      | 14.62                 |
| 2  | 40        | 23.39   | 65                      | 38.01                 |
| 3  | 39        | 22.81   | 104                     | 60.82                 |
| 4  | 53        | 30.99   | 157                     | 91.81                 |

|   |    |      |     |        |
|---|----|------|-----|--------|
| 5 | 14 | 8.19 | 171 | 100.00 |
|---|----|------|-----|--------|

Frequency Missing = 3

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| C10 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 29        | 17.06   | 29                      | 17.06                 |
| 2   | 33        | 19.41   | 62                      | 36.47                 |
| 3   | 39        | 22.94   | 101                     | 59.41                 |
| 4   | 51        | 30.00   | 152                     | 89.41                 |
| 5   | 18        | 10.59   | 170                     | 100.00                |

Frequency Missing = 4

| C11 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 15        | 8.72    | 15                      | 8.72                  |
| 2   | 29        | 16.86   | 44                      | 25.58                 |
| 3   | 53        | 30.81   | 97                      | 56.40                 |
| 4   | 52        | 30.23   | 149                     | 86.63                 |
| 5   | 23        | 13.37   | 172                     | 100.00                |

Frequency Missing = 2

| C12 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 13        | 7.56    | 13                      | 7.56                  |
| 2   | 29        | 16.86   | 42                      | 24.42                 |
| 3   | 46        | 26.74   | 88                      | 51.16                 |
| 4   | 69        | 40.12   | 157                     | 91.28                 |
| 5   | 15        | 8.72    | 172                     | 100.00                |

Frequency Missing = 2

| C13 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 9         | 5.26    | 9                       | 5.26                  |
| 2   | 28        | 16.37   | 37                      | 21.64                 |
| 3   | 59        | 34.50   | 96                      | 56.14                 |
| 4   | 59        | 34.50   | 155                     | 90.64                 |
| 5   | 16        | 9.36    | 171                     | 100.00                |

Frequency Missing = 3

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| C14 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 8         | 4.62    | 8                       | 4.62                  |
| 2   | 30        | 17.34   | 38                      | 21.97                 |
| 3   | 56        | 32.37   | 94                      | 54.34                 |
| 4   | 68        | 39.31   | 162                     | 93.64                 |
| 5   | 11        | 6.36    | 173                     | 100.00                |

Frequency Missing = 1

| C15 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 7         | 4.07    | 7                       | 4.07                  |
| 2   | 28        | 16.28   | 35                      | 20.35                 |
| 3   | 54        | 31.40   | 89                      | 51.74                 |
| 4   | 67        | 38.95   | 156                     | 90.70                 |
| 5   | 16        | 9.30    | 172                     | 100.00                |

Frequency Missing = 2

| C16 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 7         | 4.07    | 7                       | 4.07                  |
| 2   | 30        | 17.44   | 37                      | 21.51                 |
| 3   | 48        | 27.91   | 85                      | 49.42                 |
| 4   | 73        | 42.44   | 158                     | 91.86                 |
| 5   | 14        | 8.14    | 172                     | 100.00                |

Frequency Missing = 2

| C17 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 29        | 16.86   | 29                      | 16.86                 |
| 2   | 26        | 15.12   | 55                      | 31.98                 |
| 3   | 52        | 30.23   | 107                     | 62.21                 |
| 4   | 56        | 32.56   | 163                     | 94.77                 |
| 5   | 9         | 5.23    | 172                     | 100.00                |

Frequency Missing = 2

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| D1 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 18        | 10.47   | 18                      | 10.47                 |
| 2  | 23        | 13.37   | 41                      | 23.84                 |
| 3  | 49        | 28.49   | 90                      | 52.33                 |
| 4  | 66        | 38.37   | 156                     | 90.70                 |
| 5  | 16        | 9.30    | 172                     | 100.00                |

Frequency Missing = 2

| D2 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 18        | 10.40   | 18                      | 10.40                 |
| 2  | 32        | 18.50   | 50                      | 28.90                 |
| 3  | 59        | 34.10   | 109                     | 63.01                 |
| 4  | 55        | 31.79   | 164                     | 94.80                 |
| 5  | 9         | 5.20    | 173                     | 100.00                |

Frequency Missing = 1

| D3 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 17        | 9.83    | 17                      | 9.83                  |
| 2  | 32        | 18.50   | 49                      | 28.32                 |
| 3  | 60        | 34.68   | 109                     | 63.01                 |
| 4  | 54        | 31.21   | 163                     | 94.22                 |
| 5  | 10        | 5.78    | 173                     | 100.00                |

Frequency Missing = 1

| D4 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 10        | 5.81    | 10                      | 5.81                  |
| 2  | 27        | 15.70   | 37                      | 21.51                 |
| 3  | 68        | 39.53   | 105                     | 61.05                 |
| 4  | 58        | 33.72   | 163                     | 94.77                 |
| 5  | 9         | 5.23    | 172                     | 100.00                |

Frequency Missing = 2

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#### The FREQ Procedure

| D5 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 11        | 6.32    | 11                      | 6.32                  |
| 2  | 25        | 14.37   | 36                      | 20.69                 |
| 3  | 71        | 40.80   | 107                     | 61.49                 |
| 4  | 50        | 28.74   | 157                     | 90.23                 |
| 5  | 17        | 9.77    | 174                     | 100.00                |

| D6 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 15        | 8.67    | 15                      | 8.67                  |
| 2  | 30        | 17.34   | 45                      | 26.01                 |
| 3  | 58        | 33.53   | 103                     | 59.54                 |
| 4  | 64        | 36.99   | 167                     | 96.53                 |
| 5  | 6         | 3.47    | 173                     | 100.00                |

Frequency Missing = 1

| D7 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 12        | 6.98    | 12                      | 6.98                  |
| 2  | 31        | 18.02   | 43                      | 25.00                 |
| 3  | 68        | 39.53   | 111                     | 64.53                 |
| 4  | 50        | 29.07   | 161                     | 93.60                 |
| 5  | 11        | 6.40    | 172                     | 100.00                |

Frequency Missing = 2

| D8 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 12        | 6.94    | 12                      | 6.94                  |
| 2  | 42        | 24.28   | 54                      | 31.21                 |
| 3  | 54        | 31.21   | 108                     | 62.43                 |
| 4  | 58        | 33.53   | 166                     | 95.95                 |
| 5  | 7         | 4.05    | 173                     | 100.00                |

Frequency Missing = 1

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| D9 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 10        | 5.78    | 10                      | 5.78                  |
| 2  | 24        | 13.87   | 34                      | 19.65                 |
| 3  | 48        | 27.75   | 82                      | 47.40                 |

|   |    |       |     |        |
|---|----|-------|-----|--------|
| 4 | 65 | 37.57 | 147 | 84.97  |
| 5 | 26 | 15.03 | 173 | 100.00 |

Frequency Missing = 1

| D10 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 23        | 13.22   | 23                      | 13.22                 |
| 2   | 27        | 15.52   | 50                      | 28.74                 |
| 3   | 44        | 25.29   | 94                      | 54.02                 |
| 4   | 70        | 40.23   | 164                     | 94.25                 |
| 5   | 10        | 5.75    | 174                     | 100.00                |

| D11 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|-----|-----------|---------|-------------------------|-----------------------|
| 1   | 12        | 6.90    | 12                      | 6.90                  |
| 2   | 37        | 21.26   | 49                      | 28.16                 |
| 3   | 53        | 30.46   | 102                     | 58.62                 |
| 4   | 62        | 35.63   | 164                     | 94.25                 |
| 5   | 10        | 5.75    | 174                     | 100.00                |

| E1 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 5         | 2.94    | 5                       | 2.94                  |
| 2  | 23        | 13.53   | 28                      | 16.47                 |
| 3  | 37        | 21.76   | 65                      | 38.24                 |
| 4  | 74        | 43.53   | 139                     | 81.76                 |
| 5  | 31        | 18.24   | 170                     | 100.00                |

Frequency Missing = 4

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| E2 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 13        | 7.60    | 13                      | 7.60                  |
| 2  | 24        | 14.04   | 37                      | 21.64                 |
| 3  | 40        | 23.39   | 77                      | 45.03                 |
| 4  | 63        | 36.84   | 140                     | 81.87                 |
| 5  | 31        | 18.13   | 171                     | 100.00                |

Frequency Missing = 3

| E3 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 9         | 5.33    | 9                       | 5.33                  |
| 2  | 15        | 8.88    | 24                      | 14.20                 |
| 3  | 26        | 15.38   | 50                      | 29.59                 |
| 4  | 72        | 42.60   | 122                     | 72.19                 |
| 5  | 47        | 27.81   | 169                     | 100.00                |

Frequency Missing = 5

| E4 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 21        | 12.35   | 21                      | 12.35                 |
| 2  | 33        | 19.41   | 54                      | 31.76                 |
| 3  | 41        | 24.12   | 95                      | 55.88                 |
| 4  | 50        | 29.41   | 145                     | 85.29                 |
| 5  | 25        | 14.71   | 170                     | 100.00                |

Frequency Missing = 4

| E5 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 145       | 85.80   | 145                     | 85.80                 |
| 2  | 24        | 14.20   | 169                     | 100.00                |

Frequency Missing = 5

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| E6 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 155       | 91.18   | 155                     | 91.18                 |
| 2  | 15        | 8.82    | 170                     | 100.00                |

Frequency Missing = 4

| E7 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 150       | 88.76   | 150                     | 88.76                 |
| 2  | 19        | 11.24   | 169                     | 100.00                |

Frequency Missing = 5

| E8 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 128       | 76.19   | 128                     | 76.19                 |
| 2  | 40        | 23.81   | 168                     | 100.00                |

Frequency Missing = 6

| E9 | Frequency | Percent | Cumulative<br>Frequency | Cumulative<br>Percent |
|----|-----------|---------|-------------------------|-----------------------|
| 1  | 79        | 49.07   | 79                      | 49.07                 |
| 2  | 22        | 13.66   | 101                     | 62.73                 |
| 3  | 60        | 37.27   | 161                     | 100.00                |

Frequency Missing = 13

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The MEANS Procedure

| Variable | N   | Mean      | Std Dev   | Minimum   | Maximum   |
|----------|-----|-----------|-----------|-----------|-----------|
| B1       | 173 | 3.5375723 | 1.0314975 | 1.0000000 | 5.0000000 |
| B2       | 174 | 3.5114943 | 1.0791696 | 1.0000000 | 5.0000000 |
| B3       | 172 | 3.3779070 | 1.2198074 | 1.0000000 | 5.0000000 |
| B4       | 171 | 3.5906433 | 1.1615027 | 1.0000000 | 5.0000000 |
| B5       | 171 | 3.3859649 | 1.1022072 | 1.0000000 | 5.0000000 |
| B6       | 172 | 3.5755814 | 1.1082293 | 1.0000000 | 5.0000000 |
| B7       | 174 | 3.5402299 | 1.0063911 | 1.0000000 | 5.0000000 |
| B8       | 173 | 3.2774566 | 1.1223990 | 1.0000000 | 5.0000000 |
| B9       | 171 | 3.4210526 | 1.1674109 | 1.0000000 | 5.0000000 |
| B10      | 171 | 3.3216374 | 1.1714996 | 1.0000000 | 5.0000000 |
| B11      | 173 | 3.5144509 | 1.0976028 | 1.0000000 | 5.0000000 |
| B12      | 174 | 3.4080460 | 1.1379648 | 1.0000000 | 5.0000000 |

|     |     |           |           |           |           |
|-----|-----|-----------|-----------|-----------|-----------|
| B13 | 173 | 3.3063584 | 1.0475969 | 1.0000000 | 5.0000000 |
| B14 | 172 | 3.5755814 | 1.0429867 | 1.0000000 | 5.0000000 |
| B15 | 170 | 3.5352941 | 1.0886402 | 1.0000000 | 5.0000000 |
| B16 | 171 | 3.4444444 | 0.9947575 | 1.0000000 | 5.0000000 |
| B17 | 174 | 3.4597701 | 1.0568204 | 1.0000000 | 5.0000000 |
| B18 | 173 | 3.3179191 | 0.9985875 | 1.0000000 | 5.0000000 |
| C1  | 174 | 3.3908046 | 1.0843748 | 1.0000000 | 5.0000000 |
| C2  | 172 | 2.9360465 | 1.1452840 | 1.0000000 | 5.0000000 |
| C3  | 169 | 3.0710059 | 1.2226725 | 1.0000000 | 5.0000000 |
| C4  | 174 | 3.3390805 | 1.1802671 | 1.0000000 | 5.0000000 |
| C5  | 171 | 3.3567251 | 1.1094242 | 1.0000000 | 5.0000000 |
| C6  | 173 | 3.2658960 | 1.1148281 | 1.0000000 | 5.0000000 |
| C7  | 173 | 3.1907514 | 1.0639582 | 1.0000000 | 5.0000000 |
| C8  | 172 | 3.1279070 | 1.1424454 | 1.0000000 | 5.0000000 |
| C9  | 171 | 2.9473684 | 1.2090986 | 1.0000000 | 5.0000000 |
| C10 | 170 | 2.9764706 | 1.2684284 | 1.0000000 | 5.0000000 |
| C11 | 172 | 3.2267442 | 1.1449277 | 1.0000000 | 5.0000000 |
| C12 | 172 | 3.2558140 | 1.0780755 | 1.0000000 | 5.0000000 |
| C13 | 171 | 3.2631579 | 1.0150569 | 1.0000000 | 5.0000000 |
| C14 | 173 | 3.2543353 | 0.9729159 | 1.0000000 | 5.0000000 |
| C15 | 172 | 3.3313953 | 0.9915151 | 1.0000000 | 5.0000000 |
| C16 | 172 | 3.3313953 | 0.9915151 | 1.0000000 | 5.0000000 |
| C17 | 172 | 2.9418605 | 1.1683412 | 1.0000000 | 5.0000000 |
| D1  | 172 | 3.2267442 | 1.1243113 | 1.0000000 | 5.0000000 |
| D2  | 173 | 3.0289017 | 1.0643687 | 1.0000000 | 5.0000000 |
| D3  | 173 | 3.0462428 | 1.0610166 | 1.0000000 | 5.0000000 |
| D4  | 172 | 3.1686047 | 0.9554720 | 1.0000000 | 5.0000000 |
| D5  | 174 | 3.2126437 | 1.0175687 | 1.0000000 | 5.0000000 |
| D6  | 173 | 3.0924855 | 1.0130550 | 1.0000000 | 5.0000000 |
| D7  | 172 | 3.0988372 | 1.0009346 | 1.0000000 | 5.0000000 |
| D8  | 173 | 3.0346821 | 1.0109629 | 1.0000000 | 5.0000000 |
| D9  | 173 | 3.4219653 | 1.0842330 | 1.0000000 | 5.0000000 |
| D10 | 174 | 3.0977011 | 1.1463415 | 1.0000000 | 5.0000000 |
| D11 | 174 | 3.1206897 | 1.0326058 | 1.0000000 | 5.0000000 |
| E1  | 170 | 3.6058824 | 1.0279932 | 1.0000000 | 5.0000000 |

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# Descriptive Statistics

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## The MEANS Procedure

| Variable | N   | Mean      | Std Dev   | Minimum   | Maximum   |
|----------|-----|-----------|-----------|-----------|-----------|
| E2       | 171 | 3.4385965 | 1.1634261 | 1.0000000 | 5.0000000 |
| E3       | 169 | 3.7869822 | 1.1082251 | 1.0000000 | 5.0000000 |
| E4       | 170 | 3.1470588 | 1.2482497 | 1.0000000 | 5.0000000 |

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## Annexure E: Factor Analysis

Eksploratory Factor Analysis:Section B

1

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2014

### The FACTOR Procedure

|                          |          |
|--------------------------|----------|
| Input Data Type          | Raw Data |
| Number of Records Read   | 174      |
| Number of Records Used   | 150      |
| N for Significance Tests | 150      |

### Means and Standard Deviations from 150 Observations

| Variable | Mean      | Std Dev   |
|----------|-----------|-----------|
| B1       | 3.4933333 | 1.0281061 |
| B2       | 3.5600000 | 1.0393596 |
| B3       | 3.4066667 | 1.1877262 |
| B4       | 3.6066667 | 1.1345499 |
| B5       | 3.4000000 | 1.0991150 |
| B6       | 3.5400000 | 1.0845467 |
| B7       | 3.5466667 | 0.9524724 |
| B8       | 3.2866667 | 1.0576450 |
| B9       | 3.4733333 | 1.1568104 |
| B10      | 3.3600000 | 1.1427037 |
| B11      | 3.5266667 | 1.0599270 |
| B12      | 3.4200000 | 1.0760978 |
| B13      | 3.2800000 | 1.0240071 |
| B14      | 3.6133333 | 1.0019221 |
| B15      | 3.4933333 | 1.0914350 |
| B16      | 3.4866667 | 0.9605414 |
| B17      | 3.4933333 | 1.0410801 |
| B18      | 3.2866667 | 0.9577425 |

Eksploratory Factor Analysis:Section B

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### The FACTOR Procedure

#### Correlations

|     | B1      | B2      | B3      | B4      | B5      | B6      |
|-----|---------|---------|---------|---------|---------|---------|
| B7  |         |         |         |         |         |         |
| B1  | 1.00000 | 0.76349 | 0.68651 | 0.69107 | 0.66757 | 0.61418 |
| B2  | 0.76349 | 1.00000 | 0.70046 | 0.68320 | 0.68972 | 0.59324 |
| B3  | 0.68651 | 0.70046 | 1.00000 | 0.74206 | 0.73826 | 0.68284 |
| B4  | 0.69107 | 0.68320 | 0.74206 | 1.00000 | 0.77286 | 0.69739 |
| B5  | 0.66757 | 0.68972 | 0.73826 | 0.77286 | 1.00000 | 0.65648 |
| B6  | 0.61418 | 0.59324 | 0.68284 | 0.69739 | 0.65648 | 1.00000 |
| B7  | 0.63428 | 0.59036 | 0.54968 | 0.62264 | 0.56544 | 0.68686 |
| B8  | 0.59738 | 0.63446 | 0.64386 | 0.62594 | 0.58196 | 0.67157 |
| B9  | 0.41743 | 0.43115 | 0.53793 | 0.52121 | 0.53101 | 0.54382 |
| B10 | 0.55619 | 0.56373 | 0.60843 | 0.59657 | 0.60062 | 0.61649 |
| B11 | 0.56062 | 0.63822 | 0.61241 | 0.60874 | 0.60144 | 0.62085 |
| B12 | 0.55761 | 0.59838 | 0.59011 | 0.54301 | 0.54928 | 0.54044 |

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0.56025 |         |         |         |         |         |         |
| B13     | 0.53090 | 0.53903 | 0.52378 | 0.45937 | 0.49016 | 0.52164 |
| 0.44067 |         |         |         |         |         |         |
| B14     | 0.47962 | 0.49290 | 0.56729 | 0.53838 | 0.53753 | 0.51461 |
| 0.51133 |         |         |         |         |         |         |
| B15     | 0.51732 | 0.53578 | 0.58455 | 0.54799 | 0.60087 | 0.57288 |
| 0.52001 |         |         |         |         |         |         |
| B16     | 0.51641 | 0.54533 | 0.61365 | 0.58945 | 0.57722 | 0.54490 |
| 0.49218 |         |         |         |         |         |         |
| B17     | 0.53607 | 0.51828 | 0.65624 | 0.55745 | 0.56541 | 0.54114 |
| 0.52486 |         |         |         |         |         |         |
| B18     | 0.57790 | 0.56580 | 0.62842 | 0.56152 | 0.54065 | 0.58009 |
| 0.52599 |         |         |         |         |         |         |

Values less than 0.3 are not printed.

| Correlations |         |         |         |         |         |         |
|--------------|---------|---------|---------|---------|---------|---------|
|              | B8      | B9      | B10     | B11     | B12     | B13     |
| B14          |         |         |         |         |         |         |
| B1           | 0.59738 | 0.41743 | 0.55619 | 0.56062 | 0.55761 | 0.53090 |
| 0.47962      |         |         |         |         |         |         |
| B2           | 0.63446 | 0.43115 | 0.56373 | 0.63822 | 0.59838 | 0.53903 |
| 0.49290      |         |         |         |         |         |         |
| B3           | 0.64386 | 0.53793 | 0.60843 | 0.61241 | 0.59011 | 0.52378 |
| 0.56729      |         |         |         |         |         |         |
| B4           | 0.62594 | 0.52121 | 0.59657 | 0.60874 | 0.54301 | 0.45937 |
| 0.53838      |         |         |         |         |         |         |
| B5           | 0.58196 | 0.53101 | 0.60062 | 0.60144 | 0.54928 | 0.49016 |
| 0.53753      |         |         |         |         |         |         |
| B6           | 0.67157 | 0.54382 | 0.61649 | 0.62085 | 0.54044 | 0.52164 |
| 0.51461      |         |         |         |         |         |         |
| B7           | 0.56292 | 0.53716 | 0.55176 | 0.54389 | 0.56025 | 0.44067 |
| 0.51133      |         |         |         |         |         |         |
| B8           | 1.00000 | 0.54112 | 0.63039 | 0.64271 | 0.63651 | 0.62563 |
| 0.55498      |         |         |         |         |         |         |
| B9           | 0.54112 | 1.00000 | 0.44394 | 0.49047 | 0.53472 | 0.44827 |
| 0.54114      |         |         |         |         |         |         |
| B10          | 0.63039 | 0.44394 | 1.00000 | 0.65697 | 0.64578 | 0.65890 |
| 0.59722      |         |         |         |         |         |         |
| B11          | 0.64271 | 0.49047 | 0.65697 | 1.00000 | 0.65208 | 0.59287 |
| 0.49008      |         |         |         |         |         |         |
| B12          | 0.63651 | 0.53472 | 0.64578 | 0.65208 | 1.00000 | 0.67825 |
| 0.61850      |         |         |         |         |         |         |
| B13          | 0.62563 | 0.44827 | 0.65890 | 0.59287 | 0.67825 | 1.00000 |
| 0.51835      |         |         |         |         |         |         |
| B14          | 0.55498 | 0.54114 | 0.59722 | 0.49008 | 0.61850 | 0.51835 |
| 1.00000      |         |         |         |         |         |         |
| B15          | 0.57435 | 0.52610 | 0.67459 | 0.62672 | 0.65097 | 0.67424 |
| 0.58681      |         |         |         |         |         |         |
| B16          | 0.64790 | 0.54026 | 0.56083 | 0.58375 | 0.59307 | 0.50192 |
| 0.60829      |         |         |         |         |         |         |
| B17          | 0.55337 | 0.44567 | 0.59439 | 0.57796 | 0.54467 | 0.53688 |
| 0.55085      |         |         |         |         |         |         |
| B18          | 0.57426 | 0.56728 | 0.52444 | 0.61719 | 0.59871 | 0.52666 |
| 0.48697      |         |         |         |         |         |         |

Values less than 0.3 are not printed.

#### Eksploratory Factor Analysis:Section B

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#### The FACTOR Procedure

| Correlations |         |         |         |         |
|--------------|---------|---------|---------|---------|
|              | B15     | B16     | B17     | B18     |
| B1           | 0.51732 | 0.51641 | 0.53607 | 0.57790 |
| B2           | 0.53578 | 0.54533 | 0.51828 | 0.56580 |
| B3           | 0.58455 | 0.61365 | 0.65624 | 0.62842 |
| B4           | 0.54799 | 0.58945 | 0.55745 | 0.56152 |
| B5           | 0.60087 | 0.57722 | 0.56541 | 0.54065 |

|     |         |         |         |         |
|-----|---------|---------|---------|---------|
| B6  | 0.57288 | 0.54490 | 0.54114 | 0.58009 |
| B7  | 0.52001 | 0.49218 | 0.52486 | 0.52599 |
| B8  | 0.57435 | 0.64790 | 0.55337 | 0.57426 |
| B9  | 0.52610 | 0.54026 | 0.44567 | 0.56728 |
| B10 | 0.67459 | 0.56083 | 0.59439 | 0.52444 |
| B11 | 0.62672 | 0.58375 | 0.57796 | 0.61719 |
| B12 | 0.65097 | 0.59307 | 0.54467 | 0.59871 |
| B13 | 0.67424 | 0.50192 | 0.53688 | 0.52666 |
| B14 | 0.58681 | 0.60829 | 0.55085 | 0.48697 |
| B15 | 1.00000 | 0.66570 | 0.64082 | 0.65994 |
| B16 | 0.66570 | 1.00000 | 0.61065 | 0.62794 |
| B17 | 0.64082 | 0.61065 | 1.00000 | 0.59089 |
| B18 | 0.65994 | 0.62794 | 0.59089 | 1.00000 |

Values less than 0.3 are not printed.

#### Eksploratory Factor Analysis:Section B

4

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#### The FACTOR Procedure Initial Factor Method: Principal Components

##### Inverse Correlation Matrix

|     | B1         | B2         | B3         | B4         | B5         |   |
|-----|------------|------------|------------|------------|------------|---|
| B6  |            |            |            |            |            |   |
| B1  | 3.23305691 | -1.2125336 | -0.3975662 | -0.467704  | -0.3237204 |   |
| B2  | -1.2125336 | 3.34612989 | -0.5828725 | -0.2001956 | -0.5647695 |   |
| B3  | -0.3975662 | -0.5828725 | 3.70829267 | -0.6393787 | -0.6610028 | - |
| B4  | -0.467704  | -0.2001956 | -0.6393787 | 3.58247982 | -1.1583452 | - |
| B5  | -0.3237204 | -0.5647695 | -0.6610028 | -1.1583452 | 3.39671796 | - |
| B6  | 0.00863757 | 0.30198863 | -0.6124845 | -0.4779494 | -0.2861587 |   |
| B7  | -0.672622  | -0.2942065 | 0.56235486 | -0.2844435 | 0.16700073 | - |
| B8  | -0.0680309 | -0.3823474 | -0.1314259 | -0.177913  | 0.2519175  | - |
| B9  | 0.340748   | 0.28041883 | -0.2265406 | -0.0755032 | -0.3495048 | - |
| B10 | -0.0042163 | 0.1649552  | -0.1245502 | -0.19649   | -0.1804313 | - |
| B11 | 0.25271775 | -0.5483264 | 0.12196198 | -0.1849494 | -0.1118685 | - |
| B12 | 0.00916273 | -0.2337465 | -0.1573245 | 0.11170611 | 0.06544827 |   |
| B13 | -0.4054019 | -0.155604  | 0.12745101 | 0.33424313 | 0.15019371 | - |
| B14 | 0.03925764 | -0.0027205 | -0.1577201 | -0.1012181 | -0.0356862 |   |
| B15 | 0.22378209 | 0.07468524 | 0.24834581 | 0.13753571 | -0.5150247 | - |
| B16 | 0.05864824 | -0.0343293 | -0.0744242 | -0.2355351 | -0.0654484 |   |
| B17 | -0.049108  | 0.25268625 | -0.7729928 | 0.0549824  | -0.0461383 |   |
| B18 | -0.4206507 | -0.0703188 | -0.3574292 | 0.02006283 | 0.33877955 | - |

##### Inverse Correlation Matrix

|     | B7         | B8         | B9         | B10        | B11        |   |
|-----|------------|------------|------------|------------|------------|---|
| B12 |            |            |            |            |            |   |
| B1  | -0.672622  | -0.0680309 | 0.340748   | -0.0042163 | 0.25271775 |   |
| B2  | -0.2942065 | -0.3823474 | 0.28041883 | 0.1649552  | -0.5483264 | - |
| B3  | 0.56235486 | -0.1314259 | -0.2265406 | -0.1245502 | 0.12196198 | - |
| B4  |            |            |            |            |            |   |
| B5  |            |            |            |            |            |   |
| B6  |            |            |            |            |            |   |
| B7  |            |            |            |            |            |   |
| B8  |            |            |            |            |            |   |
| B9  |            |            |            |            |            |   |
| B10 |            |            |            |            |            |   |
| B11 |            |            |            |            |            |   |
| B12 |            |            |            |            |            |   |
| B13 |            |            |            |            |            |   |
| B14 |            |            |            |            |            |   |
| B15 |            |            |            |            |            |   |
| B16 |            |            |            |            |            |   |
| B17 |            |            |            |            |            |   |
| B18 |            |            |            |            |            |   |

|            |            |            |            |            |            |   |
|------------|------------|------------|------------|------------|------------|---|
| B4         | -0.2844435 | -0.177913  | -0.0755032 | -0.19649   | -0.1849494 |   |
| 0.11170611 |            |            |            |            |            |   |
| B5         | 0.16700073 | 0.2519175  | -0.3495048 | -0.1804313 | -0.1118685 |   |
| 0.06544827 |            |            |            |            |            |   |
| B6         | -0.963438  | -0.6645269 | -0.1031506 | -0.2456757 | -0.2967157 |   |
| 0.35613998 |            |            |            |            |            |   |
| B7         | 2.58310202 | 0.03234382 | -0.458488  | -0.1795598 | 0.0244055  | - |
| 0.3749581  |            |            |            |            |            |   |
| B8         | 0.03234382 | 2.93482034 | -0.244658  | -0.2419394 | -0.2441962 | - |
| 0.224744   |            |            |            |            |            |   |
| B9         | -0.458488  | -0.244658  | 2.04106687 | 0.30283089 | -0.0351916 | - |
| 0.1671681  |            |            |            |            |            |   |
| B10        | -0.1795598 | -0.2419394 | 0.30283089 | 2.85801844 | -0.5018437 | - |
| 0.2395156  |            |            |            |            |            |   |
| B11        | 0.0244055  | -0.2441962 | -0.0351916 | -0.5018437 | 2.70541087 | - |
| 0.4658173  |            |            |            |            |            |   |
| B12        | -0.3749581 | -0.224744  | -0.1671681 | -0.2395156 | -0.4658173 |   |
| 2.8931066  |            |            |            |            |            |   |
| B13        | 0.38478156 | -0.5793461 | -0.1250396 | -0.5455262 | -0.1146752 | - |
| 0.7223344  |            |            |            |            |            |   |
| B14        | -0.1301736 | -0.0287986 | -0.371492  | -0.4057837 | 0.28597306 | - |
| 0.5007672  |            |            |            |            |            |   |
| B15        | -0.0674794 | 0.37466031 | -0.0689335 | -0.5453653 | -0.1194721 | - |
| 0.1922732  |            |            |            |            |            |   |
| B16        | 0.14030207 | -0.6967462 | -0.1488928 | 0.09596639 | -0.1021077 | - |
| 0.1155388  |            |            |            |            |            |   |
| B17        | -0.3410806 | -0.0029771 | 0.19564228 | -0.1789711 | -0.2216014 |   |
| 0.16408946 |            |            |            |            |            |   |
| B18        | 0.03523338 | 0.0471637  | -0.4650833 | 0.24394271 | -0.361265  | - |
| 0.2500244  |            |            |            |            |            |   |

#### Eksploratory Factor Analysis:Section B

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#### The FACTOR Procedure Initial Factor Method: Principal Components

#### Inverse Correlation Matrix

|            | B13        | B14        | B15        | B16        | B17        |   |
|------------|------------|------------|------------|------------|------------|---|
| B18        |            |            |            |            |            |   |
| B1         | -0.4054019 | 0.03925764 | 0.22378209 | 0.05864824 | -0.049108  | - |
| 0.4206507  |            |            |            |            |            |   |
| B2         | -0.155604  | -0.0027205 | 0.07468524 | -0.0343293 | 0.25268625 | - |
| 0.0703188  |            |            |            |            |            |   |
| B3         | 0.12745101 | -0.1577201 | 0.24834581 | -0.0744242 | -0.7729928 | - |
| 0.3574292  |            |            |            |            |            |   |
| B4         | 0.33424313 | -0.1012181 | 0.13753571 | -0.2355351 | 0.0549824  |   |
| 0.02006283 |            |            |            |            |            |   |
| B5         | 0.15019371 | -0.0356862 | -0.5150247 | -0.0654484 | -0.0461383 |   |
| 0.33877955 |            |            |            |            |            |   |
| B6         | -0.137721  | 0.03392645 | -0.1174143 | 0.16095377 | 0.17663221 | - |
| 0.2031824  |            |            |            |            |            |   |
| B7         | 0.38478156 | -0.1301736 | -0.0674794 | 0.14030207 | -0.3410806 |   |
| 0.03523338 |            |            |            |            |            |   |
| B8         | -0.5793461 | -0.0287986 | 0.37466031 | -0.6967462 | -0.0029771 |   |
| 0.0471637  |            |            |            |            |            |   |
| B9         | -0.1250396 | -0.371492  | -0.0689335 | -0.1488928 | 0.19564228 | - |
| 0.4650833  |            |            |            |            |            |   |
| B10        | -0.5455262 | -0.4057837 | -0.5453653 | 0.09596639 | -0.1789711 |   |
| 0.24394271 |            |            |            |            |            |   |
| B11        | -0.1146752 | 0.28597306 | -0.1194721 | -0.1021077 | -0.2216014 | - |
| 0.361265   |            |            |            |            |            |   |
| B12        | -0.7223344 | -0.5007672 | -0.1922732 | -0.1155388 | 0.16408946 | - |
| 0.2500244  |            |            |            |            |            |   |
| B13        | 2.70840253 | -0.0258824 | -0.8407258 | 0.33763133 | -0.1770671 |   |
| 0.07746602 |            |            |            |            |            |   |
| B14        | -0.0258824 | 2.22004538 | -0.151701  | -0.4569264 | -0.2195958 |   |
| 0.21560795 |            |            |            |            |            |   |
| B15        | -0.8407258 | -0.151701  | 3.24624086 | -0.6771169 | -0.4185151 | - |
| 0.6771934  |            |            |            |            |            |   |
| B16        | 0.33763133 | -0.4569264 | -0.6771169 | 2.66681182 | -0.3373944 | - |
| 0.3844563  |            |            |            |            |            |   |

|            |            |            |            |            |            |   |
|------------|------------|------------|------------|------------|------------|---|
| B17        | -0.1770671 | -0.2195958 | -0.4185151 | -0.3373944 | 2.38100516 | - |
| 0.2533682  |            |            |            |            |            |   |
| B18        | 0.07746602 | 0.21560795 | -0.6771934 | -0.3844563 | -0.2533682 |   |
| 2.58611874 |            |            |            |            |            |   |

Partial Correlations Controlling all other Variables

|         | B1      | B2      | B3       | B4      | B5      | B6      |   |
|---------|---------|---------|----------|---------|---------|---------|---|
| B7      |         |         |          |         |         |         |   |
| B1      | 1.00000 | 0.36865 | .        | .       | .       | .       |   |
| 0.23275 |         |         |          |         |         |         |   |
| B2      | 0.36865 | 1.00000 | 0.16547  | .       | 0.16752 | .       | . |
| B3      | .       | 0.16547 | 1.00000  | 0.17542 | 0.18625 | 0.18011 | - |
| 0.18170 |         |         |          |         |         |         |   |
| B4      | .       | .       | 0.17542  | 1.00000 | 0.33206 | .       | . |
| B5      | .       | 0.16752 | 0.18625  | 0.33206 | 1.00000 | .       | . |
| B6      | .       | .       | 0.18011  | .       | .       | 1.00000 | . |
| 0.33945 |         |         |          |         |         |         |   |
| B7      | 0.23275 | .       | -0.18170 | .       | .       | 0.33945 | . |
| 1.00000 |         |         |          |         |         |         |   |
| B8      | .       | .       | .        | .       | .       | 0.21966 | . |
| B9      | .       | .       | .        | .       | .       | .       | . |
| 0.19968 |         |         |          |         |         |         |   |
| B10     | .       | .       | .        | .       | .       | .       | . |
| B11     | .       | 0.18224 | .        | .       | .       | .       | . |
| B12     | .       | .       | .        | .       | .       | .       | . |
| B13     | .       | .       | .        | .       | .       | .       | . |
| B14     | .       | .       | .        | .       | .       | .       | . |
| B15     | .       | .       | .        | .       | 0.15510 | .       | . |
| B16     | .       | .       | .        | .       | .       | .       | . |
| B17     | .       | .       | 0.26014  | .       | .       | .       | . |
| B18     | .       | .       | .        | .       | .       | .       | . |

Values less than 0.15 are not printed.

Eksploratory Factor Analysis:Section B

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09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Partial Correlations Controlling all other Variables

|         | B8      | B9      | B10     | B11     | B12     | B13     |   |
|---------|---------|---------|---------|---------|---------|---------|---|
| B14     |         |         |         |         |         |         |   |
| B1      | .       | .       | .       | .       | .       | .       | . |
| B2      | .       | .       | .       | 0.18224 | .       | .       | . |
| B3      | .       | .       | .       | .       | .       | .       | . |
| B4      | .       | .       | .       | .       | .       | .       | . |
| B5      | .       | .       | .       | .       | .       | .       | . |
| B6      | 0.21966 | .       | .       | .       | .       | .       | . |
| B7      | .       | 0.19968 | .       | .       | .       | .       | . |
| B8      | 1.00000 | .       | .       | .       | .       | 0.20549 | . |
| B9      | .       | 1.00000 | .       | .       | .       | .       | . |
| 0.17452 |         |         |         |         |         |         |   |
| B10     | .       | .       | 1.00000 | 0.18048 | .       | 0.19608 | . |
| 0.16109 |         |         |         |         |         |         |   |
| B11     | .       | .       | 0.18048 | 1.00000 | 0.16650 | .       | . |
| B12     | .       | .       | .       | 0.16650 | 1.00000 | 0.25805 | . |
| 0.19759 |         |         |         |         |         |         |   |
| B13     | 0.20549 | .       | 0.19608 | .       | 0.25805 | 1.00000 | . |
| B14     | .       | 0.17452 | 0.16109 | .       | 0.19759 | .       | . |
| 1.00000 |         |         |         |         |         |         |   |
| B15     | .       | .       | 0.17905 | .       | .       | 0.28354 | . |
| B16     | 0.24905 | .       | .       | .       | .       | .       | . |
| 0.18779 |         |         |         |         |         |         |   |
| B17     | .       | .       | .       | .       | .       | .       | . |
| B18     | .       | 0.20243 | .       | .       | .       | .       | . |

Values less than 0.15 are not printed.

Partial Correlations Controlling all other Variables

|     | B15     | B16     | B17     | B18     |
|-----|---------|---------|---------|---------|
| B1  | .       | .       | .       | .       |
| B2  | .       | .       | .       | .       |
| B3  | .       | .       | 0.26014 | .       |
| B4  | .       | .       | .       | .       |
| B5  | 0.15510 | .       | .       | .       |
| B6  | .       | .       | .       | .       |
| B7  | .       | .       | .       | .       |
| B8  | .       | 0.24905 | .       | .       |
| B9  | .       | .       | .       | 0.20243 |
| B10 | 0.17905 | .       | .       | .       |
| B11 | .       | .       | .       | .       |
| B12 | .       | .       | .       | .       |
| B13 | 0.28354 | .       | .       | .       |
| B14 | .       | 0.18779 | .       | .       |
| B15 | 1.00000 | 0.23013 | 0.15054 | 0.23372 |
| B16 | 0.23013 | 1.00000 | .       | .       |
| B17 | 0.15054 | .       | 1.00000 | .       |
| B18 | 0.23372 | .       | .       | 1.00000 |

Values less than 0.15 are not printed.

Eksploratory Factor Analysis:Section B

7

09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95944710

| B1         | B2         | B3         | B4         | B5         | B6         |
|------------|------------|------------|------------|------------|------------|
| 0.95111782 | 0.95406401 | 0.96073556 | 0.96611377 | 0.95988231 | 0.95636346 |

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95944710

| B7         | B8         | B9         | B10        | B11        | B12        |
|------------|------------|------------|------------|------------|------------|
| 0.94038115 | 0.96540037 | 0.95360313 | 0.96864459 | 0.97268586 | 0.96611293 |

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95944710

| B13        | B14        | B15        | B16        | B17        | B18        |
|------------|------------|------------|------------|------------|------------|
| 0.94240558 | 0.96661891 | 0.95256530 | 0.96174293 | 0.96620095 | 0.96152762 |

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 18 Average = 1

|    | Eigenvalue | Difference | Proportion | Cumulative |
|----|------------|------------|------------|------------|
| 1  | 10.9029894 | 9.8635400  | 0.6057     | 0.6057     |
| 2  | 1.0394493  | 0.2863672  | 0.0577     | 0.6635     |
| 3  | 0.7530821  | 0.1241672  | 0.0418     | 0.7053     |
| 4  | 0.6289150  | 0.0575327  | 0.0349     | 0.7402     |
| 5  | 0.5713823  | 0.0546603  | 0.0317     | 0.7720     |
| 6  | 0.5167220  | 0.0334892  | 0.0287     | 0.8007     |
| 7  | 0.4832328  | 0.0410985  | 0.0268     | 0.8275     |
| 8  | 0.4421343  | 0.0465667  | 0.0246     | 0.8521     |
| 9  | 0.3955676  | 0.0296173  | 0.0220     | 0.8741     |
| 10 | 0.3659502  | 0.0422209  | 0.0203     | 0.8944     |
| 11 | 0.3237293  | 0.0418380  | 0.0180     | 0.9124     |
| 12 | 0.2818913  | 0.0142921  | 0.0157     | 0.9281     |
| 13 | 0.2675991  | 0.0321653  | 0.0149     | 0.9429     |
| 14 | 0.2354338  | 0.0133611  | 0.0131     | 0.9560     |
| 15 | 0.2220727  | 0.0208515  | 0.0123     | 0.9683     |
| 16 | 0.2012212  | 0.0098756  | 0.0112     | 0.9795     |
| 17 | 0.1913457  | 0.0140637  | 0.0106     | 0.9902     |

18      0.1772819                      0.0098              1.0000

2 factors will be retained by the MINEIGEN criterion.

Eksploratory Factor Analysis:Section B

8

09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Eigenvectors

|     | 1       | 2        |
|-----|---------|----------|
| B1  | 0.23657 | -0.34761 |
| B2  | 0.24063 | -0.29662 |
| B3  | 0.25330 | -0.21123 |
| B4  | 0.24666 | -0.34833 |
| B5  | 0.24457 | -0.28325 |
| B6  | 0.24277 | -0.19926 |
| B7  | 0.22505 | -0.20839 |
| B8  | 0.24478 | 0.03797  |
| B9  | 0.20604 | 0.10817  |
| B10 | 0.23999 | 0.17572  |
| B11 | 0.24094 | 0.07185  |
| B12 | 0.23975 | 0.26411  |
| B13 | 0.22162 | 0.35255  |
| B14 | 0.21959 | 0.22665  |
| B15 | 0.24124 | 0.32613  |
| B16 | 0.23390 | 0.18108  |
| B17 | 0.22796 | 0.12997  |
| B18 | 0.23245 | 0.10596  |

Factor Pattern

|     | Factor1 | Factor2  |
|-----|---------|----------|
| B3  | 0.83638 | .        |
| B4  | 0.81445 | -0.35513 |
| B8  | 0.80824 | .        |
| B5  | 0.80755 | .        |
| B6  | 0.80162 | .        |
| B15 | 0.79657 | 0.33250  |
| B11 | 0.79558 | .        |
| B2  | 0.79455 | -0.30242 |
| B10 | 0.79243 | .        |
| B12 | 0.79164 | .        |
| B1  | 0.78115 | -0.35440 |
| B16 | 0.77234 | .        |
| B18 | 0.76755 | .        |
| B17 | 0.75272 | .        |
| B7  | 0.74309 | .        |
| B13 | 0.73180 | 0.35943  |
| B14 | 0.72506 | .        |
| B9  | 0.68033 | .        |

Values less than 0.3 are not  
printed.

Eksploratory Factor Analysis:Section B

9

09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Variance Explained by Each Factor

| Factor1   | Factor2  |
|-----------|----------|
| 10.902989 | 1.039449 |

Final Communalities Estimates: Total = 11.942439

| B1         | B2         | B3         | B4         | B5         | B6         |
|------------|------------|------------|------------|------------|------------|
| 0.73579441 | 0.72276572 | 0.74590133 | 0.78944466 | 0.73554271 | 0.68387300 |
| B7         | B8         | B9         | B10        | B11        | B12        |
| 0.59732760 | 0.65475455 | 0.47500650 | 0.66004960 | 0.63830633 | 0.69920772 |
| B13        | B14        | B15        | B16        | B17        | B18        |
| 0.66471763 | 0.57911551 | 0.74508558 | 0.63059644 | 0.58415237 | 0.60079704 |

Residual Correlations With Uniqueness on the Diagonal

|     | B1       | B2       | B3       | B4      | B5       | B6       |
|-----|----------|----------|----------|---------|----------|----------|
| B7  |          |          |          |         |          |          |
| B1  | 0.26421  | .        | .        | .       | .        | -0.08400 |
| B2  | .        | 0.27723  | .        | .       | .        | -0.10512 |
| B3  | .        | .        | 0.25410  | .       | .        | -        |
| B4  | .        | .        | .        | 0.21056 | .        | .        |
| B5  | .        | .        | .        | .       | 0.26446  | -        |
| B6  | -0.08400 | -0.10512 | .        | .       | .        | 0.31613  |
| B7  | .        | .        | -0.11758 | .       | -0.09600 | .        |
| B8  | .        | .        | .        | .       | .        | .        |
| B9  | .        | -0.07605 | .        | .       | .        | .        |
| B10 | .        | .        | .        | .       | .        | .        |
| B11 | .        | .        | .        | .       | .        | .        |
| B12 | .        | .        | .        | .       | .        | .        |
| B13 | 0.08664  | .        | .        | .       | .        | .        |
| B14 | .        | .        | .        | .       | .        | .        |
| B15 | .        | .        | .        | .       | .        | .        |
| B16 | .        | .        | .        | .       | .        | .        |
| B17 | .        | .        | .        | .       | .        | .        |
| B18 | .        | .        | .        | .       | .        | .        |

Values less than 0.075 are not printed.

Eksploratory Factor Analysis:Section B

10

09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Residual Correlations With Uniqueness on the Diagonal

|     | B8       | B9       | B10      | B11      | B12     | B13      |
|-----|----------|----------|----------|----------|---------|----------|
| B14 |          |          |          |          |         |          |
| B1  | .        | .        | .        | .        | .       | 0.08664  |
| B2  | .        | -0.07605 | .        | .        | .       | .        |
| B3  | .        | .        | .        | .        | .       | .        |
| B4  | .        | .        | .        | .        | .       | .        |
| B5  | .        | .        | .        | .        | .       | .        |
| B6  | .        | .        | .        | .        | .       | .        |
| B7  | .        | .        | .        | .        | .       | .        |
| B8  | 0.34525  | .        | .        | .        | .       | .        |
| B9  | .        | 0.52499  | -0.11493 | .        | .       | -0.08923 |
| B10 | .        | -0.11493 | 0.33995  | .        | .       | .        |
| B11 | .        | .        | .        | 0.36169  | .       | -        |
| B12 | .        | .        | .        | .        | 0.30079 | .        |
| B13 | .        | -0.08923 | .        | .        | .       | 0.33528  |
| B14 | .        | .        | .        | -0.10369 | .       | -0.09531 |
| B15 | -0.08235 | .        | .        | .        | .       | .        |

|         |   |          |          |   |          |          |   |
|---------|---|----------|----------|---|----------|----------|---|
| B16     | . | .        | -0.08428 | . | .        | -0.12963 | . |
| B17     | . | -0.08104 | .        | . | -0.08690 | .        | . |
| B18     | . | .        | -0.10314 | . | .        | .        | - |
| 0.09451 |   |          |          |   |          |          |   |

Values less than 0.075 are not printed.

#### Residual Correlations With Uniqueness on the Diagonal

|     | B15      | B16      | B17      | B18      |
|-----|----------|----------|----------|----------|
| B1  | .        | .        | .        | .        |
| B2  | .        | .        | .        | .        |
| B3  | .        | .        | .        | .        |
| B4  | .        | .        | .        | .        |
| B5  | .        | .        | .        | .        |
| B6  | .        | .        | .        | .        |
| B7  | .        | .        | .        | .        |
| B8  | -0.08235 | .        | .        | .        |
| B9  | .        | .        | -0.08104 | .        |
| B10 | .        | -0.08428 | .        | -0.10314 |
| B11 | .        | .        | .        | .        |
| B12 | .        | .        | -0.08690 | .        |
| B13 | .        | -0.12963 | .        | .        |
| B14 | .        | .        | .        | -0.09451 |
| B15 | 0.25491  | .        | .        | .        |
| B16 | .        | 0.36940  | .        | .        |
| B17 | .        | .        | 0.41585  | .        |
| B18 | .        | .        | .        | 0.39920  |

Values less than 0.075 are not printed.

#### Eksploratory Factor Analysis:Section B

11

09:00 Tuesday, September 30,

2014

#### The FACTOR Procedure Initial Factor Method: Principal Components

Root Mean Square Off-Diagonal Residuals: Overall = 0.04435950

| B1         | B2         | B3         | B4         | B5         | B6         |
|------------|------------|------------|------------|------------|------------|
| 0.04658616 | 0.04832596 | 0.03737751 | 0.03266086 | 0.04036826 | 0.04280252 |

Root Mean Square Off-Diagonal Residuals: Overall = 0.04435950

| B7         | B8         | B9         | B10        | B11        | B12        |
|------------|------------|------------|------------|------------|------------|
| 0.05003752 | 0.03647399 | 0.05531857 | 0.04529187 | 0.03719221 | 0.04022961 |

Root Mean Square Off-Diagonal Residuals: Overall = 0.04435950

| B13        | B14        | B15        | B16        | B17        | B18        |
|------------|------------|------------|------------|------------|------------|
| 0.05823713 | 0.04801936 | 0.03809879 | 0.04586135 | 0.04190321 | 0.04509182 |

#### Partial Correlations Controlling Factors

|         | B1       | B2       | B3       | B4       | B5       | B6       |
|---------|----------|----------|----------|----------|----------|----------|
| B7      |          |          |          |          |          |          |
| B1      | 1.00000  | .        | -0.16653 | -0.30102 | -0.24815 | -0.29067 |
| B2      | .        | 1.00000  | .        | -0.29517 | .        | -0.35510 |
| 0.19251 |          |          |          |          |          |          |
| B3      | -0.16653 | .        | 1.00000  | .        | .        | .        |
| 0.36760 |          |          |          |          |          |          |
| B4      | -0.30102 | -0.29517 | .        | 1.00000  | .        | .        |
| 0.19927 |          |          |          |          |          |          |
| B5      | -0.24815 | .        | .        | .        | 1.00000  | -0.17135 |
| 0.29420 |          |          |          |          |          |          |
| B6      | -0.29067 | -0.35510 | .        | .        | -0.17135 | 1.00000  |
| B7      | .        | -0.19251 | -0.36760 | -0.19927 | -0.29420 | .        |
| 1.00000 |          |          |          |          |          |          |
| B8      | .        | .        | .        | .        | -0.19712 | .        |

|     |          |          |         |   |         |   |   |
|-----|----------|----------|---------|---|---------|---|---|
| B9  | -0.20116 | -0.19935 | .       | . | .       | . | . |
| B10 | .        | .        | .       | . | .       | . | . |
| B11 | .        | .        | .       | . | .       | . | . |
| B12 | .        | 0.17597  | .       | . | .       | . | . |
| B13 | 0.29111  | 0.21739  | .       | . | .       | . | . |
| B14 | .        | .        | .       | . | .       | . | . |
| B15 | .        | .        | .       | . | 0.20647 | . | . |
| B16 | .        | .        | .       | . | .       | . | . |
| B17 | .        | .        | 0.16987 | . | .       | . | . |
| B18 | .        | .        | .       | . | .       | . | . |

Values less than 0.15 are not printed.

#### Eksploratory Factor Analysis:Section B

12

09:00 Tuesday, September 30,

2014

#### The FACTOR Procedure Initial Factor Method: Principal Components

#### Partial Correlations Controlling Factors

|         | B8       | B9       | B10      | B11      | B12      | B13      |   |
|---------|----------|----------|----------|----------|----------|----------|---|
| B14     |          |          |          |          |          |          |   |
| B1      | .        | -0.20116 | .        | .        | .        | 0.29111  | . |
| B2      | .        | -0.19935 | .        | .        | 0.17597  | 0.21739  | . |
| B3      | .        | .        | .        | .        | .        | .        | . |
| B4      | .        | .        | .        | .        | .        | .        | . |
| B5      | -0.19712 | .        | .        | .        | .        | .        | . |
| B6      | .        | .        | .        | .        | .        | .        | . |
| B7      | .        | .        | .        | .        | .        | .        | . |
| B8      | 1.00000  | .        | .        | .        | .        | .        | . |
| B9      | .        | 1.00000  | -0.27205 | .        | .        | -0.21269 | . |
| B10     | .        | -0.27205 | 1.00000  | .        | .        | .        | . |
| B11     | .        | .        | .        | 1.00000  | .        | .        | - |
| 0.26576 |          |          |          |          |          |          |   |
| B12     | .        | .        | .        | .        | 1.00000  | .        | . |
| B13     | .        | -0.21269 | .        | .        | .        | 1.00000  | - |
| 0.25371 |          |          |          |          |          |          |   |
| B14     | .        | .        | .        | -0.26576 | .        | -0.25371 | . |
| 1.00000 |          |          |          |          |          |          |   |
| B15     | -0.27759 | .        | .        | .        | -0.24977 | .        | - |
| 0.20634 |          |          |          |          |          |          |   |
| B16     | .        | .        | -0.23783 | .        | -0.20418 | -0.36835 | . |
| B17     | -0.15874 | -0.17345 | .        | .        | -0.24570 | -0.16495 | . |
| B18     | .        | .        | -0.27998 | .        | .        | -0.20189 | - |
| 0.23057 |          |          |          |          |          |          |   |

Values less than 0.15 are not printed.

#### Partial Correlations Controlling Factors

|     | B15      | B16      | B17      | B18      |
|-----|----------|----------|----------|----------|
| B1  | .        | .        | .        | .        |
| B2  | .        | .        | .        | .        |
| B3  | .        | .        | 0.16987  | .        |
| B4  | .        | .        | .        | .        |
| B5  | 0.20647  | .        | .        | .        |
| B6  | .        | .        | .        | .        |
| B7  | .        | .        | .        | .        |
| B8  | -0.27759 | .        | -0.15874 | .        |
| B9  | .        | .        | -0.17345 | .        |
| B10 | .        | -0.23783 | .        | -0.27998 |
| B11 | .        | .        | .        | .        |
| B12 | -0.24977 | -0.20418 | -0.24570 | .        |
| B13 | .        | -0.36835 | -0.16495 | -0.20189 |
| B14 | -0.20634 | .        | .        | -0.23057 |
| B15 | 1.00000  | .        | .        | .        |
| B16 | .        | 1.00000  | .        | .        |
| B17 | .        | .        | 1.00000  | .        |
| B18 | .        | .        | .        | 1.00000  |

Values less than 0.15 are not printed.

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2014

# Eksploratory Factor Analysis:Section B

09:00 Tuesday, September 30,

The FACTOR Procedure  
Initial Factor Method: Principal Components

Root Mean Square Off-Diagonal Partial: Overall = 0.13353823

| B1         | B2         | B3         | B4         | B5         | B6         |
|------------|------------|------------|------------|------------|------------|
| 0.16340358 | 0.16204004 | 0.12212311 | 0.12862943 | 0.13668189 | 0.14117428 |

Root Mean Square Off-Diagonal Partial: Overall = 0.13353823

| B7         | B8         | B9         | B10        | B11        | B12        |
|------------|------------|------------|------------|------------|------------|
| 0.14926415 | 0.11184863 | 0.13353342 | 0.12021214 | 0.10092868 | 0.12630560 |

Root Mean Square Off-Diagonal Partial: Overall = 0.13353823

| B13        | B14        | B15        | B16        | B17        | B18        |
|------------|------------|------------|------------|------------|------------|
| 0.16637829 | 0.12709054 | 0.12856765 | 0.13145233 | 0.11147847 | 0.12113045 |

# Eksploratory Factor Analysis:Section B

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2014

09:00 Tuesday, September 30,

The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Oblique Transformation Matrix

|   | 1          | 2          |
|---|------------|------------|
| 1 | 0.57196541 | 0.49106929 |
| 2 | 1.45445657 | -1.4837248 |

Inter-Factor Correlations

|         | Factor1 | Factor2 |
|---------|---------|---------|
| Factor1 | 1.00000 | 0.76850 |
| Factor2 | 0.76850 | 1.00000 |

Rotated Factor Pattern (Standardized Regression Coefficients)

|     | Factor1 | Factor2 |
|-----|---------|---------|
| B13 | 0.94134 | .       |
| B15 | 0.93922 | .       |
| B12 | 0.84444 | .       |
| B14 | 0.75080 | .       |
| B10 | 0.71382 | .       |
| B16 | 0.71028 | .       |
| B17 | 0.62326 | .       |
| B18 | 0.59613 | .       |
| B11 | 0.56158 | .       |
| B9  | 0.54952 | .       |
| B8  | 0.51860 | 0.33946 |
| B4  | .       | 0.92687 |
| B1  | .       | 0.90943 |
| B2  | .       | 0.83888 |
| B5  | .       | 0.82505 |
| B3  | .       | 0.73025 |
| B6  | .       | 0.69508 |
| B7  | .       | 0.68014 |

Values less than 0.3 are not  
printed.

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2014

# Eksploratory Factor Analysis:Section B

09:00 Tuesday, September 30,

The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

## Reference Axis Correlations

|         | Factor1  | Factor2  |
|---------|----------|----------|
| Factor1 | 1.00000  | -0.76850 |
| Factor2 | -0.76850 | 1.00000  |

## Reference Structure (Semipartial Correlations)

|     | Factor1 | Factor2 |
|-----|---------|---------|
| B13 | 0.60231 | .       |
| B15 | 0.60095 | .       |
| B12 | 0.54031 | .       |
| B14 | 0.48040 | .       |
| B10 | 0.45673 | .       |
| B16 | 0.45447 | .       |
| B17 | 0.39879 | .       |
| B18 | 0.38143 | .       |
| B11 | 0.35933 | .       |
| B9  | 0.35161 | .       |
| B8  | 0.33182 | .       |
| B4  | .       | 0.59305 |
| B1  | .       | 0.58190 |
| B2  | .       | 0.53675 |
| B5  | .       | 0.52790 |
| B3  | .       | 0.46724 |
| B6  | .       | 0.44474 |
| B7  | .       | 0.43518 |

Values less than 0.3 are not  
printed.

## Variance Explained by Each Factor Eliminating Other Factors

| Factor1   | Factor2   |
|-----------|-----------|
| 2.3605079 | 2.0132456 |

# Eksploratory Factor Analysis:Section B

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2014

09:00 Tuesday, September 30,

The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

## Factor Structure (Correlations)

|     | Factor1 | Factor2 |
|-----|---------|---------|
| B13 | 0.80767 | 0.54949 |
| B15 | 0.86070 | 0.61963 |
| B12 | 0.83616 | 0.63818 |
| B14 | 0.76095 | 0.59020 |
| B10 | 0.80859 | 0.67190 |
| B16 | 0.79124 | 0.65120 |
| B17 | 0.75624 | 0.65201 |
| B18 | 0.76262 | 0.67476 |
| B11 | 0.77830 | 0.71358 |
| B9  | 0.68052 | 0.59277 |
| B8  | 0.77947 | 0.73800 |
| B4  | 0.66161 | 0.88791 |
| B1  | 0.63023 | 0.85666 |
| B2  | 0.65929 | 0.85010 |

|    |         |         |
|----|---------|---------|
| B5 | 0.67592 | 0.85722 |
| B3 | 0.72635 | 0.85717 |
| B6 | 0.69719 | 0.82036 |
| B7 | 0.63870 | 0.76930 |

Values less than 0.3 are not  
printed.

#### Variance Explained by Each Factor Ignoring Other Factors

| Factor1   | Factor2   |
|-----------|-----------|
| 9.9291932 | 9.5819308 |

Final Communality Estimates: Total = 11.942439

| B1         | B2         | B3         | B4         | B5         | B6         |
|------------|------------|------------|------------|------------|------------|
| 0.73579441 | 0.72276572 | 0.74590133 | 0.78944466 | 0.73554271 | 0.68387300 |
| B7         | B8         | B9         | B10        | B11        | B12        |
| 0.59732760 | 0.65475455 | 0.47500650 | 0.66004960 | 0.63830633 | 0.69920772 |
| B13        | B14        | B15        | B16        | B17        | B18        |
| 0.66471763 | 0.57911551 | 0.74508558 | 0.63059644 | 0.58415237 | 0.60079704 |

#### Eksploratory Factor Analysis:Section B

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Scoring Coefficients Estimated by Regression

#### Squared Multiple Correlations of the Variables with Each Factor

| Factor1   | Factor2   |
|-----------|-----------|
| 1.0000000 | 1.0000000 |

#### Standardized Scoring Coefficients

|     | Factor1  | Factor2  |
|-----|----------|----------|
| B13 | 0.17237  | -0.06409 |
| B15 | 0.16987  | -0.04907 |
| B12 | 0.15033  | -0.02723 |
| B14 | 0.13298  | -0.01947 |
| B10 | 0.12316  | 0.00456  |
| B16 | 0.12306  | 0.00092  |
| B17 | 0.10560  | 0.01760  |
| B18 | 0.09949  | 0.02748  |
| B11 | 0.09142  | 0.04212  |
| B9  | 0.09257  | 0.01924  |
| B8  | 0.08208  | 0.05536  |
| B4  | -0.03643 | 0.19455  |
| B1  | -0.03911 | 0.19145  |
| B2  | -0.02223 | 0.17429  |
| B5  | -0.01698 | 0.17061  |
| B3  | 0.00773  | 0.14721  |
| B6  | 0.00839  | 0.13995  |
| B7  | 0.00048  | 0.13823  |

#### Eksploratory Factor Analysis:Section C

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The FACTOR Procedure

|                          |          |
|--------------------------|----------|
| Input Data Type          | Raw Data |
| Number of Records Read   | 174      |
| Number of Records Used   | 157      |
| N for Significance Tests | 157      |

Means and Standard Deviations from 157 Observations

| Variable | Mean      | Std Dev   |
|----------|-----------|-----------|
| C1       | 3.3694268 | 1.1168099 |
| C2       | 2.9426752 | 1.1560434 |
| C3       | 3.0700637 | 1.2148370 |
| C4       | 3.3121019 | 1.1921404 |
| C5       | 3.3503185 | 1.1258401 |
| C6       | 3.2611465 | 1.1102465 |
| C7       | 3.1910828 | 1.0569293 |
| C8       | 3.1082803 | 1.1467883 |
| C9       | 2.9235669 | 1.2170867 |
| C10      | 3.0000000 | 1.2760114 |
| C11      | 3.2038217 | 1.1587950 |
| C12      | 3.2356688 | 1.0809548 |
| C13      | 3.2547771 | 1.0247230 |
| C14      | 3.2420382 | 0.9700732 |
| C15      | 3.3121019 | 0.9861444 |
| C16      | 3.3248408 | 1.0013872 |
| C17      | 2.9171975 | 1.1655404 |

Eksploratory Factor Analysis:Section C

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The FACTOR Procedure

Correlations

|         | C1      | C2      | C3      | C4      | C5      | C6      |
|---------|---------|---------|---------|---------|---------|---------|
| C7      |         |         |         |         |         |         |
| C1      | 1.00000 | 0.66693 | 0.63281 | 0.61579 | 0.62036 | 0.68683 |
| 0.56434 |         |         |         |         |         |         |
| C2      | 0.66693 | 1.00000 | 0.72862 | 0.65494 | 0.52775 | 0.59109 |
| 0.63858 |         |         |         |         |         |         |
| C3      | 0.63281 | 0.72862 | 1.00000 | 0.74611 | 0.62872 | 0.68024 |
| 0.65350 |         |         |         |         |         |         |
| C4      | 0.61579 | 0.65494 | 0.74611 | 1.00000 | 0.64876 | 0.73715 |
| 0.67479 |         |         |         |         |         |         |
| C5      | 0.62036 | 0.52775 | 0.62872 | 0.64876 | 1.00000 | 0.79304 |
| 0.63832 |         |         |         |         |         |         |
| C6      | 0.68683 | 0.59109 | 0.68024 | 0.73715 | 0.79304 | 1.00000 |
| 0.70560 |         |         |         |         |         |         |
| C7      | 0.56434 | 0.63858 | 0.65350 | 0.67479 | 0.63832 | 0.70560 |
| 1.00000 |         |         |         |         |         |         |
| C8      | 0.56417 | 0.70099 | 0.72151 | 0.67845 | 0.65063 | 0.68754 |
| 0.71795 |         |         |         |         |         |         |
| C9      | 0.57268 | 0.66204 | 0.67564 | 0.63065 | 0.61847 | 0.68375 |
| 0.66423 |         |         |         |         |         |         |
| C10     | 0.43633 | 0.53016 | 0.62029 | 0.63631 | 0.58454 | 0.60633 |
| 0.62741 |         |         |         |         |         |         |
| C11     | 0.50116 | 0.46815 | 0.58631 | 0.64041 | 0.58368 | 0.63599 |
| 0.67980 |         |         |         |         |         |         |
| C12     | 0.67612 | 0.60593 | 0.66099 | 0.68374 | 0.71656 | 0.80834 |
| 0.63923 |         |         |         |         |         |         |
| C13     | 0.61739 | 0.59141 | 0.66013 | 0.70061 | 0.66670 | 0.75814 |
| 0.69459 |         |         |         |         |         |         |
| C14     | 0.59738 | 0.53833 | 0.60561 | 0.60496 | 0.63793 | 0.66706 |
| 0.60482 |         |         |         |         |         |         |
| C15     | 0.52907 | 0.57246 | 0.63442 | 0.64727 | 0.65725 | 0.67450 |
| 0.67429 |         |         |         |         |         |         |
| C16     | 0.58556 | 0.58099 | 0.58187 | 0.63943 | 0.61483 | 0.63239 |
| 0.63748 |         |         |         |         |         |         |
| C17     | 0.37330 | 0.49123 | 0.61077 | 0.54465 | 0.47167 | 0.50228 |

0.56971

Values less than 0.3 are not printed.

| Correlations |         |         |         |         |         |         |
|--------------|---------|---------|---------|---------|---------|---------|
|              | C8      | C9      | C10     | C11     | C12     | C13     |
| C14          |         |         |         |         |         |         |
| C1           | 0.56417 | 0.57268 | 0.43633 | 0.50116 | 0.67612 | 0.61739 |
| 0.59738      |         |         |         |         |         |         |
| C2           | 0.70099 | 0.66204 | 0.53016 | 0.46815 | 0.60593 | 0.59141 |
| 0.53833      |         |         |         |         |         |         |
| C3           | 0.72151 | 0.67564 | 0.62029 | 0.58631 | 0.66099 | 0.66013 |
| 0.60561      |         |         |         |         |         |         |
| C4           | 0.67845 | 0.63065 | 0.63631 | 0.64041 | 0.68374 | 0.70061 |
| 0.60496      |         |         |         |         |         |         |
| C5           | 0.65063 | 0.61847 | 0.58454 | 0.58368 | 0.71656 | 0.66670 |
| 0.63793      |         |         |         |         |         |         |
| C6           | 0.68754 | 0.68375 | 0.60633 | 0.63599 | 0.80834 | 0.75814 |
| 0.66706      |         |         |         |         |         |         |
| C7           | 0.71795 | 0.66423 | 0.62741 | 0.67980 | 0.63923 | 0.69459 |
| 0.60482      |         |         |         |         |         |         |
| C8           | 1.00000 | 0.79592 | 0.65272 | 0.61520 | 0.69290 | 0.69642 |
| 0.61589      |         |         |         |         |         |         |
| C9           | 0.79592 | 1.00000 | 0.74710 | 0.62017 | 0.71054 | 0.70959 |
| 0.64015      |         |         |         |         |         |         |
| C10          | 0.65272 | 0.74710 | 1.00000 | 0.68063 | 0.62276 | 0.63242 |
| 0.54376      |         |         |         |         |         |         |
| C11          | 0.61520 | 0.62017 | 0.68063 | 1.00000 | 0.69833 | 0.72256 |
| 0.66294      |         |         |         |         |         |         |
| C12          | 0.69290 | 0.71054 | 0.62276 | 0.69833 | 1.00000 | 0.81351 |
| 0.72162      |         |         |         |         |         |         |
| C13          | 0.69642 | 0.70959 | 0.63242 | 0.72256 | 0.81351 | 1.00000 |
| 0.72430      |         |         |         |         |         |         |
| C14          | 0.61589 | 0.64015 | 0.54376 | 0.66294 | 0.72162 | 0.72430 |
| 1.00000      |         |         |         |         |         |         |
| C15          | 0.65012 | 0.67693 | 0.65716 | 0.55542 | 0.65218 | 0.63128 |
| 0.66432      |         |         |         |         |         |         |
| C16          | 0.57203 | 0.56750 | 0.53177 | 0.61653 | 0.68683 | 0.69970 |
| 0.55203      |         |         |         |         |         |         |
| C17          | 0.55827 | 0.56940 | 0.62066 | 0.51092 | 0.49894 | 0.51692 |
| 0.51108      |         |         |         |         |         |         |

Values less than 0.3 are not printed.

#### Eksploratory Factor Analysis:Section C

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#### The FACTOR Procedure

| Correlations |         |         |         |
|--------------|---------|---------|---------|
|              | C15     | C16     | C17     |
| C1           | 0.52907 | 0.58556 | 0.37330 |
| C2           | 0.57246 | 0.58099 | 0.49123 |
| C3           | 0.63442 | 0.58187 | 0.61077 |
| C4           | 0.64727 | 0.63943 | 0.54465 |
| C5           | 0.65725 | 0.61483 | 0.47167 |
| C6           | 0.67450 | 0.63239 | 0.50228 |
| C7           | 0.67429 | 0.63748 | 0.56971 |
| C8           | 0.65012 | 0.57203 | 0.55827 |
| C9           | 0.67693 | 0.56750 | 0.56940 |
| C10          | 0.65716 | 0.53177 | 0.62066 |
| C11          | 0.55542 | 0.61653 | 0.51092 |
| C12          | 0.65218 | 0.68683 | 0.49894 |
| C13          | 0.63128 | 0.69970 | 0.51692 |
| C14          | 0.66432 | 0.55203 | 0.51108 |
| C15          | 1.00000 | 0.64967 | 0.60822 |
| C16          | 0.64967 | 1.00000 | 0.49003 |
| C17          | 0.60822 | 0.49003 | 1.00000 |

Values less than 0.3 are not printed.

The FACTOR Procedure  
Initial Factor Method: Principal Components

## Inverse Correlation Matrix

|            | C1         | C2         | C3         | C4         | C5         |   |
|------------|------------|------------|------------|------------|------------|---|
| C6         |            |            |            |            |            |   |
| C1         | 2.70249075 | -0.9057164 | -0.3423265 | -0.1158315 | -0.3057633 | - |
| 0.6268212  |            |            |            |            |            |   |
| C2         | -0.9057164 | 3.19236429 | -0.9267005 | -0.395929  | 0.37347075 |   |
| 0.41111987 |            |            |            |            |            |   |
| C3         | -0.3423265 | -0.9267005 | 3.54850288 | -0.8981456 | -0.2082151 | - |
| 0.1106855  |            |            |            |            |            |   |
| C4         | -0.1158315 | -0.395929  | -0.8981456 | 3.37725055 | 0.03917392 | - |
| 0.900691   |            |            |            |            |            |   |
| C5         | -0.3057633 | 0.37347075 | -0.2082151 | 0.03917392 | 3.20517238 | - |
| 1.4756917  |            |            |            |            |            |   |
| C6         | -0.6268212 | 0.41111987 | -0.1106855 | -0.900691  | -1.4756917 |   |
| 4.96983577 |            |            |            |            |            |   |
| C7         | -0.0145159 | -0.5606377 | 0.12757141 | -0.0370145 | -0.0978818 | - |
| 0.771177   |            |            |            |            |            |   |
| C8         | 0.37326197 | -0.7195804 | -0.5201049 | -0.2266735 | -0.4716934 |   |
| 0.08258262 |            |            |            |            |            |   |
| C9         | -0.2033588 | -0.4695189 | -0.0088369 | 0.50037578 | 0.25531291 | - |
| 0.2965638  |            |            |            |            |            |   |
| C10        | 0.33660667 | -0.0283048 | -0.0712588 | -0.4343081 | -0.3446613 |   |
| 0.18770321 |            |            |            |            |            |   |
| C11        | 0.03176937 | 0.62378925 | -0.1180061 | -0.3317239 | 0.13987696 |   |
| 0.20886306 |            |            |            |            |            |   |
| C12        | -0.4371694 | -0.1538388 | 0.03740794 | 0.19409327 | -0.2157915 | - |
| 1.5209623  |            |            |            |            |            |   |
| C13        | 0.09688807 | 0.18863904 | -0.0985664 | -0.336295  | 0.1940041  | - |
| 0.5398935  |            |            |            |            |            |   |
| C14        | -0.3730548 | -0.0768605 | -0.0284993 | 0.05681961 | -0.3451487 |   |
| 0.19142321 |            |            |            |            |            |   |
| C15        | 0.1749204  | 0.09871627 | -0.0596575 | -0.2117354 | -0.3068838 | - |
| 0.2866442  |            |            |            |            |            |   |
| C16        | -0.2832825 | -0.4117941 | 0.17923727 | -0.278544  | -0.3543474 |   |
| 0.39577035 |            |            |            |            |            |   |
| C17        | 0.24897284 | 0.01650999 | -0.61879   | -0.0041961 | 0.12617822 |   |
| 0.04941433 |            |            |            |            |            |   |

## Inverse Correlation Matrix

|            | C7         | C8         | C9         | C10        | C11        |   |
|------------|------------|------------|------------|------------|------------|---|
| C12        |            |            |            |            |            |   |
| C1         | -0.0145159 | 0.37326197 | -0.2033588 | 0.33660667 | 0.03176937 | - |
| 0.4371694  |            |            |            |            |            |   |
| C2         | -0.5606377 | -0.7195804 | -0.4695189 | -0.0283048 | 0.62378925 | - |
| 0.1538388  |            |            |            |            |            |   |
| C3         | 0.12757141 | -0.5201049 | -0.0088369 | -0.0712588 | -0.1180061 |   |
| 0.03740794 |            |            |            |            |            |   |
| C4         | -0.0370145 | -0.2266735 | 0.50037578 | -0.4343081 | -0.3317239 |   |
| 0.19409327 |            |            |            |            |            |   |
| C5         | -0.0978818 | -0.4716934 | 0.25531291 | -0.3446613 | 0.13987696 | - |
| 0.2157915  |            |            |            |            |            |   |
| C6         | -0.771177  | 0.08258262 | -0.2965638 | 0.18770321 | 0.20886306 | - |
| 1.5209623  |            |            |            |            |            |   |
| C7         | 3.30625634 | -0.6950941 | 0.08780138 | 0.03183221 | -0.8813164 |   |
| 0.75384038 |            |            |            |            |            |   |
| C8         | -0.6950941 | 3.96157509 | -1.5611156 | 0.19754984 | -0.1257417 | - |
| 0.3034404  |            |            |            |            |            |   |
| C9         | 0.08780138 | -1.5611156 | 4.23350593 | -1.4299573 | 0.17745236 | - |
| 0.3596236  |            |            |            |            |            |   |
| C10        | 0.03183221 | 0.19754984 | -1.4299573 | 3.32729941 | -1.0693283 | - |
| 0.0808332  |            |            |            |            |            |   |
| C11        | -0.8813164 | -0.1257417 | 0.17745236 | -1.0693283 | 3.25882868 | - |
| 0.614059   |            |            |            |            |            |   |
| C12        | 0.75384038 | -0.3034404 | -0.3596236 | -0.0808332 | -0.614059  |   |

|            |            |            |            |            |            |   |
|------------|------------|------------|------------|------------|------------|---|
| 4.85161182 |            |            |            |            |            |   |
| C13        | -0.3978419 | -0.2204845 | -0.486904  | -0.0752334 | -0.420245  | - |
| 1.2467763  |            |            |            |            |            |   |
| C14        | 0.13109456 | 0.09380279 | -0.2603682 | 0.53679163 | -0.8136686 | - |
| 0.5311107  |            |            |            |            |            |   |
| C15        | -0.5221851 | -0.0490415 | -0.3589758 | -0.6097056 | 0.64173598 | - |
| 0.0418437  |            |            |            |            |            |   |
| C16        | -0.2488209 | 0.28264966 | 0.17006027 | 0.28151422 | -0.488543  | - |
| 0.5677253  |            |            |            |            |            |   |
| C17        | -0.256378  | -0.0400828 | -0.0250519 | -0.5586241 | 0.02206391 |   |
| 0.08345488 |            |            |            |            |            |   |

# Eksploratory Factor Analysis:Section C

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## The FACTOR Procedure Initial Factor Method: Principal Components

### Inverse Correlation Matrix

|     | C13        | C14        | C15        | C16        | C17        |
|-----|------------|------------|------------|------------|------------|
| C1  | 0.09688807 | -0.3730548 | 0.1749204  | -0.2832825 | 0.24897284 |
| C2  | 0.18863904 | -0.0768605 | 0.09871627 | -0.4117941 | 0.01650999 |
| C3  | -0.0985664 | -0.0284993 | -0.0596575 | 0.17923727 | -0.61879   |
| C4  | -0.336295  | 0.05681961 | -0.2117354 | -0.278544  | -0.0041961 |
| C5  | 0.1940041  | -0.3451487 | -0.3068838 | -0.3543474 | 0.12617822 |
| C6  | -0.5398935 | 0.19142321 | -0.2866442 | 0.39577035 | 0.04941433 |
| C7  | -0.3978419 | 0.13109456 | -0.5221851 | -0.2488209 | -0.256378  |
| C8  | -0.2204845 | 0.09380279 | -0.0490415 | 0.28264966 | -0.0400828 |
| C9  | -0.486904  | -0.2603682 | -0.3589758 | 0.17006027 | -0.0250519 |
| C10 | -0.0752334 | 0.53679163 | -0.6097056 | 0.28151422 | -0.5586241 |
| C11 | -0.420245  | -0.8136686 | 0.64173598 | -0.488543  | 0.02206391 |
| C12 | -1.2467763 | -0.5311107 | -0.0418437 | -0.5677253 | 0.08345488 |
| C13 | 4.38487043 | -0.8225497 | 0.44609067 | -0.8038161 | 0.08100396 |
| C14 | -0.8225497 | 3.01599421 | -0.8955761 | 0.53304901 | -0.2338627 |
| C15 | 0.44609067 | -0.8955761 | 3.18920516 | -0.7930653 | -0.3966091 |
| C16 | -0.8038161 | 0.53304901 | -0.7930653 | 2.74912191 | -0.1578287 |
| C17 | 0.08100396 | -0.2338627 | -0.3966091 | -0.1578287 | 2.06756402 |

### Partial Correlations Controlling all other Variables

|         | C1      | C2       | C3      | C4      | C5      | C6      |
|---------|---------|----------|---------|---------|---------|---------|
| C7      |         |          |         |         |         |         |
| C1      | 1.00000 | 0.30836  | .       | .       | .       | 0.17104 |
| C2      | 0.30836 | 1.00000  | 0.27533 | .       | .       | .       |
| 0.17257 |         |          |         |         |         |         |
| C3      | .       | 0.27533  | 1.00000 | 0.25944 | .       | .       |
| C4      | .       | .        | 0.25944 | 1.00000 | .       | 0.21985 |
| C5      | .       | .        | .       | .       | 1.00000 | 0.36974 |
| C6      | 0.17104 | .        | .       | 0.21985 | 0.36974 | 1.00000 |
| 0.19025 |         |          |         |         |         |         |
| C7      | .       | 0.17257  | .       | .       | .       | 0.19025 |
| 1.00000 |         |          |         |         |         |         |
| C8      | .       | 0.20234  | .       | .       | .       | .       |
| 0.19206 |         |          |         |         |         |         |
| C9      | .       | .        | .       | .       | .       | .       |
| C10     | .       | .        | .       | .       | .       | .       |
| C11     | .       | -0.19340 | .       | .       | .       | .       |
| 0.26849 |         |          |         |         |         |         |
| C12     | .       | .        | .       | .       | .       | 0.30975 |
| 0.18822 |         |          |         |         |         | -       |
| C13     | .       | .        | .       | .       | .       | .       |
| C14     | .       | .        | .       | .       | .       | .       |
| C15     | .       | .        | .       | .       | .       | .       |
| 0.16081 |         |          |         |         |         |         |
| C16     | .       | .        | .       | .       | .       | .       |
| C17     | .       | .        | 0.22845 | .       | .       | .       |

Values less than 0.15 are not printed.

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# Eksploratory Factor Analysis:Section C

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Partial Correlations Controlling all other Variables

|         | C8      | C9      | C10      | C11      | C12      | C13     |   |
|---------|---------|---------|----------|----------|----------|---------|---|
| C14     |         |         |          |          |          |         |   |
| C1      | .       | .       | .        | .        | .        | .       | . |
| C2      | 0.20234 | .       | .        | -0.19340 | .        | .       | . |
| C3      | .       | .       | .        | .        | .        | .       | . |
| C4      | .       | .       | .        | .        | .        | .       | . |
| C5      | .       | .       | .        | .        | .        | .       | . |
| C6      | .       | .       | .        | .        | 0.30975  | .       | . |
| C7      | 0.19206 | .       | .        | 0.26849  | -0.18822 | .       | . |
| C8      | 1.00000 | 0.38120 | .        | .        | .        | .       | . |
| C9      | 0.38120 | 1.00000 | 0.38100  | .        | .        | .       | . |
| C10     | .       | 0.38100 | 1.00000  | 0.32474  | .        | .       | - |
| 0.16945 |         |         |          |          |          |         |   |
| C11     | .       | .       | 0.32474  | 1.00000  | 0.15443  | .       |   |
| 0.25954 |         |         |          |          |          |         |   |
| C12     | .       | .       | .        | 0.15443  | 1.00000  | 0.27031 | . |
| C13     | .       | .       | .        | .        | 0.27031  | 1.00000 |   |
| 0.22619 |         |         |          |          |          |         |   |
| C14     | .       | .       | -0.16945 | 0.25954  | .        | 0.22619 |   |
| 1.00000 |         |         |          |          |          |         |   |
| C15     | .       | .       | 0.18717  | -0.19906 | .        | .       |   |
| 0.28877 |         |         |          |          |          |         |   |
| C16     | .       | .       | .        | 0.16322  | 0.15545  | 0.23152 | - |
| 0.18512 |         |         |          |          |          |         |   |
| C17     | .       | .       | 0.21298  | .        | .        | .       | . |

Values less than 0.15 are not printed.

Partial Correlations Controlling all other Variables

|     | C15      | C16      | C17     |
|-----|----------|----------|---------|
| C1  | .        | .        | .       |
| C2  | .        | .        | .       |
| C3  | .        | .        | 0.22845 |
| C4  | .        | .        | .       |
| C5  | .        | .        | .       |
| C6  | .        | .        | .       |
| C7  | 0.16081  | .        | .       |
| C8  | .        | .        | .       |
| C9  | .        | .        | .       |
| C10 | 0.18717  | .        | 0.21298 |
| C11 | -0.19906 | 0.16322  | .       |
| C12 | .        | 0.15545  | .       |
| C13 | .        | 0.23152  | .       |
| C14 | 0.28877  | -0.18512 | .       |
| C15 | 1.00000  | 0.26784  | 0.15445 |
| C16 | 0.26784  | 1.00000  | .       |
| C17 | 0.15445  | .        | 1.00000 |

Values less than 0.15 are not printed.

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# Eksploratory Factor Analysis:Section C

09:00 Tuesday, September 30,

The FACTOR Procedure  
Initial Factor Method: Principal Components

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95522957

| C1         | C2         | C3         | C4         | C5         | C6         |
|------------|------------|------------|------------|------------|------------|
| 0.95844229 | 0.94151897 | 0.96624285 | 0.97146905 | 0.96311048 | 0.94904262 |

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95522957

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| C7         | C8         | C9         | C10        | C11        | C12        |
| 0.96186243 | 0.95950860 | 0.94906974 | 0.93519793 | 0.93743283 | 0.96082568 |

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.95522957

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| C13        | C14        | C15        | C16        | C17        |
| 0.96615035 | 0.94874344 | 0.95174850 | 0.95007013 | 0.96586605 |

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 17 Average = 1

|    | Eigenvalue | Difference | Proportion | Cumulative |
|----|------------|------------|------------|------------|
| 1  | 11.1230321 | 10.2483149 | 0.6543     | 0.6543     |
| 2  | 0.8747172  | 0.1173173  | 0.0515     | 0.7057     |
| 3  | 0.7573999  | 0.2225316  | 0.0446     | 0.7503     |
| 4  | 0.5348683  | 0.0341878  | 0.0315     | 0.7818     |
| 5  | 0.5006805  | 0.0479154  | 0.0295     | 0.8112     |
| 6  | 0.4527651  | 0.0278070  | 0.0266     | 0.8379     |
| 7  | 0.4249581  | 0.0517217  | 0.0250     | 0.8628     |
| 8  | 0.3732364  | 0.0449753  | 0.0220     | 0.8848     |
| 9  | 0.3282611  | 0.0033321  | 0.0193     | 0.9041     |
| 10 | 0.3249290  | 0.0647304  | 0.0191     | 0.9232     |
| 11 | 0.2601985  | 0.0469696  | 0.0153     | 0.9385     |
| 12 | 0.2132289  | 0.0055581  | 0.0125     | 0.9511     |
| 13 | 0.2076708  | 0.0153188  | 0.0122     | 0.9633     |
| 14 | 0.1923520  | 0.0326853  | 0.0113     | 0.9746     |
| 15 | 0.1596667  | 0.0163959  | 0.0094     | 0.9840     |
| 16 | 0.1432707  | 0.0145059  | 0.0084     | 0.9924     |
| 17 | 0.1287648  |            | 0.0076     | 1.0000     |

1 factor will be retained by the MINEIGEN criterion.

Eksploratory Factor Analysis:Section C

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09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
Initial Factor Method: Principal Components

Eigenvectors

1

|     |         |
|-----|---------|
| C1  | 0.22335 |
| C2  | 0.22991 |
| C3  | 0.24944 |
| C4  | 0.25106 |
| C5  | 0.24194 |
| C6  | 0.25966 |
| C7  | 0.24871 |
| C8  | 0.25315 |
| C9  | 0.25243 |
| C10 | 0.23394 |
| C11 | 0.23539 |
| C12 | 0.26042 |
| C13 | 0.25924 |
| C14 | 0.23792 |
| C15 | 0.24290 |
| C16 | 0.23202 |
| C17 | 0.20440 |

Factor Pattern

Factor1

|     |         |
|-----|---------|
| C12 | 0.86855 |
| C6  | 0.86601 |
| C13 | 0.86460 |
| C8  | 0.84429 |
| C9  | 0.84189 |
| C4  | 0.83732 |
| C3  | 0.83191 |
| C7  | 0.82949 |
| C15 | 0.81012 |
| C5  | 0.80690 |
| C14 | 0.79350 |
| C11 | 0.78505 |
| C10 | 0.78020 |
| C16 | 0.77380 |
| C2  | 0.76677 |
| C1  | 0.74488 |
| C17 | 0.68169 |

Values less than  
0.3 are not  
printed.

# Eksploratory Factor Analysis:Section C

26

09:00 Tuesday, September 30,

2014

## The FACTOR Procedure Initial Factor Method: Principal Components

### Variance Explained by Each Factor

Factor1

11.123032

Final Communality Estimates: Total = 11.123032

| C1         | C2         | C3         | C4         | C5         | C6         |
|------------|------------|------------|------------|------------|------------|
| 0.55485288 | 0.58794271 | 0.69207578 | 0.70110297 | 0.65109085 | 0.74997709 |
| C7         | C8         | C9         | C10        | C11        | C12        |
| 0.68804752 | 0.71283165 | 0.70878466 | 0.60871857 | 0.61629822 | 0.75437064 |
| C13        | C14        | C15        | C16        | C17        |            |
| 0.74753472 | 0.62963615 | 0.65628978 | 0.59877038 | 0.46470751 |            |

### Residual Correlations With Uniqueness on the Diagonal

|         | C1       | C2       | C3      | C4      | C5       | C6       |
|---------|----------|----------|---------|---------|----------|----------|
| C7      |          |          |         |         |          |          |
| C1      | 0.44515  | 0.09577  | .       | .       | .        | .        |
| C2      | 0.09577  | 0.41206  | 0.09073 | .       | -0.09096 | .        |
| C3      | .        | 0.09073  | 0.30792 | .       | .        | .        |
| C4      | .        | .        | .       | 0.29890 | .        | .        |
| C5      | .        | -0.09096 | .       | .       | 0.34891  | 0.09425  |
| C6      | .        | .        | .       | .       | 0.09425  | 0.25002  |
| C7      | .        | .        | .       | .       | .        | .        |
| 0.31195 |          |          |         |         |          |          |
| C8      | .        | .        | .       | .       | .        | .        |
| C9      | .        | .        | .       | .       | .        | .        |
| C10     | -0.14483 | .        | .       | .       | .        | .        |
| C11     | -0.08361 | -0.13380 | .       | .       | .        | .        |
| C12     | .        | .        | .       | .       | .        | -        |
| 0.08121 |          |          |         |         |          |          |
| C13     | .        | .        | .       | .       | .        | .        |
| C14     | .        | .        | .       | .       | .        | .        |
| C15     | .        | .        | .       | .       | .        | .        |
| C16     | .        | .        | .       | .       | .        | .        |
| C17     | -0.13449 | .        | .       | .       | -0.07839 | -0.08808 |

Values less than 0.075 are not printed.

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2014

Eksploratory Factor Analysis:Section C  
09:00 Tuesday, September 30,

The FACTOR Procedure  
Initial Factor Method: Principal Components

Residual Correlations With Uniqueness on the Diagonal

|         | C8       | C9       | C10      | C11      | C12      | C13     |
|---------|----------|----------|----------|----------|----------|---------|
| C14     |          |          |          |          |          |         |
| C1      | .        | .        | -0.14483 | -0.08361 | .        | .       |
| C2      | .        | .        | .        | -0.13380 | .        | .       |
| C3      | .        | .        | .        | .        | .        | .       |
| C4      | .        | .        | .        | .        | .        | .       |
| C5      | .        | .        | .        | .        | .        | .       |
| C6      | .        | .        | .        | .        | .        | .       |
| C7      | .        | .        | .        | .        | -0.08121 | .       |
| C8      | 0.28717  | 0.08511  | .        | .        | .        | .       |
| C9      | 0.08511  | 0.29122  | 0.09025  | .        | .        | .       |
| C10     | .        | 0.09025  | 0.39128  | .        | .        | -       |
| 0.07533 |          |          |          |          |          |         |
| C11     | .        | .        | .        | 0.38370  | .        | .       |
| C12     | .        | .        | .        | .        | 0.24563  | .       |
| C13     | .        | .        | .        | .        | .        | 0.25247 |
| C14     | .        | .        | -0.07533 | .        | .        | .       |
| 0.37036 |          |          |          |          |          |         |
| C15     | .        | .        | .        | -0.08056 | .        | .       |
| C16     | -0.08129 | -0.08396 | .        | .        | .        | .       |
| C17     | .        | .        | 0.08880  | .        | -0.09314 | .       |

Values less than 0.075 are not printed.

Residual Correlations With Uniqueness on the Diagonal

|     | C15      | C16      | C17      |
|-----|----------|----------|----------|
| C1  | .        | .        | -0.13449 |
| C2  | .        | .        | .        |
| C3  | .        | .        | .        |
| C4  | .        | .        | .        |
| C5  | .        | .        | -0.07839 |
| C6  | .        | .        | -0.08808 |
| C7  | .        | .        | .        |
| C8  | .        | -0.08129 | .        |
| C9  | .        | -0.08396 | .        |
| C10 | .        | .        | 0.08880  |
| C11 | -0.08056 | .        | .        |
| C12 | .        | .        | -0.09314 |
| C13 | .        | .        | .        |
| C14 | .        | .        | .        |
| C15 | 0.34371  | .        | .        |
| C16 | .        | 0.40123  | .        |
| C17 | .        | .        | 0.53529  |

Values less than 0.075 are not printed.

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2014

Eksploratory Factor Analysis:Section C  
09:00 Tuesday, September 30,

The FACTOR Procedure  
Initial Factor Method: Principal Components

Root Mean Square Off-Diagonal Residuals: Overall = 0.05221217

| C1         | C2         | C3         | C4         | C5         | C6         |
|------------|------------|------------|------------|------------|------------|
| 0.06837911 | 0.06801247 | 0.04964914 | 0.03403738 | 0.04849449 | 0.05131071 |

Root Mean Square Off-Diagonal Residuals: Overall = 0.05221217

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| C7         | C8         | C9         | C10        | C11        | C12        |
| 0.03391463 | 0.04655163 | 0.05121908 | 0.06658285 | 0.05830079 | 0.05122777 |

Root Mean Square Off-Diagonal Residuals: Overall = 0.05221217

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| C13        | C14        | C15        | C16        | C17        |
| 0.04536971 | 0.04568960 | 0.04402991 | 0.04437549 | 0.06311451 |

#### Partial Correlations Controlling Factors

|         |          |          |          |          |          |          |
|---------|----------|----------|----------|----------|----------|----------|
|         | C1       | C2       | C3       | C4       | C5       | C6       |
| C7      |          |          |          |          |          |          |
| C1      | 1.00000  | 0.22361  | .        | .        | .        | .        |
| C2      | 0.22361  | 1.00000  | 0.25471  | .        | -0.23990 | -0.22727 |
| C3      | .        | 0.25471  | 1.00000  | 0.16328  | .        | .        |
| C4      | .        | .        | 0.16328  | 1.00000  | .        | .        |
| C5      | .        | -0.23990 | .        | .        | 1.00000  | 0.31910  |
| C6      | .        | -0.22727 | .        | .        | 0.31910  | 1.00000  |
| C7      | .        | .        | .        | .        | .        | .        |
| 1.00000 |          |          |          |          |          |          |
| C8      | -0.18104 | 0.15583  | .        | .        | .        | -0.16282 |
| C9      | -0.15119 | .        | .        | -0.25178 | -0.19090 | -0.16801 |
| C10     | -0.34704 | -0.16955 | .        | .        | .        | -0.22169 |
| C11     | -0.20230 | -0.33650 | -0.19429 | .        | .        | .        |
| C12     | .        | -0.18875 | -0.22386 | -0.16057 | .        | 0.22667  |
| 0.29338 |          |          |          |          |          |          |
| C13     | .        | -0.22182 | -0.21211 | .        | .        | .        |
| C14     | .        | -0.17945 | -0.16140 | -0.17867 | .        | .        |
| 0.15703 |          |          |          |          |          |          |
| C15     | -0.19015 | .        | .        | .        | .        | .        |
| C16     | .        | .        | -0.17599 | .        | .        | .        |
| C17     | -0.27551 | .        | .        | .        | -0.18138 | -0.24076 |

Values less than 0.15 are not printed.

#### Partial Correlations Controlling Factors

|     |          |          |          |          |     |     |
|-----|----------|----------|----------|----------|-----|-----|
|     | C8       | C9       | C10      | C11      | C12 | C13 |
| C14 |          |          |          |          |     |     |
| C1  | -0.18104 | -0.15119 | -0.34704 | -0.20230 | .   | .   |

#### Eksploratory Factor Analysis:Section C

29  
09:00 Tuesday, September 30,  
2014

#### The FACTOR Procedure Initial Factor Method: Principal Components

Values less than 0.15 are noPartial Correlations Controlling Factors

|         |          |          |          |          |          |          |
|---------|----------|----------|----------|----------|----------|----------|
|         | C8       | C9       | C10      | C11      | C12      | C13      |
| C14     |          |          |          |          |          |          |
| C2      | 0.15583  | .        | -0.16955 | -0.33650 | -0.18875 | -0.22182 |
| 0.17945 |          |          |          |          |          |          |
| C3      | .        | .        | .        | -0.19429 | -0.22386 | -0.21211 |
| 0.16140 |          |          |          |          |          |          |
| C4      | .        | -0.25178 | .        | .        | -0.16057 | .        |
| 0.17867 |          |          |          |          |          |          |
| C5      | .        | -0.19090 | .        | .        | .        | .        |
| C6      | -0.16282 | -0.16801 | -0.22169 | .        | 0.22667  | .        |
| C7      | .        | .        | .        | .        | -0.29338 | .        |
| 0.15703 |          |          |          |          |          |          |
| C8      | 1.00000  | 0.29432  | .        | .        | -0.15215 | .        |
| 0.16573 |          |          |          |          |          |          |
| C9      | 0.29432  | 1.00000  | 0.26736  | .        | .        | .        |
| C10     | .        | 0.26736  | 1.00000  | 0.17585  | -0.17704 | .        |
| 0.19789 |          |          |          |          |          |          |
| C11     | .        | .        | 0.17585  | 1.00000  | .        | .        |

|         |          |          |          |          |          |          |   |
|---------|----------|----------|----------|----------|----------|----------|---|
| C12     | -0.15215 | .        | -0.17704 | .        | 1.00000  | 0.25125  | . |
| C13     | .        | .        | .        | .        | 0.25125  | 1.00000  | . |
| C14     | -0.16573 | .        | -0.19789 | .        | .        | .        | . |
| 1.00000 |          |          |          |          |          |          |   |
| C15     | .        | .        | .        | -0.22184 | -0.17706 | -0.23474 | . |
| C16     | -0.23947 | -0.24562 | -0.18160 | .        | .        | .        | - |
| 0.16077 |          |          |          |          |          |          |   |
| C17     | .        | .        | 0.19404  | .        | -0.25687 | -0.19715 | . |

Values less than 0.15 are not printed.

#### Partial Correlations Controlling Factors

|     | C15      | C16      | C17      |
|-----|----------|----------|----------|
| C1  | -0.19015 | .        | -0.27551 |
| C2  | .        | .        | .        |
| C3  | .        | -0.17599 | .        |
| C4  | .        | .        | .        |
| C5  | .        | .        | -0.18138 |
| C6  | .        | .        | -0.24076 |
| C7  | .        | .        | .        |
| C8  | .        | -0.23947 | .        |
| C9  | .        | -0.24562 | .        |
| C10 | .        | -0.18160 | 0.19404  |
| C11 | -0.22184 | .        | .        |
| C12 | -0.17706 | .        | -0.25687 |
| C13 | -0.23474 | .        | -0.19715 |
| C14 | .        | -0.16077 | .        |
| C15 | 1.00000  | .        | .        |
| C16 | .        | 1.00000  | .        |
| C17 | .        | .        | 1.00000  |

Values less than 0.15 are not printed.

#### Eksploratory Factor Analysis:Section C

30

09:00 Tuesday, September 30,

2014

#### The FACTOR Procedure Initial Factor Method: Principal Components

Root Mean Square Off-Diagonal Partial: Overall = 0.15073512

| C1         | C2         | C3         | C4         | C5         | C6         |
|------------|------------|------------|------------|------------|------------|
| 0.16475092 | 0.18255521 | 0.15382372 | 0.11139255 | 0.14164173 | 0.16880660 |

Root Mean Square Off-Diagonal Partial: Overall = 0.15073512

| C7         | C8         | C9         | C10        | C11        | C12        |
|------------|------------|------------|------------|------------|------------|
| 0.10998183 | 0.14886368 | 0.16284046 | 0.17539624 | 0.15667381 | 0.17628496 |

Root Mean Square Off-Diagonal Partial: Overall = 0.15073512

| C13        | C14        | C15        | C16        | C17        |
|------------|------------|------------|------------|------------|
| 0.15132200 | 0.12888040 | 0.12806104 | 0.12419431 | 0.15055976 |

#### Eksploratory Factor Analysis:Section C

31

09:00 Tuesday, September 30,

2014

#### The FACTOR Procedure Rotation Method: Oblimin (tau = 0)

NOTE: Rotation not possible with 1 factor.

#### Eksploratory Factor Analysis:Section C

32

09:00 Tuesday, September 30,

2014

The FACTOR Procedure  
 Rotation Method: Oblimin (tau = 0)  
 Scoring Coefficients Estimated by Regression

Squared Multiple Correlations of the Variables with Each Factor

Factor1  
 1.0000000

Standardized Scoring Coefficients

|     | Factor1 |
|-----|---------|
| C12 | 0.07809 |
| C6  | 0.07786 |
| C13 | 0.07773 |
| C8  | 0.07590 |
| C9  | 0.07569 |
| C4  | 0.07528 |
| C3  | 0.07479 |
| C7  | 0.07457 |
| C15 | 0.07283 |
| C5  | 0.07254 |
| C14 | 0.07134 |
| C11 | 0.07058 |
| C10 | 0.07014 |
| C16 | 0.06957 |
| C2  | 0.06894 |
| C1  | 0.06697 |
| C17 | 0.06129 |

Eksploratory Factor Analysis:Section D

33

09:00 Tuesday, September 30,

2014

The FACTOR Procedure

| Input Data Type          | Raw Data |
|--------------------------|----------|
| Number of Records Read   | 174      |
| Number of Records Used   | 167      |
| N for Significance Tests | 167      |

Means and Standard Deviations from 167 Observations

| Variable | Mean      | Std Dev   |
|----------|-----------|-----------|
| D1       | 3.2395210 | 1.1312089 |
| D2       | 3.0299401 | 1.0666079 |
| D3       | 3.0598802 | 1.0568229 |
| D4       | 3.1796407 | 0.9588233 |
| D5       | 3.2335329 | 0.9936310 |
| D6       | 3.0898204 | 1.0168837 |
| D7       | 3.0958084 | 1.0014058 |
| D8       | 3.0419162 | 1.0081194 |
| D9       | 3.4311377 | 1.0837187 |
| D10      | 3.0958084 | 1.1366487 |
| D11      | 3.1257485 | 1.0307305 |

Correlations

|    | D1      | D2      | D3      | D4      | D5      | D6      |
|----|---------|---------|---------|---------|---------|---------|
| D7 |         |         |         |         |         |         |
| D1 | 1.00000 | 0.62811 | 0.61277 | 0.55437 | 0.47517 | 0.52059 |
| D2 | 0.37314 | 1.00000 | 0.76797 | 0.75458 | 0.58451 | 0.63623 |
| D3 | 0.41466 |         |         |         |         |         |

|         |         |         |         |         |         |         |   |
|---------|---------|---------|---------|---------|---------|---------|---|
| D3      | 0.61277 | 0.76797 | 1.00000 | 0.69677 | 0.60043 | 0.53870 | . |
| D4      | 0.55437 | 0.75458 | 0.69677 | 1.00000 | 0.66388 | 0.66916 |   |
| 0.43369 |         |         |         |         |         |         |   |
| D5      | 0.47517 | 0.58451 | 0.60043 | 0.66388 | 1.00000 | 0.61109 |   |
| 0.49199 |         |         |         |         |         |         |   |
| D6      | 0.52059 | 0.63623 | 0.53870 | 0.66916 | 0.61109 | 1.00000 |   |
| 0.69547 |         |         |         |         |         |         |   |
| D7      | 0.37314 | 0.41466 | .       | 0.43369 | 0.49199 | 0.69547 |   |
| 1.00000 |         |         |         |         |         |         |   |
| D8      | 0.48770 | 0.56467 | 0.47824 | 0.60915 | 0.56750 | 0.68972 |   |
| 0.68222 |         |         |         |         |         |         |   |
| D9      | 0.46071 | 0.53077 | 0.48227 | 0.63810 | 0.60523 | 0.62609 |   |
| 0.56121 |         |         |         |         |         |         |   |
| D10     | 0.44119 | 0.50942 | 0.46660 | 0.53133 | 0.65213 | 0.66484 |   |
| 0.61110 |         |         |         |         |         |         |   |
| D11     | 0.46484 | 0.65410 | 0.51842 | 0.63532 | 0.61817 | 0.67885 |   |
| 0.53103 |         |         |         |         |         |         |   |

Values less than 0.3 are not printed.

#### Correlations

|    | D8      | D9      | D10     | D11     |
|----|---------|---------|---------|---------|
| D1 | 0.48770 | 0.46071 | 0.44119 | 0.46484 |
| D2 | 0.56467 | 0.53077 | 0.50942 | 0.65410 |
| D3 | 0.47824 | 0.48227 | 0.46660 | 0.51842 |

Values less than 0.3 are not printed.

#### Eksploratory Factor Analysis:Section D

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#### The FACTOR Procedure

#### Correlations

|     | D8      | D9      | D10     | D11     |
|-----|---------|---------|---------|---------|
| D4  | 0.60915 | 0.63810 | 0.53133 | 0.63532 |
| D5  | 0.56750 | 0.60523 | 0.65213 | 0.61817 |
| D6  | 0.68972 | 0.62609 | 0.66484 | 0.67885 |
| D7  | 0.68222 | 0.56121 | 0.61110 | 0.53103 |
| D8  | 1.00000 | 0.64503 | 0.73248 | 0.69638 |
| D9  | 0.64503 | 1.00000 | 0.65582 | 0.63608 |
| D10 | 0.73248 | 0.65582 | 1.00000 | 0.66838 |
| D11 | 0.69638 | 0.63608 | 0.66838 | 1.00000 |

Values less than 0.3 are not printed.

#### Eksploratory Factor Analysis:Section D

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#### The FACTOR Procedure Initial Factor Method: Principal Components

#### Inverse Correlation Matrix

|            | D1         | D2         | D3         | D4         | D5         |   |
|------------|------------|------------|------------|------------|------------|---|
| D6         |            |            |            |            |            |   |
| D1         | 1.87471359 | -0.5315133 | -0.5391119 | 0.0095485  | -0.0147942 | - |
| 0.1638145  |            |            |            |            |            |   |
| D2         | -0.5315133 | 3.78379273 | -1.4857122 | -1.089836  | 0.19245175 | - |
| 0.2778339  |            |            |            |            |            |   |
| D3         | -0.5391119 | -1.4857122 | 3.08581184 | -0.5236808 | -0.5936561 | - |
| 0.1594739  |            |            |            |            |            |   |
| D4         | 0.0095485  | -1.089836  | -0.5236808 | 3.48584565 | -0.7037588 | - |
| 0.6967803  |            |            |            |            |            |   |
| D5         | -0.0147942 | 0.19245175 | -0.5936561 | -0.7037588 | 2.52426577 | - |
| 0.0184208  |            |            |            |            |            |   |
| D6         | -0.1638145 | -0.2778339 | -0.1594739 | -0.6967803 | -0.0184208 |   |
| 3.34277203 |            |            |            |            |            |   |

|           |            |            |            |            |            |   |
|-----------|------------|------------|------------|------------|------------|---|
| D7        | -0.0712207 | -0.1721785 | 0.6009923  | 0.38615025 | -0.2830549 | - |
| 1.2214619 |            |            |            |            |            |   |
| D8        | -0.1935657 | 0.06402625 | -0.0991274 | -0.5246929 | 0.31613272 | - |
| 0.0622527 |            |            |            |            |            |   |
| D9        | -0.1283251 | 0.23954273 | -0.0179744 | -0.7212558 | -0.1960922 | - |
| 0.0301213 |            |            |            |            |            |   |
| D10       | -0.0088202 | 0.13589032 | -0.1533776 | 0.52643954 | -0.7800468 | - |
| 0.4154811 |            |            |            |            |            |   |
| D11       | 0.13013048 | -0.8919931 | 0.29442939 | -0.0594128 | -0.335789  | - |
| 0.4857903 |            |            |            |            |            |   |

#### Inverse Correlation Matrix

|     | D7         | D8         | D9         | D10        | D11        |
|-----|------------|------------|------------|------------|------------|
| D1  | -0.0712207 | -0.1935657 | -0.1283251 | -0.0088202 | 0.13013048 |
| D2  | -0.1721785 | 0.06402625 | 0.23954273 | 0.13589032 | -0.8919931 |
| D3  | 0.6009923  | -0.0991274 | -0.0179744 | -0.1533776 | 0.29442939 |
| D4  | 0.38615025 | -0.5246929 | -0.7212558 | 0.52643954 | -0.0594128 |
| D5  | -0.2830549 | 0.31613272 | -0.1960922 | -0.7800468 | -0.335789  |
| D6  | -1.2214619 | -0.0622527 | -0.0301213 | -0.4154811 | -0.4857903 |
| D7  | 2.58292821 | -0.9609567 | -0.3299476 | -0.1718876 | 0.21534073 |
| D8  | -0.9609567 | 3.31348388 | -0.1841657 | -1.0302948 | -0.7117163 |
| D9  | -0.3299476 | -0.1841657 | 2.42953321 | -0.5331045 | -0.3734281 |
| D10 | -0.1718876 | -1.0302948 | -0.5331045 | 3.01811527 | -0.444868  |
| D11 | 0.21534073 | -0.7117163 | -0.3734281 | -0.444868  | 2.86157057 |

#### Partial Correlations Controlling all other Variables

|         | D1      | D2      | D3       | D4       | D5      | D6      |
|---------|---------|---------|----------|----------|---------|---------|
| D7      |         |         |          |          |         |         |
| D1      | 1.00000 | 0.19956 | 0.22414  | .        | .       | .       |
| D2      | 0.19956 | 1.00000 | 0.43480  | 0.30008  | .       | .       |
| D3      | 0.22414 | 0.43480 | 1.00000  | 0.15967  | 0.21271 | .       |
| 0.21288 |         |         |          |          |         |         |
| D4      | .       | 0.30008 | 0.15967  | 1.00000  | 0.23725 | 0.20412 |
| D5      | .       | .       | 0.21271  | 0.23725  | 1.00000 | .       |
| D6      | .       | .       | .        | 0.20412  | .       | 1.00000 |
| 0.41569 |         |         |          |          |         |         |
| D7      | .       | .       | -0.21288 | .        | .       | 0.41569 |
| 1.00000 |         |         |          |          |         |         |
| D8      | .       | .       | .        | 0.15439  | .       | .       |
| 0.32848 |         |         |          |          |         |         |
| D9      | .       | .       | .        | 0.24784  | .       | .       |
| D10     | .       | .       | .        | -0.16230 | 0.28261 | .       |

Values less than 0.15 are not printed.

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#### The FACTOR Procedure Initial Factor Method: Principal Components

#### Partial Correlations Controlling all other Variables

|     | D1 | D2      | D3 | D4 | D5 | D6      |
|-----|----|---------|----|----|----|---------|
| D7  |    |         |    |    |    |         |
| D11 | .  | 0.27108 | .  | .  | .  | 0.15707 |

Values less than 0.15 are not printed.

#### Partial Correlations Controlling all other Variables

|    | D8      | D9      | D10      | D11     |
|----|---------|---------|----------|---------|
| D1 | .       | .       | .        | .       |
| D2 | .       | .       | .        | 0.27108 |
| D3 | .       | .       | .        | .       |
| D4 | 0.15439 | 0.24784 | -0.16230 | .       |
| D5 | .       | .       | 0.28261  | .       |
| D6 | .       | .       | .        | 0.15707 |

|     |         |         |         |         |
|-----|---------|---------|---------|---------|
| D7  | 0.32848 | .       | .       | .       |
| D8  | 1.00000 | .       | 0.32580 | 0.23113 |
| D9  | .       | 1.00000 | 0.19687 | .       |
| D10 | 0.32580 | 0.19687 | 1.00000 | 0.15138 |
| D11 | 0.23113 | .       | 0.15138 | 1.00000 |

Values less than 0.15 are not printed.

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.92461820

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| D1         | D2         | D3         | D4         | D5         | D6         |
| 0.95963644 | 0.90089858 | 0.89390459 | 0.91942836 | 0.93763072 | 0.93746348 |

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.92461820

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| D7         | D8         | D9         | D10        | D11        |
| 0.87637068 | 0.92447150 | 0.95627956 | 0.92345583 | 0.94266456 |

Prior Communality Estimates: ONE

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Eigenvalues of the Correlation Matrix: Total = 11 Average = 1

|    | Eigenvalue | Difference | Proportion | Cumulative |
|----|------------|------------|------------|------------|
| 1  | 6.84604692 | 5.70086951 | 0.6224     | 0.6224     |
| 2  | 1.14517741 | 0.57575114 | 0.1041     | 0.7265     |
| 3  | 0.56942628 | 0.12057392 | 0.0518     | 0.7782     |
| 4  | 0.44885235 | 0.03874378 | 0.0408     | 0.8190     |
| 5  | 0.41010858 | 0.01412866 | 0.0373     | 0.8563     |
| 6  | 0.39597991 | 0.08489684 | 0.0360     | 0.8923     |
| 7  | 0.31108307 | 0.04384125 | 0.0283     | 0.9206     |
| 8  | 0.26724181 | 0.01893577 | 0.0243     | 0.9449     |
| 9  | 0.24830605 | 0.04741048 | 0.0226     | 0.9675     |
| 10 | 0.20089556 | 0.04401350 | 0.0183     | 0.9857     |
| 11 | 0.15688206 |            | 0.0143     | 1.0000     |

2 factors will be retained by the MINEIGEN criterion.

Eigenvectors

|     | 1       | 2        |
|-----|---------|----------|
| D1  | 0.26224 | 0.33585  |
| D2  | 0.31097 | 0.36519  |
| D3  | 0.28327 | 0.49377  |
| D4  | 0.31819 | 0.24806  |
| D5  | 0.30349 | 0.03462  |
| D6  | 0.32430 | -0.14885 |
| D7  | 0.26665 | -0.48039 |
| D8  | 0.31637 | -0.27054 |
| D9  | 0.30231 | -0.16323 |
| D10 | 0.30659 | -0.29235 |
| D11 | 0.31495 | -0.09526 |

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Factor Pattern

|     | Factor1 | Factor2  |
|-----|---------|----------|
| D6  | 0.84854 | .        |
| D4  | 0.83254 | .        |
| D8  | 0.82777 | .        |
| D11 | 0.82405 | .        |
| D2  | 0.81364 | 0.39080  |
| D10 | 0.80218 | -0.31285 |
| D5  | 0.79407 | .        |
| D9  | 0.79100 | .        |
| D3  | 0.74117 | 0.52839  |
| D7  | 0.69768 | -0.51408 |
| D1  | 0.68615 | 0.35940  |

Values less than 0.3 are not printed.

Variance Explained by Each Factor

| Factor1   | Factor2   |
|-----------|-----------|
| 6.8460469 | 1.1451774 |

Final Community Estimates: Total = 7.991224

| D1         | D2         | D3         | D4         | D5         | D6         |
|------------|------------|------------|------------|------------|------------|
| 0.59996373 | 0.81473903 | 0.82853183 | 0.76358822 | 0.63191901 | 0.74539306 |
| D7         | D8         | D9         | D10        | D11        |            |
| 0.75103247 | 0.76902525 | 0.65620157 | 0.74137348 | 0.68945668 |            |

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Residual Correlations With Uniqueness on the Diagonal

|         | D1       | D2       | D3       | D4       | D5       | D6      |
|---------|----------|----------|----------|----------|----------|---------|
| D7      |          |          |          |          |          |         |
| D1      | 0.40004  | .        | -0.08568 | -0.11227 | -0.08299 | .       |
| 0.07920 |          |          |          |          |          |         |
| D2      | .        | 0.18526  | .        | .        | -0.07606 | .       |
| D3      | -0.08568 | .        | 0.17147  | .        | .        | .       |
| D4      | -0.11227 | .        | .        | 0.23641  | .        | .       |
| D5      | -0.08299 | -0.07606 | .        | .        | 0.36808  | .       |
| D6      | .        | .        | .        | .        | .        | 0.25461 |
| D7      | 0.07920  | .        | .        | .        | .        | .       |
| 0.24897 |          |          |          |          |          |         |
| D8      | .        | .        | .        | .        | -0.07908 | .       |
| D9      | .        | .        | .        | .        | .        | -       |
| 0.08046 |          |          |          |          |          |         |
| D10     | .        | .        | .        | .        | .        | -       |
| 0.10939 |          |          |          |          |          |         |
| D11     | .        | .        | .        | .        | .        | -       |
| 0.09629 |          |          |          |          |          |         |

Values less than 0.075 are not printed.

Residual Correlations With Uniqueness on the Diagonal

|     | D8       | D9       | D10      | D11      |
|-----|----------|----------|----------|----------|
| D1  | .        | .        | .        | .        |
| D2  | .        | .        | .        | .        |
| D3  | .        | .        | .        | .        |
| D4  | .        | .        | .        | .        |
| D5  | -0.07908 | .        | .        | .        |
| D6  | .        | .        | .        | .        |
| D7  | .        | -0.08046 | -0.10939 | -0.09629 |
| D8  | 0.23097  | .        | .        | .        |
| D9  | .        | 0.34380  | .        | .        |
| D10 | .        | .        | 0.25863  | .        |
| D11 | .        | .        | .        | 0.31054  |

Values less than 0.075 are not printed.

Root Mean Square Off-Diagonal Residuals: Overall = 0.04942528

| D1         | D2         | D3         | D4         | D5         | D6         |
|------------|------------|------------|------------|------------|------------|
| 0.06568837 | 0.04308155 | 0.04158493 | 0.04611513 | 0.05113164 | 0.04274390 |

Root Mean Square Off-Diagonal Residuals: Overall = 0.04942528

| D7         | D8         | D9         | D10        | D11        |
|------------|------------|------------|------------|------------|
| 0.06464422 | 0.04113968 | 0.04593946 | 0.04889377 | 0.04506310 |

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Partial Correlations Controlling Factors

|         | D1       | D2       | D3       | D4       | D5       | D6       |
|---------|----------|----------|----------|----------|----------|----------|
| D7      |          |          |          |          |          |          |
| D1      | 1.00000  | -0.25942 | -0.32716 | -0.36508 | -0.21629 | .        |
| 0.25095 |          |          |          |          |          |          |
| D2      | -0.25942 | 1.00000  | -0.23326 | .        | -0.29126 | .        |
| 0.22302 |          |          |          |          |          |          |
| D3      | -0.32716 | -0.23326 | 1.00000  | -0.30070 | .        | .        |
| 0.16309 |          |          |          |          |          |          |
| D4      | -0.36508 | .        | -0.30070 | 1.00000  | .        | .        |
| D5      | -0.21629 | -0.29126 | .        | .        | 1.00000  | -0.18557 |
| D6      | .        | .        | .        | .        | -0.18557 | 1.00000  |
| D7      | 0.25095  | 0.22302  | 0.16309  | .        | .        | .        |
| 1.00000 |          |          |          |          |          |          |
| D8      | .        | .        | .        | .        | -0.27123 | -0.24246 |
| 0.18401 |          |          |          |          |          | -        |
| D9      | .        | -0.17657 | .        | .        | .        | -0.24652 |
| 0.27501 |          |          |          |          |          | -        |
| D10     | .        | .        | 0.17739  | -0.21623 | .        | -0.25593 |
| 0.43111 |          |          |          |          |          | -        |
| D11     | -0.18143 | .        | -0.16677 | .        | .        | .        |
| 0.34631 |          |          |          |          |          | -        |

Values less than 0.15 are not printed.

Partial Correlations Controlling Factors

|    | D8       | D9       | D10      | D11      |
|----|----------|----------|----------|----------|
| D1 | .        | .        | .        | -0.18143 |
| D2 | .        | -0.17657 | .        | .        |
| D3 | .        | .        | 0.17739  | -0.16677 |
| D4 | .        | .        | -0.21623 | .        |
| D5 | -0.27123 | .        | .        | .        |
| D6 | -0.24246 | -0.24652 | -0.25593 | .        |
| D7 | -0.18401 | -0.27501 | -0.43111 | -0.34631 |
| D8 | 1.00000  | -0.21402 | .        | .        |
| D9 | -0.21402 | 1.00000  | .        | .        |

|     |   |   |         |         |
|-----|---|---|---------|---------|
| D10 | . | . | 1.00000 | .       |
| D11 | . | . | .       | 1.00000 |

Values less than 0.15 are not printed.

Root Mean Square Off-Diagonal Partial: Overall = 0.18239509

|            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|
| D1         | D2         | D3         | D4         | D5         | D6         |
| 0.21433425 | 0.18003583 | 0.18701423 | 0.17480691 | 0.16736098 | 0.15704600 |

Root Mean Square Off-Diagonal Partial: Overall = 0.18239509

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| D7         | D8         | D9         | D10        | D11        |
| 0.24166669 | 0.15430253 | 0.15870223 | 0.19354931 | 0.15662331 |

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Oblique Transformation Matrix

|   |            |            |
|---|------------|------------|
|   | 1          | 2          |
| 1 | 0.62284103 | 0.49534652 |
| 2 | -1.0761435 | 1.14045934 |

Inter-Factor Correlations

|         |         |         |
|---------|---------|---------|
|         | Factor1 | Factor2 |
| Factor1 | 1.00000 | 0.59429 |
| Factor2 | 0.59429 | 1.00000 |

Rotated Factor Pattern (Standardized Regression Coefficients)

|     |         |         |
|-----|---------|---------|
|     | Factor1 | Factor2 |
| D7  | 0.98777 | .       |
| D10 | 0.83631 | .       |
| D8  | 0.82713 | .       |
| D6  | 0.69992 | .       |
| D9  | 0.68065 | .       |
| D11 | 0.62295 | .       |
| D5  | 0.45472 | 0.43559 |
| D3  | .       | 0.96975 |
| D2  | .       | 0.84872 |
| D1  | .       | 0.74976 |
| D4  | .       | 0.71513 |

Values less than 0.3 are not  
printed.

Reference Axis Correlations

|         |          |          |
|---------|----------|----------|
|         | Factor1  | Factor2  |
| Factor1 | 1.00000  | -0.59429 |
| Factor2 | -0.59429 | 1.00000  |

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Reference Structure (Semipartial Correlations)

|     | Factor1 | Factor2 |
|-----|---------|---------|
| D7  | 0.79442 | .       |
| D10 | 0.67260 | .       |
| D8  | 0.66522 | .       |
| D6  | 0.56291 | .       |
| D9  | 0.54742 | .       |
| D11 | 0.50101 | .       |
| D5  | 0.36571 | 0.35032 |
| D3  | .       | 0.77992 |
| D2  | .       | 0.68259 |
| D1  | .       | 0.60300 |
| D4  | .       | 0.57515 |

Values less than 0.3 are not printed.

Variance Explained by Each Factor Eliminating Other Factors

| Factor1   | Factor2   |
|-----------|-----------|
| 2.5756569 | 2.0499625 |

Factor Structure (Correlations)

|     | Factor1 | Factor2 |
|-----|---------|---------|
| D7  | 0.84472 | 0.34632 |
| D10 | 0.86041 | 0.53757 |
| D8  | 0.87459 | 0.57141 |
| D6  | 0.84175 | 0.65462 |
| D9  | 0.79511 | 0.59711 |
| D11 | 0.79645 | 0.66215 |
| D5  | 0.71358 | 0.70582 |
| D3  | 0.46931 | 0.90616 |
| D2  | 0.59060 | 0.89996 |
| D1  | 0.48617 | 0.77388 |
| D4  | 0.65787 | 0.85353 |

Values less than 0.3 are not printed.

Eksploratory Factor Analysis:Section D

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Variance Explained by Each Factor Ignoring Other Factors

| Factor1   | Factor2   |
|-----------|-----------|
| 5.9412618 | 5.4155674 |

Final Communality Estimates: Total = 7.991224

| D1         | D2         | D3         | D4         | D5         | D6         |
|------------|------------|------------|------------|------------|------------|
| 0.59996373 | 0.81473903 | 0.82853183 | 0.76358822 | 0.63191901 | 0.74539306 |
| D7         | D8         | D9         | D10        | D11        |            |
| 0.75103247 | 0.76902525 | 0.65620157 | 0.74137348 | 0.68945668 |            |

Eksploratory Factor Analysis:Section D

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The FACTOR Procedure  
 Rotation Method: Oblimin (tau = 0)  
 Scoring Coefficients Estimated by Regression

Squared Multiple Correlations of the Variables with Each Factor

|  | Factor1   | Factor2   |
|--|-----------|-----------|
|  | 1.0000000 | 1.0000000 |

Standardized Scoring Coefficients

|     | Factor1  | Factor2  |
|-----|----------|----------|
| D7  | 0.27231  | -0.13667 |
| D10 | 0.21631  | -0.03544 |
| D8  | 0.21162  | -0.02199 |
| D6  | 0.16910  | 0.03760  |
| D9  | 0.16675  | 0.02359  |
| D11 | 0.14587  | 0.05959  |
| D5  | 0.09350  | 0.11659  |
| D3  | -0.08452 | 0.32483  |
| D2  | -0.02694 | 0.27380  |
| D1  | -0.03310 | 0.24395  |
| D4  | 0.01920  | 0.22137  |

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure

| Input Data Type          | Raw Data |
|--------------------------|----------|
| Number of Records Read   | 174      |
| Number of Records Used   | 169      |
| N for Significance Tests | 169      |

Means and Standard Deviations from 169 Observations

| Variable | Mean      | Std Dev   |
|----------|-----------|-----------|
| E1       | 3.6035503 | 1.0305970 |
| E2       | 3.4497041 | 1.1542429 |
| E3       | 3.7869822 | 1.1082251 |
| E4       | 3.1420118 | 1.2502184 |

Correlations

|    | E1      | E2      | E3      | E4      |
|----|---------|---------|---------|---------|
| E1 | 1.00000 | 0.81628 | 0.74385 | 0.43201 |
| E2 | 0.81628 | 1.00000 | 0.77334 | 0.58246 |
| E3 | 0.74385 | 0.77334 | 1.00000 | 0.52461 |
| E4 | 0.43201 | 0.58246 | 0.52461 | 1.00000 |

Values less than 0.3 are not printed.

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure  
 Initial Factor Method: Principal Components

Inverse Correlation Matrix

| E1 | E2 | E3 | E4 |
|----|----|----|----|
|----|----|----|----|

|    |            |            |            |            |
|----|------------|------------|------------|------------|
| E1 | 3.38088886 | -2.1749521 | -1.0088982 | 0.3355091  |
| E2 | -2.1749521 | 4.18589436 | -1.1495165 | -0.8954506 |
| E3 | -1.0088982 | -1.1495165 | 2.84156712 | -0.385314  |
| E4 | 0.3355091  | -0.8954506 | -0.385314  | 1.57875739 |

Partial Correlations Controlling all other Variables

|    | E1      | E2      | E3      | E4      |
|----|---------|---------|---------|---------|
| E1 | 1.00000 | 0.57815 | 0.32550 | .       |
| E2 | 0.57815 | 1.00000 | 0.33331 | 0.34833 |
| E3 | 0.32550 | 0.33331 | 1.00000 | 0.18192 |
| E4 | .       | 0.34833 | 0.18192 | 1.00000 |

Values less than 0.15 are not printed.

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.78275374

|            | E1         | E2         | E3         | E4 |
|------------|------------|------------|------------|----|
| 0.75299331 | 0.73889230 | 0.85081605 | 0.82028193 |    |

Prior Communality Estimates: ONE

Eigenvalues of the Correlation Matrix: Total = 4 Average = 1

|   | Eigenvalue | Difference | Proportion | Cumulative |
|---|------------|------------|------------|------------|
| 1 | 2.95996478 | 2.34153215 | 0.7400     | 0.7400     |
| 2 | 0.61843264 | 0.35851352 | 0.1546     | 0.8946     |
| 3 | 0.25991911 | 0.09823564 | 0.0650     | 0.9596     |
| 4 | 0.16168347 |            | 0.0404     | 1.0000     |

1 factor will be retained by the MINEIGEN criterion.

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Eigenvectors

|    | 1       |
|----|---------|
| E1 | 0.51433 |
| E2 | 0.54227 |
| E3 | 0.51989 |
| E4 | 0.41367 |

Factor Pattern

|    | Factor1 |
|----|---------|
| E2 | 0.93295 |
| E3 | 0.89444 |
| E1 | 0.88488 |
| E4 | 0.71171 |

Values less than  
0.3 are not  
printed.

Variance Explained by Each Factor

Factor1

2.9599648

Final Commuality Estimates: Total = 2.959965

| E1         | E2         | E3         | E4         |
|------------|------------|------------|------------|
| 0.78301825 | 0.87039967 | 0.80002223 | 0.50652463 |

Residual Correlations With Uniqueness on the Diagonal

|    | E1       | E2       | E3       | E4       |
|----|----------|----------|----------|----------|
| E1 | 0.21698  | .        | .        | -0.19776 |
| E2 | .        | 0.12960  | .        | -0.08153 |
| E3 | .        | .        | 0.19998  | -0.11197 |
| E4 | -0.19776 | -0.08153 | -0.11197 | 0.49348  |

Values less than 0.075 are not printed.

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure  
Initial Factor Method: Principal Components

Root Mean Square Off-Diagonal Residuals: Overall = 0.10359056

| E1         | E2         | E3         | E4         |
|------------|------------|------------|------------|
| 0.11756567 | 0.05907701 | 0.07861815 | 0.13939663 |

Partial Correlations Controlling Factors

|    | E1       | E2       | E3       | E4       |
|----|----------|----------|----------|----------|
| E1 | 1.00000  | .        | -0.22865 | -0.60437 |
| E2 | .        | 1.00000  | -0.37973 | -0.32239 |
| E3 | -0.22865 | -0.37973 | 1.00000  | -0.35642 |
| E4 | -0.60437 | -0.32239 | -0.35642 | 1.00000  |

Values less than 0.15 are not printed.

Root Mean Square Off-Diagonal Partial: Overall = 0.36418222

| E1         | E2         | E3         | E4         |
|------------|------------|------------|------------|
| 0.37443378 | 0.28936144 | 0.32838853 | 0.44580829 |

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

NOTE: Rotation not possible with 1 factor.

Eksploratory Factor Analysis:Section E

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The FACTOR Procedure  
Rotation Method: Oblimin (tau = 0)

Scoring Coefficients Estimated by Regression

Squared Multiple Correlations of the Variables with Each Factor

Factor1

1.0000000

Standardized Scoring Coefficients

Factor1

|    |         |
|----|---------|
| E2 | 0.31519 |
| E3 | 0.30218 |
| E1 | 0.29895 |
| E4 | 0.24044 |

## Annexure F: Cronbach Alpha

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Cronbach Alpha:Vision\_mision

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### The CORR Procedure

7 Variables: B1 B2 B3 B4 B5 B6 B7

### Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| B1       | 166 | 3.53614 | 1.04238 | 587.00000 | 1.00000 | 5.00000 |
| B2       | 166 | 3.53614 | 1.07106 | 587.00000 | 1.00000 | 5.00000 |
| B3       | 166 | 3.40361 | 1.21095 | 565.00000 | 1.00000 | 5.00000 |
| B4       | 166 | 3.60843 | 1.14825 | 599.00000 | 1.00000 | 5.00000 |
| B5       | 166 | 3.39759 | 1.10030 | 564.00000 | 1.00000 | 5.00000 |
| B6       | 166 | 3.56627 | 1.10308 | 592.00000 | 1.00000 | 5.00000 |
| B7       | 166 | 3.54217 | 1.00062 | 588.00000 | 1.00000 | 5.00000 |

### Cronbach Coefficient Alpha

| Variables    | Alpha    |
|--------------|----------|
| Raw          | 0.929630 |
| Standardized | 0.929821 |

### Cronbach Coefficient Alpha with Deleted Variable

| Raw Variables    |                        |          | Standardized Variables |          |  |
|------------------|------------------------|----------|------------------------|----------|--|
| Deleted Variable | Correlation with Total | Alpha    | Correlation with Total | Alpha    |  |
| B1               | 0.785542               | 0.918018 | 0.786479               | 0.918010 |  |
| B2               | 0.773385               | 0.919035 | 0.773414               | 0.919269 |  |
| B3               | 0.814375               | 0.915195 | 0.813023               | 0.915435 |  |
| B4               | 0.803745               | 0.916048 | 0.802021               | 0.916505 |  |
| B5               | 0.791407               | 0.917264 | 0.789149               | 0.917752 |  |
| B6               | 0.741113               | 0.922114 | 0.741633               | 0.922310 |  |
| B7               | 0.722718               | 0.923786 | 0.723728               | 0.924010 |  |

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Cronbach Alpha:Strat\_obj\_tools

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### The CORR Procedure

11 Variables: B8 B9 B10 B11 B12 B13 B14 B15  
B16 B17 B18

### Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| B8       | 156 | 3.24359 | 1.08581 | 506.00000 | 1.00000 | 5.00000 |
| B9       | 156 | 3.44872 | 1.16561 | 538.00000 | 1.00000 | 5.00000 |
| B10      | 156 | 3.32692 | 1.15933 | 519.00000 | 1.00000 | 5.00000 |
| B11      | 156 | 3.50000 | 1.06861 | 546.00000 | 1.00000 | 5.00000 |
| B12      | 156 | 3.39103 | 1.10467 | 529.00000 | 1.00000 | 5.00000 |
| B13      | 156 | 3.27564 | 1.01329 | 511.00000 | 1.00000 | 5.00000 |
| B14      | 156 | 3.57692 | 1.02257 | 558.00000 | 1.00000 | 5.00000 |
| B15      | 156 | 3.50000 | 1.10424 | 546.00000 | 1.00000 | 5.00000 |
| B16      | 156 | 3.44231 | 0.99184 | 537.00000 | 1.00000 | 5.00000 |
| B17      | 156 | 3.46795 | 1.04369 | 541.00000 | 1.00000 | 5.00000 |
| B18      | 156 | 3.28846 | 0.98380 | 513.00000 | 1.00000 | 5.00000 |

# Cronbach Coefficient Alpha

| Variables    | Alpha    |
|--------------|----------|
| Raw          | 0.936820 |
| Standardized | 0.937290 |

## Cronbach Coefficient Alpha with Deleted Variable

| Raw Variables    |                        |          | Standardized Variables |          |  |
|------------------|------------------------|----------|------------------------|----------|--|
| Deleted Variable | Correlation with Total | Alpha    | Correlation with Total | Alpha    |  |
| B8               | 0.763132               | 0.929571 | 0.763156               | 0.930163 |  |
| B9               | 0.641255               | 0.935156 | 0.643024               | 0.935151 |  |
| B10              | 0.767588               | 0.929403 | 0.767808               | 0.929967 |  |
| B11              | 0.732760               | 0.930867 | 0.732443               | 0.931451 |  |
| B12              | 0.779636               | 0.928840 | 0.779691               | 0.929466 |  |
| B13              | 0.719451               | 0.931450 | 0.717364               | 0.932080 |  |
| B14              | 0.703598               | 0.932072 | 0.702136               | 0.932713 |  |
| B15              | 0.767788               | 0.929360 | 0.769647               | 0.929889 |  |
| B16              | 0.752094               | 0.930214 | 0.751945               | 0.930634 |  |
| B17              | 0.715098               | 0.931602 | 0.716328               | 0.932123 |  |
| B18              | 0.716517               | 0.931616 | 0.715902               | 0.932141 |  |

## Cronbach Alpha:Strat\_implementation

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## The CORR Procedure

|               |     |     |     |     |     |     |     |     |    |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 17 Variables: | C1  | C2  | C3  | C4  | C5  | C6  | C7  | C8  | C9 |
|               | C10 | C11 | C12 | C13 | C14 | C15 | C16 | C17 |    |

## Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| C1       | 157 | 3.36943 | 1.11681 | 529.00000 | 1.00000 | 5.00000 |
| C2       | 157 | 2.94268 | 1.15604 | 462.00000 | 1.00000 | 5.00000 |
| C3       | 157 | 3.07006 | 1.21484 | 482.00000 | 1.00000 | 5.00000 |
| C4       | 157 | 3.31210 | 1.19214 | 520.00000 | 1.00000 | 5.00000 |
| C5       | 157 | 3.35032 | 1.12584 | 526.00000 | 1.00000 | 5.00000 |
| C6       | 157 | 3.26115 | 1.11025 | 512.00000 | 1.00000 | 5.00000 |
| C7       | 157 | 3.19108 | 1.05693 | 501.00000 | 1.00000 | 5.00000 |
| C8       | 157 | 3.10828 | 1.14679 | 488.00000 | 1.00000 | 5.00000 |
| C9       | 157 | 2.92357 | 1.21709 | 459.00000 | 1.00000 | 5.00000 |
| C10      | 157 | 3.00000 | 1.27601 | 471.00000 | 1.00000 | 5.00000 |
| C11      | 157 | 3.20382 | 1.15879 | 503.00000 | 1.00000 | 5.00000 |
| C12      | 157 | 3.23567 | 1.08095 | 508.00000 | 1.00000 | 5.00000 |
| C13      | 157 | 3.25478 | 1.02472 | 511.00000 | 1.00000 | 5.00000 |
| C14      | 157 | 3.24204 | 0.97007 | 509.00000 | 1.00000 | 5.00000 |
| C15      | 157 | 3.31210 | 0.98614 | 520.00000 | 1.00000 | 5.00000 |
| C16      | 157 | 3.32484 | 1.00139 | 522.00000 | 1.00000 | 5.00000 |
| C17      | 157 | 2.91720 | 1.16554 | 458.00000 | 1.00000 | 5.00000 |

# Cronbach Coefficient Alpha

| Variables    | Alpha    |
|--------------|----------|
| Raw          | 0.966044 |
| Standardized | 0.966656 |

## Cronbach Coefficient Alpha with Deleted Variable

| Raw Variables    |                        |       | Standardized Variables |       |  |
|------------------|------------------------|-------|------------------------|-------|--|
| Deleted Variable | Correlation with Total | Alpha | Correlation with Total | Alpha |  |

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
C1          0.708973      0.965009      0.710835      0.965667
C2          0.737354      0.964614      0.735983      0.965295
C3          0.809828      0.963506      0.807872      0.964227
C4          0.813046      0.963445      0.812521      0.964157
C5          0.775592      0.964017      0.777617      0.964678
C6          0.841176      0.963037      0.842761      0.963704
C7          0.804512      0.963627      0.804339      0.964280
C8          0.821816      0.963308      0.819667      0.964051

```

Cronbach Alpha:Strat\_implementation

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#### The CORR Procedure

##### Cronbach Coefficient Alpha with Deleted Variable

|                                                                          | Raw Variables          |          | Standardized Variables |          |
|--------------------------------------------------------------------------|------------------------|----------|------------------------|----------|
| Deleted Variable                                                         | Correlation with Total | Alpha    | Correlation with Total | Alpha    |
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |                        |          |                        |          |
| C9                                                                       | 0.819180               | 0.963354 | 0.817527               | 0.964083 |
| C10                                                                      | 0.752755               | 0.964537 | 0.750720               | 0.965077 |
| C11                                                                      | 0.753546               | 0.964367 | 0.754627               | 0.965019 |
| C12                                                                      | 0.843725               | 0.963033 | 0.845929               | 0.963657 |
| C13                                                                      | 0.839858               | 0.963178 | 0.841552               | 0.963723 |
| C14                                                                      | 0.762201               | 0.964305 | 0.763944               | 0.964881 |
| C15                                                                      | 0.783571               | 0.964003 | 0.783795               | 0.964586 |
| C16                                                                      | 0.741297               | 0.964547 | 0.743242               | 0.965188 |
| C17                                                                      | 0.648439               | 0.965995 | 0.646870               | 0.966605 |

Cronbach Alpha:Strat\_view

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#### The CORR Procedure

7 Variables: D5 D6 D7 D8 D9 D10 D11

##### Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| D5       | 170 | 3.24706 | 0.99592 | 552.00000 | 1.00000 | 5.00000 |
| D6       | 170 | 3.10000 | 1.01264 | 527.00000 | 1.00000 | 5.00000 |
| D7       | 170 | 3.10588 | 1.00323 | 528.00000 | 1.00000 | 5.00000 |
| D8       | 170 | 3.05294 | 1.00450 | 519.00000 | 1.00000 | 5.00000 |
| D9       | 170 | 3.44118 | 1.07668 | 585.00000 | 1.00000 | 5.00000 |
| D10      | 170 | 3.11765 | 1.14004 | 530.00000 | 1.00000 | 5.00000 |
| D11      | 170 | 3.13529 | 1.02596 | 533.00000 | 1.00000 | 5.00000 |

##### Cronbach Coefficient Alpha

| Variables                                | Alpha    |
|------------------------------------------|----------|
| ffffffffffffffffffffffffffffffffffffffff |          |
| Raw                                      | 0.924295 |
| Standardized                             | 0.924491 |

##### Cronbach Coefficient Alpha with Deleted Variable

|                                                                          | Raw Variables          |          | Standardized Variables |          |
|--------------------------------------------------------------------------|------------------------|----------|------------------------|----------|
| Deleted Variable                                                         | Correlation with Total | Alpha    | Correlation with Total | Alpha    |
| ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff |                        |          |                        |          |
| D5                                                                       | 0.707753               | 0.917966 | 0.705962               | 0.918540 |
| D6                                                                       | 0.797887               | 0.909272 | 0.799087               | 0.909306 |
| D7                                                                       | 0.708267               | 0.917929 | 0.708690               | 0.918273 |
| D8                                                                       | 0.811173               | 0.908027 | 0.810339               | 0.908171 |
| D9                                                                       | 0.742235               | 0.914851 | 0.741864               | 0.915013 |

|     |          |          |          |          |
|-----|----------|----------|----------|----------|
| D10 | 0.803739 | 0.908660 | 0.803898 | 0.908821 |
| D11 | 0.767700 | 0.912191 | 0.767477 | 0.912472 |

Cronbach Alpha: Perf\_management

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The CORR Procedure

4 Variables: D1 D2 D3 D4

Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| D1       | 169 | 3.23077 | 1.12863 | 546.00000 | 1.00000 | 5.00000 |
| D2       | 169 | 3.02959 | 1.06025 | 512.00000 | 1.00000 | 5.00000 |
| D3       | 169 | 3.06509 | 1.05301 | 518.00000 | 1.00000 | 5.00000 |
| D4       | 169 | 3.17751 | 0.95330 | 537.00000 | 1.00000 | 5.00000 |

Cronbach Coefficient Alpha

| Variables    | Alpha    |
|--------------|----------|
| Raw          | 0.886644 |
| Standardized | 0.889076 |

Cronbach Coefficient Alpha with Deleted Variable

| Raw Variables    |                        |          | Standardized Variables |          |
|------------------|------------------------|----------|------------------------|----------|
| Deleted Variable | Correlation with Total | Alpha    | Correlation with Total | Alpha    |
| D1               | 0.657232               | 0.893544 | 0.655993               | 0.894271 |
| D2               | 0.824985               | 0.825732 | 0.828510               | 0.829568 |
| D3               | 0.787734               | 0.840542 | 0.789239               | 0.844813 |
| D4               | 0.754569               | 0.855478 | 0.756720               | 0.857205 |

Cronbach Alpha:Present\_perf

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The CORR Procedure

4 Variables: E1 E2 E3 E4

Simple Statistics

| Variable | N   | Mean    | Std Dev | Sum       | Minimum | Maximum |
|----------|-----|---------|---------|-----------|---------|---------|
| E1       | 169 | 3.60355 | 1.03060 | 609.00000 | 1.00000 | 5.00000 |
| E2       | 169 | 3.44970 | 1.15424 | 583.00000 | 1.00000 | 5.00000 |
| E3       | 169 | 3.78698 | 1.10823 | 640.00000 | 1.00000 | 5.00000 |
| E4       | 169 | 3.14201 | 1.25022 | 531.00000 | 1.00000 | 5.00000 |

Cronbach Coefficient Alpha

| Variables    | Alpha    |
|--------------|----------|
| Raw          | 0.874020 |
| Standardized | 0.879243 |

Cronbach Coefficient Alpha with Deleted Variable

| Raw Variables    |                        |       | Standardized Variables |       |
|------------------|------------------------|-------|------------------------|-------|
| Deleted Variable | Correlation with Total | Alpha | Correlation with Total | Alpha |

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
E1          0.758966          0.830363          0.766161          0.834399
E2          0.851557          0.788130          0.858525          0.796978
E3          0.785173          0.817193          0.791089          0.824476
E4          0.558836          0.912059          0.555841          0.913063

```



## Annexure G: Effect sizes

Effectsizes:qual

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The TTEST Procedure

Variable: Vision\_mision

| qual       | N   | Mean    | Std Dev | Std Err | Minimum | Maximum |
|------------|-----|---------|---------|---------|---------|---------|
| 1          | 124 | 3.4176  | 0.9449  | 0.0849  | 1.0000  | 4.8571  |
| 2          | 25  | 3.9943  | 0.6870  | 0.1374  | 2.2857  | 5.0000  |
| Diff (1-2) |     | -0.5767 | 0.9078  | 0.1990  |         |         |

| qual       | Method        | Mean    | 95% CL Mean     | Std Dev | 95% CL Std Dev |
|------------|---------------|---------|-----------------|---------|----------------|
| 1          |               | 3.4176  | 3.2497 3.5856   | 0.9449  | 0.8402         |
| 2          |               | 3.9943  | 3.7107 4.2778   | 0.6870  | 0.5364         |
| Diff (1-2) | Pooled        | -0.5767 | -0.9700 -0.1833 | 0.9078  | 0.8149         |
| Diff (1-2) | Satterthwaite | -0.5767 | -0.9020 -0.2513 |         |                |

| Method        | Variances | DF     | t Value | Pr >  t |
|---------------|-----------|--------|---------|---------|
| Pooled        | Equal     | 147    | -2.90   | 0.0043  |
| Satterthwaite | Unequal   | 44.538 | -3.57   | 0.0009  |

Equality of Variances

| Method   | Num DF | Den DF | F Value | Pr > F |
|----------|--------|--------|---------|--------|
| Folded F | 123    | 24     | 1.89    | 0.0720 |

Variable: Strat\_obj\_tools

| qual       | N   | Mean    | Std Dev | Std Err | Minimum | Maximum |
|------------|-----|---------|---------|---------|---------|---------|
| 1          | 124 | 3.3550  | 0.8832  | 0.0793  | 1.0000  | 4.9091  |
| 2          | 25  | 3.6735  | 0.6109  | 0.1222  | 2.2727  | 4.6364  |
| Diff (1-2) |     | -0.3185 | 0.8447  | 0.1852  |         |         |

| qual       | Method        | Mean    | 95% CL Mean     | Std Dev | 95% CL Std Dev |
|------------|---------------|---------|-----------------|---------|----------------|
| 1          |               | 3.3550  | 3.1980 3.5120   | 0.8832  | 0.7852         |
| 2          |               | 3.6735  | 3.4213 3.9256   | 0.6109  | 0.4770         |
| Diff (1-2) | Pooled        | -0.3185 | -0.6845 0.0475  | 0.8447  | 0.7582         |
| Diff (1-2) | Satterthwaite | -0.3185 | -0.6115 -0.0254 |         |                |

| Method        | Variances | DF    | t Value | Pr >  t |
|---------------|-----------|-------|---------|---------|
| Pooled        | Equal     | 147   | -1.72   | 0.0876  |
| Satterthwaite | Unequal   | 46.86 | -2.19   | 0.0338  |

Effectsizes:qual

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The TTEST Procedure

Variable: Strat\_obj\_tools

Equality of Variances

| Method   | Num DF | Den DF | F Value | Pr > F |
|----------|--------|--------|---------|--------|
| Folded F | 123    | 24     | 2.09    | 0.0388 |

|                                |               |           |             |                                |         |                |  |
|--------------------------------|---------------|-----------|-------------|--------------------------------|---------|----------------|--|
| Variable: Strat_implementation |               |           |             |                                |         |                |  |
| qual                           | N             | Mean      | Std Dev     | Std Err                        | Minimum | Maximum        |  |
| 1                              | 124           | 3.0660    | 0.9073      | 0.0815                         | 1.0000  | 4.7647         |  |
| 2                              | 25            | 3.6051    | 0.6761      | 0.1352                         | 1.9412  | 4.9412         |  |
| Diff (1-2)                     |               | -0.5392   | 0.8737      | 0.1916                         |         |                |  |
| qual                           | Method        | Mean      | 95% CL Mean |                                | Std Dev | 95% CL Std Dev |  |
| 1                              |               | 3.0660    | 2.9047      | 3.2273                         | 0.9073  | 0.8067         |  |
| 1.0368                         |               |           |             |                                |         |                |  |
| 2                              |               | 3.6051    | 3.3261      | 3.8842                         | 0.6761  | 0.5279         |  |
| 0.9405                         |               |           |             |                                |         |                |  |
| Diff (1-2)                     | Pooled        | -0.5392   | -0.9177     | -0.1606                        | 0.8737  | 0.7843         |  |
| 0.9865                         |               |           |             |                                |         |                |  |
| Diff (1-2)                     | Satterthwaite | -0.5392   | -0.8574     | -0.2209                        |         |                |  |
|                                | Method        | Variances | DF          | t Value                        | Pr >  t |                |  |
|                                | Pooled        | Equal     | 147         | -2.81                          | 0.0056  |                |  |
|                                | Satterthwaite | Unequal   | 43.474      | -3.42                          | 0.0014  |                |  |
| Equality of Variances          |               |           |             |                                |         |                |  |
|                                | Method        | Num DF    | Den DF      | F Value                        | Pr > F  |                |  |
|                                | Folded F      | 123       | 24          | 1.80                           | 0.0961  |                |  |
| Variable: Strat_view           |               |           |             |                                |         |                |  |
| qual                           | N             | Mean      | Std Dev     | Std Err                        | Minimum | Maximum        |  |
| 1                              | 124           | 3.0515    | 0.8999      | 0.0808                         | 1.0000  | 4.7143         |  |
| 2                              | 25            | 3.4057    | 0.6607      | 0.1321                         | 2.0000  | 4.5714         |  |
| Diff (1-2)                     |               | -0.3542   | 0.8654      | 0.1897                         |         |                |  |
| Effectsizes:qual               |               |           |             | 08:58 Friday, October 31, 2014 |         |                |  |
| 4                              |               |           |             |                                |         |                |  |
| The TTEST Procedure            |               |           |             |                                |         |                |  |
| Variable: Strat_view           |               |           |             |                                |         |                |  |
| qual                           | Method        | Mean      | 95% CL Mean |                                | Std Dev | 95% CL Std Dev |  |
| 1                              |               | 3.0515    | 2.8915      | 3.2115                         | 0.8999  | 0.8002         |  |
| 1.0284                         |               |           |             |                                |         |                |  |
| 2                              |               | 3.4057    | 3.1330      | 3.6784                         | 0.6607  | 0.5159         |  |
| 0.9191                         |               |           |             |                                |         |                |  |
| Diff (1-2)                     | Pooled        | -0.3542   | -0.7292     | 0.0207                         | 0.8654  | 0.7768         |  |
| 0.9770                         |               |           |             |                                |         |                |  |
| Diff (1-2)                     | Satterthwaite | -0.3542   | -0.6664     | -0.0421                        |         |                |  |
|                                | Method        | Variances | DF          | t Value                        | Pr >  t |                |  |
|                                | Pooled        | Equal     | 147         | -1.87                          | 0.0639  |                |  |
|                                | Satterthwaite | Unequal   | 44.108      | -2.29                          | 0.0271  |                |  |
| Equality of Variances          |               |           |             |                                |         |                |  |
|                                | Method        | Num DF    | Den DF      | F Value                        | Pr > F  |                |  |
|                                | Folded F      | 123       | 24          | 1.86                           | 0.0809  |                |  |
| Variable: Perf_management      |               |           |             |                                |         |                |  |
| qual                           | N             | Mean      | Std Dev     | Std Err                        | Minimum | Maximum        |  |
| 1                              | 124           | 3.0047    | 0.9186      | 0.0825                         | 1.0000  | 4.5000         |  |
| 2                              | 25            | 3.4000    | 0.8956      | 0.1791                         | 1.2500  | 5.0000         |  |
| Diff (1-2)                     |               | -0.3953   | 0.9149      | 0.2006                         |         |                |  |
| qual                           | Method        | Mean      | 95% CL Mean |                                | Std Dev | 95% CL Std Dev |  |

```

1
1.0497          3.0047      2.8414      3.1680      0.9186      0.8168
2
1.2459          3.4000      3.0303      3.7697      0.8956      0.6993
Diff (1-2)      Pooled      -0.3953      -0.7917      0.00110      0.9149      0.8212
1.0329
Diff (1-2)      Satterthwaite      -0.3953      -0.7957      0.00506

Method          Variances          DF          t Value          Pr > |t|
Pooled          Equal          147          -1.97          0.0506
Satterthwaite    Unequal          34.955        -2.00          0.0528

Equality of Variances

Method          Num DF          Den DF          F Value          Pr > F
Folded F          123          24          1.05          0.9297

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```

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```

The TTEST Procedure

Variable: Present_perf

qual          N          Mean          Std Dev          Std Err          Minimum          Maximum
1              121          3.4463          1.0289          0.0935          1.0000          5.0000
2              25          3.7700          0.6690          0.1338          2.0000          5.0000
Diff (1-2)      -0.3237          0.9781          0.2149

qual          Method          Mean          95% CL Mean          Std Dev          95% CL Std Dev
1              3.4463          3.2611      3.6315          1.0289          0.9135
1.1778
2              3.7700          3.4939      4.0461          0.6690          0.5223
0.9306
Diff (1-2)      Pooled      -0.3237          -0.7485      0.1010          0.9781          0.8770
1.1058
Diff (1-2)      Satterthwaite      -0.3237          -0.6515      0.00404

Method          Variances          DF          t Value          Pr > |t|
Pooled          Equal          144          -1.51          0.1341
Satterthwaite    Unequal          50.767        -1.98          0.0528

Equality of Variances

Method          Num DF          Den DF          F Value          Pr > F
Folded F          120          24          2.37          0.0170

```

```

Beskrywende Statistiek vir Vision_mision

0
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```

```

----- qual=1 -----
-----

```

```

The MEANS Procedure

Analysis Variable : Vision_mision

Lower
N          Mean          Std Dev          Median          Minimum          Maximum
Quartile

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
124          3.42          0.94          3.57          1.00          4.86
2.77

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

```

Analysis Variable : Vision\_mision

Upper  
Quartile  
4.14

----- qual=2 -----  
-----

Analysis Variable : Vision\_mision

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 25<br>3.57             | 3.99 | 0.69    | 4.29   | 2.29    | 5.00    |

Analysis Variable : Vision\_mision

Upper  
Quartile  
4.43

Effekgroottes vir verskille tussen groepe vir Vision\_mision

7  
2014  
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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | 0.61         |

Beskrywende Statistiek vir Strat\_obj\_tools

8  
2014  
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----- qual=1 -----  
-----

The MEANS Procedure

Analysis Variable : Strat\_obj\_tools

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 124<br>2.68            | 3.35 | 0.88    | 3.50   | 1.00    | 4.91    |

Analysis Variable : Strat\_obj\_tools

Upper  
Quartile  
4.00

----- qual=2 -----  
-----

Analysis Variable : Strat\_obj\_tools

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 25                     | 3.67 | 0.61    | 3.64   | 2.27    | 4.64    |
| 3.27                   |      |         |        |         |         |

Analysis Variable : Strat\_obj\_tools

Upper  
Quartile  
4.18

Effekgroottes vir verskille tussen groepe vir Strat\_obj\_tools

9  
2014  
08:58 Friday, October 31,

| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | 0.36         |

Beskrywende Statistiek vir Strat\_implementation

10  
2014  
08:58 Friday, October 31,

----- qual=1 -----  
----

The MEANS Procedure

Analysis Variable : Strat\_implementation

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 124                    | 3.07 | 0.91    | 3.06   | 1.00    | 4.76    |
| 2.44                   |      |         |        |         |         |

Analysis Variable : Strat\_implementation

Upper  
Quartile  
3.93

----- qual=2 -----  
----

Analysis Variable : Strat\_implementation

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 25                     | 3.61 | 0.68    | 3.76   | 1.94    | 4.94    |
| 3.06                   |      |         |        |         |         |

```

Analysis Variable : Strat_implementation

Upper
Quartile
ffffffffffff
4.00
ffffffffffff

Effekgroottes vir verskille tussen groepe vir Strat_implementation
11
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2014

groep_i   groep_j   effekgrootte
1         2         0.59

Beskrywende Statistiek vir Strat_view
12
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----- qual=1 -----
----

The MEANS Procedure

Analysis Variable : Strat_view

Lower
N      Mean      Std Dev      Median      Minimum      Maximum
Quartile
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
124    3.05      0.90      3.00      1.00      4.71
2.43
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Strat_view

Upper
Quartile
ffffffffffff
3.86
ffffffffffff

----- qual=2 -----
----

Analysis Variable : Strat_view

Lower
N      Mean      Std Dev      Median      Minimum      Maximum
Quartile
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
25     3.41      0.66      3.43      2.00      4.57
3.00
ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Strat_view

Upper
Quartile
ffffffffffff
3.86
ffffffffffff

Effekgroottes vir verskille tussen groepe vir Strat_view
13
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```

2014

| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | 0.39         |

Beskrywende Statistiek vir Perf\_management

14

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2014

----- qual=1 -----  
----

The MEANS Procedure

Analysis Variable : Perf\_management

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 124<br>2.50            | 3.00 | 0.92    | 3.25   | 1.00    | 4.50    |

Analysis Variable : Perf\_management

| Upper<br>Quartile |
|-------------------|
| 3.75              |

----- qual=2 -----  
----

Analysis Variable : Perf\_management

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 25<br>3.00             | 3.40 | 0.90    | 3.50   | 1.25    | 5.00    |

Analysis Variable : Perf\_management

| Upper<br>Quartile |
|-------------------|
| 4.00              |

Effekgroottes vir verskille tussen groepe vir Perf\_management

15

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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | 0.43         |

Beskrywende Statistiek vir Present\_perf

16

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----- qual=1 -----

----

The MEANS Procedure

Analysis Variable : Present\_perf

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 121                    | 3.45 | 1.03    | 3.50   | 1.00    | 5.00    |
| 3.00                   |      |         |        |         |         |

-----

Analysis Variable : Present\_perf

| Upper<br>Quartile |
|-------------------|
| 4.00              |

----- qual=2 -----

Analysis Variable : Present\_perf

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 25                     | 3.77 | 0.67    | 3.75   | 2.00    | 5.00    |
| 3.25                   |      |         |        |         |         |

-----

Analysis Variable : Present\_perf

| Upper<br>Quartile |
|-------------------|
| 4.25              |

Effekgroottes vir verskille tussen groepe vir Present\_perf

17

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2014

| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | 0.31         |

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The TTEST Procedure

Variable: Vision\_mision

| A6         | N   | Mean   | Std Dev | Std Err | Minimum | Maximum |
|------------|-----|--------|---------|---------|---------|---------|
| 1          | 49  | 3.8406 | 0.7153  | 0.1022  | 2.2857  | 5.0000  |
| 2          | 123 | 3.3569 | 0.9657  | 0.0871  | 1.0000  | 4.8571  |
| Diff (1-2) |     | 0.4838 | 0.9021  | 0.1524  |         |         |

| A6 | Method | Mean   | 95% CL Mean   | Std Dev | 95% CL Std Dev |
|----|--------|--------|---------------|---------|----------------|
| 1  |        | 3.8406 | 3.6352 4.0461 | 0.7153  | 0.5965         |
| 2  |        | 3.3569 | 3.1845 3.5292 | 0.9657  | 0.8582         |

|            |                                               |               |           |               |         |                |         |
|------------|-----------------------------------------------|---------------|-----------|---------------|---------|----------------|---------|
| 1.1042     |                                               |               |           |               |         |                |         |
| Diff (1-2) | Pooled                                        |               | 0.4838    | 0.1829        | 0.7846  | 0.9021         | 0.8155  |
| 1.0093     |                                               |               |           |               |         |                |         |
| Diff (1-2) | Satterthwaite                                 |               | 0.4838    | 0.2179        | 0.7496  |                |         |
|            | Method                                        |               | Variances | DF            | t Value | Pr >  t        |         |
|            | Pooled                                        |               | Equal     | 170           | 3.17    | 0.0018         |         |
|            | Satterthwaite                                 |               | Unequal   | 118.44        | 3.60    | 0.0005         |         |
|            | Equality of Variances                         |               |           |               |         |                |         |
|            | Method                                        |               | Num DF    | Den DF        | F Value | Pr > F         |         |
|            | Folded F                                      |               | 122       | 48            | 1.82    | 0.0197         |         |
|            | Variable: Strat_obj_tools                     |               |           |               |         |                |         |
|            | A6                                            | N             | Mean      | Std Dev       | Std Err | Minimum        | Maximum |
|            | 1                                             | 49            | 3.6846    | 0.6470        | 0.0924  | 2.0909         | 4.8000  |
|            | 2                                             | 123           | 3.2999    | 0.9020        | 0.0813  | 1.0000         | 4.9091  |
|            | Diff (1-2)                                    |               | 0.3847    | 0.8379        | 0.1416  |                |         |
|            | A6                                            | Method        | Mean      | 95% CL Mean   | Std Dev | 95% CL Std Dev |         |
|            | 1                                             |               | 3.6846    | 3.4988 3.8704 | 0.6470  | 0.5396         |         |
| 0.8083     | 2                                             |               | 3.2999    | 3.1389 3.4609 | 0.9020  | 0.8017         |         |
| 1.0314     | Diff (1-2)                                    | Pooled        | 0.3847    | 0.1053 0.6641 | 0.8379  | 0.7575         |         |
| 0.9376     | Diff (1-2)                                    | Satterthwaite | 0.3847    | 0.1410 0.6284 |         |                |         |
|            | Method                                        |               | Variances | DF            | t Value | Pr >  t        |         |
|            | Pooled                                        |               | Equal     | 170           | 2.72    | 0.0073         |         |
|            | Satterthwaite                                 |               | Unequal   | 122.27        | 3.12    | 0.0022         |         |
|            | Effectsizes:A6 08:58 Friday, October 31, 2014 |               |           |               |         |                |         |
| 19         |                                               |               |           |               |         |                |         |
|            | The TTEST Procedure                           |               |           |               |         |                |         |
|            | Variable: Strat_obj_tools                     |               |           |               |         |                |         |
|            | Equality of Variances                         |               |           |               |         |                |         |
|            | Method                                        |               | Num DF    | Den DF        | F Value | Pr > F         |         |
|            | Folded F                                      |               | 122       | 48            | 1.94    | 0.0101         |         |
|            | Variable: Strat_implementation                |               |           |               |         |                |         |
|            | A6                                            | N             | Mean      | Std Dev       | Std Err | Minimum        | Maximum |
|            | 1                                             | 49            | 3.4624    | 0.7573        | 0.1082  | 1.9412         | 4.9412  |
|            | 2                                             | 123           | 3.0850    | 0.9244        | 0.0834  | 1.0000         | 4.7647  |
|            | Diff (1-2)                                    |               | 0.3774    | 0.8804        | 0.1487  |                |         |
|            | A6                                            | Method        | Mean      | 95% CL Mean   | Std Dev | 95% CL Std Dev |         |
|            | 1                                             |               | 3.4624    | 3.2449 3.6799 | 0.7573  | 0.6315         |         |
| 0.9461     | 2                                             |               | 3.0850    | 2.9200 3.2500 | 0.9244  | 0.8215         |         |
| 1.0569     | Diff (1-2)                                    | Pooled        | 0.3774    | 0.0838 0.6710 | 0.8804  | 0.7960         |         |
| 0.9851     | Diff (1-2)                                    | Satterthwaite | 0.3774    | 0.1067 0.6481 |         |                |         |
|            | Method                                        |               | Variances | DF            | t Value | Pr >  t        |         |
|            | Pooled                                        |               | Equal     | 170           | 2.54    | 0.0121         |         |
|            | Satterthwaite                                 |               | Unequal   | 107.06        | 2.76    | 0.0067         |         |

|                           |               |           |             |                                |         |                |
|---------------------------|---------------|-----------|-------------|--------------------------------|---------|----------------|
| Equality of Variances     |               |           |             |                                |         |                |
|                           | Method        | Num DF    | Den DF      | F Value                        | Pr > F  |                |
|                           | Folded F      | 122       | 48          | 1.49                           | 0.1177  |                |
| Variable: Strat_view      |               |           |             |                                |         |                |
| A6                        | N             | Mean      | Std Dev     | Std Err                        | Minimum | Maximum        |
| 1                         | 49            | 3.2099    | 0.7143      | 0.1020                         | 1.5714  | 4.5714         |
| 2                         | 123           | 3.1204    | 0.9254      | 0.0834                         | 1.0000  | 4.7143         |
| Diff (1-2)                |               | 0.0895    | 0.8710      | 0.1471                         |         |                |
| Effectsizes:A6            |               |           |             | 08:58 Friday, October 31, 2014 |         |                |
| The TTEST Procedure       |               |           |             |                                |         |                |
| Variable: Strat_view      |               |           |             |                                |         |                |
| A6                        | Method        | Mean      | 95% CL Mean |                                | Std Dev | 95% CL Std Dev |
| 1                         |               | 3.2099    | 3.0047      | 3.4151                         | 0.7143  | 0.5957         |
| 0.8924                    |               |           |             |                                |         |                |
| 2                         |               | 3.1204    | 2.9553      | 3.2856                         | 0.9254  | 0.8224         |
| 1.0580                    |               |           |             |                                |         |                |
| Diff (1-2)                | Pooled        | 0.0895    | -0.2010     | 0.3799                         | 0.8710  | 0.7874         |
| 0.9745                    |               |           |             |                                |         |                |
| Diff (1-2)                | Satterthwaite | 0.0895    | -0.1717     | 0.3506                         |         |                |
|                           | Method        | Variances | DF          | t Value                        | Pr >  t |                |
|                           | Pooled        | Equal     | 170         | 0.61                           | 0.5439  |                |
|                           | Satterthwaite | Unequal   | 113.64      | 0.68                           | 0.4987  |                |
| Equality of Variances     |               |           |             |                                |         |                |
|                           | Method        | Num DF    | Den DF      | F Value                        | Pr > F  |                |
|                           | Folded F      | 122       | 48          | 1.68                           | 0.0433  |                |
| Variable: Perf_management |               |           |             |                                |         |                |
| A6                        | N             | Mean      | Std Dev     | Std Err                        | Minimum | Maximum        |
| 1                         | 49            | 3.3895    | 0.8353      | 0.1193                         | 1.0000  | 5.0000         |
| 2                         | 123           | 2.9925    | 0.9297      | 0.0838                         | 1.0000  | 4.7500         |
| Diff (1-2)                |               | 0.3969    | 0.9041      | 0.1527                         |         |                |
| A6                        | Method        | Mean      | 95% CL Mean |                                | Std Dev | 95% CL Std Dev |
| 1                         |               | 3.3895    | 3.1495      | 3.6294                         | 0.8353  | 0.6966         |
| 1.0435                    |               |           |             |                                |         |                |
| 2                         |               | 2.9925    | 2.8266      | 3.1585                         | 0.9297  | 0.8263         |
| 1.0630                    |               |           |             |                                |         |                |
| Diff (1-2)                | Pooled        | 0.3969    | 0.0954      | 0.6984                         | 0.9041  | 0.8173         |
| 1.0116                    |               |           |             |                                |         |                |
| Diff (1-2)                | Satterthwaite | 0.3969    | 0.1075      | 0.6863                         |         |                |
|                           | Method        | Variances | DF          | t Value                        | Pr >  t |                |
|                           | Pooled        | Equal     | 170         | 2.60                           | 0.0102  |                |
|                           | Satterthwaite | Unequal   | 97.708      | 2.72                           | 0.0077  |                |
| Equality of Variances     |               |           |             |                                |         |                |
|                           | Method        | Num DF    | Den DF      | F Value                        | Pr > F  |                |
|                           | Folded F      | 122       | 48          | 1.24                           | 0.4027  |                |
| Effectsizes:A6            |               |           |             | 08:58 Friday, October 31, 2014 |         |                |

```

The TTEST Procedure
Variable: Present_perf

      A6          N      Mean      Std Dev      Std Err      Minimum      Maximum
      1             48      3.7188      0.6697      0.0967      1.5000      5.0000
      2            121      3.3946      1.0492      0.0954      1.0000      5.0000
      Diff (1-2)          0.3241      0.9577      0.1634

      A6          Method          Mean      95% CL Mean      Std Dev      95% CL Std Dev
      1
0.8388
      2
1.2010
      Diff (1-2)    Pooled          0.3241      0.00159      0.6467      0.9577      0.8651
1.0727
      Diff (1-2)    Satterthwaite      0.3241      0.0555      0.5927

      Method          Variances          DF      t Value      Pr > |t|
      Pooled          Equal          167          1.98      0.0489
      Satterthwaite    Unequal        133.51        2.39      0.0184

Equality of Variances

      Method          Num DF      Den DF      F Value      Pr > F
      Folded F          120          47          2.45      0.0007

Beskrywende Statistiek vir Vision_mision
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2014

```

```

----- A6=1 -----
-----

```

```

The MEANS Procedure
Analysis Variable : Vision_mision

Lower
N      Mean      Std Dev      Median      Minimum      Maximum
Quartile

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
49      3.84      0.72      4.00      2.29      5.00
3.29

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Vision_mision

Upper
Quartile
ffffffffffffff
4.43
ffffffffffffff

```

```

----- A6=2 -----
-----

```

```

Analysis Variable : Vision_mision

Lower
N      Mean      Std Dev      Median      Minimum      Maximum
Quartile

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
123      3.36      0.97      3.43      1.00      4.86
2.57

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Vision\_mision

Upper  
Quartile  
fffffffffffff  
4.00  
fffffffffffff

Effekgroottes vir verskille tussen groepe vir Vision\_mision

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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.50        |

Beskrywende Statistiek vir Strat\_obj\_tools

24

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2014

----- A6=1 -----  
----

The MEANS Procedure

Analysis Variable : Strat\_obj\_tools

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 49<br>3.36             | 3.68 | 0.65    | 3.64   | 2.09    | 4.80    |

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Strat\_obj\_tools

Upper  
Quartile  
fffffffffffff  
4.27  
fffffffffffff

----- A6=2 -----  
----

Analysis Variable : Strat\_obj\_tools

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 123<br>2.64            | 3.30 | 0.90    | 3.36   | 1.00    | 4.91    |

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Strat\_obj\_tools

Upper  
Quartile  
fffffffffffff  
4.00  
fffffffffffff

Effekgroottes vir verskille tussen groepe vir Strat\_obj\_tools

25  
2014

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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.43        |

Beskrywende Statistiek vir Strat\_implementation

26  
2014

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----- A6=1 -----  
----

The MEANS Procedure

Analysis Variable : Strat\_implementation

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 49<br>2.76             | 3.46 | 0.76    | 3.76   | 1.94    | 4.94    |

Analysis Variable : Strat\_implementation

Upper  
Quartile  
4.06

----- A6=2 -----  
----

Analysis Variable : Strat\_implementation

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 123<br>2.47            | 3.09 | 0.92    | 3.12   | 1.00    | 4.76    |

Analysis Variable : Strat\_implementation

Upper  
Quartile  
3.93

Effekgroottes vir verskille tussen groepe vir Strat\_implementation

27  
2014

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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.41        |

Beskrywende Statistiek vir Strat\_view

28  
2014

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----- A6=1 -----  
 ----

The MEANS Procedure

Analysis Variable : Strat\_view

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 49<br>2.71             | 3.21 | 0.71    | 3.14   | 1.57    | 4.57    |

-----

Analysis Variable : Strat\_view

Upper  
 Quartile  
 -----  
 3.71  
 -----

----- A6=2 -----  
 ----

Analysis Variable : Strat\_view

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 123<br>2.43            | 3.12 | 0.93    | 3.14   | 1.00    | 4.71    |

-----

Analysis Variable : Strat\_view

Upper  
 Quartile  
 -----  
 4.00  
 -----

Effekgroottes vir verskille tussen groepe vir Strat\_view

29  
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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.10        |

Beskrywende Statistiek vir Perf\_management

30  
 2014 08:58 Friday, October 31,

----- A6=1 -----  
 ----

The MEANS Procedure

Analysis Variable : Perf\_management

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
|------------------------|------|---------|--------|---------|---------|

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff
 49          3.39          0.84          3.25          1.00          5.00
3.00

```

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

```

Analysis Variable : Perf\_management

```

      Upper
      Quartile
      ffffffff
      4.00
      ffffffff

```

```

----- A6=2 -----
----

```

Analysis Variable : Perf\_management

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 123<br>2.25            | 2.99 | 0.93    | 3.25   | 1.00    | 4.75    |

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

```

Analysis Variable : Perf\_management

```

      Upper
      Quartile
      ffffffff
      3.75
      ffffffff

```

Effekgroottes vir verskille tussen groepe vir Perf\_management

31  
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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.43        |

Beskrywende Statistiek vir Present\_perf

32  
2014 08:58 Friday, October 31,

```

----- A6=1 -----
----

```

The MEANS Procedure

Analysis Variable : Present\_perf

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 48<br>3.38             | 3.72 | 0.67    | 3.75   | 1.50    | 5.00    |

```

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

```

Analysis Variable : Present\_perf

```

      Upper
      Quartile
      ffffffff

```

4.00  
ffffffffffff

----- A6=2 -----  
----

Analysis Variable : Present\_perf

| Lower<br>N<br>Quartile | Mean | Std Dev | Median | Minimum | Maximum |
|------------------------|------|---------|--------|---------|---------|
| 121<br>2.75            | 3.39 | 1.05    | 3.50   | 1.00    | 5.00    |

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff

Analysis Variable : Present\_perf

Upper  
Quartile  
ffffffffffff  
4.00  
ffffffffffff

Effekgroottes vir verskille tussen groepe vir Present\_perf

33  
2014

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| groep_i | groep_j | effekgrootte |
|---------|---------|--------------|
| 1       | 2       | -0.31        |

## Annexure H: Means of Constructs

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1

The MEANS Procedure

| Variable             | N   | Mean      | Std Dev   | Minimum   | Maximum   |
|----------------------|-----|-----------|-----------|-----------|-----------|
| Vision_mision        | 174 | 3.5012999 | 0.9224369 | 1.0000000 | 5.0000000 |
| Strat_obj_tools      | 174 | 3.4178509 | 0.8521715 | 1.0000000 | 4.9090909 |
| Strat_implementation | 174 | 3.1950375 | 0.8922780 | 1.0000000 | 4.9411765 |
| Strat_view           | 174 | 3.1508210 | 0.8677007 | 1.0000000 | 4.7142857 |
| Perf_management      | 174 | 3.1115900 | 0.9156150 | 1.0000000 | 5.0000000 |
| Present_perf         | 171 | 3.4926901 | 0.9680282 | 1.0000000 | 5.0000000 |

ffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffffff