# EXPLORING THE VALIDITY OF TWO ORGANISATIONAL ENERGY MEASURES IN THE SOUTH AFRICAN CONTEXT

by

**ROWENNA ERIN CUFF**

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Supervisor:

**Prof. Nicolene Barkhuizen**

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*"Praise the bridge that carried you over"*
*George Colman*

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## DECLARATION

I, Rowenna Erin Cuff, declare that “Exploring the Validity of Two Measures of Organisational Energy in the South African Context” is my own unaided work both in content and execution. All the resources I used for this study are cited and referred to in the reference list by means of a comprehensive referencing system. Apart from the normal guidance from my supervisors, I have received no assistance, except as stated in the acknowledgements. I declare that the content of this thesis has never before been used for any qualification at any tertiary institution.

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Signature

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# CONTENTS

## APPENDICES

# LIST OF FIGURES

# LIST OF TABLES

# ABSTRACT

**Background and Aim:**

Although inroads are currently being made into research in the area of organisational energy, an exhaustive search of the literature has indicated that research into measurement instruments which are applicable in the South African context is scant, with two empirical studies having been conducted in South Africa on organisational energy (Derman, Barkhuizen, & Stanz, 2011; Lamberti, 2010). As there is minimal research into organisational energy measures which are most appropriate for use in the South African context, this study explores the reliability and validity of the Productive Energy Measure (PEM) (Bruch, Cole & Vogel, 2005) in the South African context. This study also adds to the existing knowledge on the Energy Scapes Profile (ESP) (Tosey & Llewellyn, 2002) in the South Africa.

**Method:**

A cross-sectional survey research design is followed with data being collected from employees (N=303) from South African institutions. The ESP (Tosey & Llewellyn, 2002), and the PEM (Cole, Bruch & Vogel, 2011) are administered. Exploratory Factor Analysis, Confirmatory Factor Analysis, construct equivalence item bias analyses, Analysis of Variance, Multivariate Analysis of Variance and Regression Analysis are applied.

**Results:**

- Confirmatory factor analysis (CFA) of the ESP reveals that both a seven-factor and a one-factor model were inconclusive. Subsequent Exploratory factor analysis (EFA) reveals a one-factor structure. The theoretical sub-scales of the ESP show a high level of internal consistency.
- The results of the CFA for the PEM clearly reveal a three-factor model. The three theoretical sub-scales show an excellent level of reliability. Statistically significant differences are found in the productive organisational energy levels of employees based on job level, home language, years in current job and the PEM dimensions.
- Results of the regression analysis indicate that a statistically significant relationship exists between organisational energy and productive organisational energy.

**Practical Relevance:**

As far as could be determined, this is the first study to make use of the PEM in South Africa. The study attempts to identify which measure of organisational energy is most appropriate for use in the South African context, and makes a contribution to the body of knowledge surrounding organisational energy measurement instruments in the South African context. Furthermore, the study of measures of organisational energy which can be applied in the South African context provides assistance to those interested in measuring organisational energy in the workplace.

**Keywords:** energy, organisational energy, demographic characteristics, construct equivalence, productive organisational energy

# EXPLORING THE VALIDITY OF TWO ORGANISATIONAL ENERGY MEASURES IN THE SOUTH AFRICAN CONTEXT

## 1 INTRODUCTION AND BACKGROUND

### 1.1 INTRODUCTION

*"Without a high level of energy, a company cannot achieve radical productivity improvements, cannot grow fast and cannot create major innovations"*
(Bruch and Ghoshal, 2003, p.51)

In the complex and dynamic world in which businesses of the 21st century must function, the primary objective is to find and maintain the competitive advantage and, in so doing, create an organisation that is capable of rapid evolution and change (Lawler, 2008). Historically, management theory and practice have focused on highly analytical methodologies that largely dismissed the importance of thoughts and emotions in the workplace (De Bruyn & Roodt, 2009; Bruch & Ghoshal, 2003). However, in recent years the significant escalation in the dissemination and use of information in the organisation, more complex work, and the new global business environment have necessitated major shifts in the way in which employees are viewed and managed (Lawler & Mohrman, 2003). Scholars and managers alike have begun to realise the influential role that the thoughts and emotions of employees play in shaping the actions of the latter within the workplace (Bruch & Ghoshal, 2003; Bruch & Vogel, 2011; Cameron & Spreitzer, 2011, Cole, Bruch & Vogel, in press; Luthans & Avolio, 2009). This has led to an escalating interest in the effects that positive psychological states can have in the workplace (Luthans & Avolio, 2009).

Thus the focus of today's leaders is increasingly being turned towards "…unleash[ing] the human spirit…" (Porth, McCall, & Bausch, 1999, p. 211) with the aim of fostering the employee activities and behaviours that are needed to implement the organisation's strategy effectively (Lawler, 2005). This focus extends to creating a culture which enhances the ability of the organisation to respond to its external environment (Lawler,

2005) and “allows the human capacity for innovation and creativity to flourish” (Porth, *et al*., 1999, p.211).

When viewing the organisation from this perspective, the concept of energy becomes a valuable tool with which to gain a deeper understanding of how organisations can reach their full potential. Positive organisational energy can be defined as activating and focusing the employee’s tasks, behaviours and cognitive processes collectively in the achievement of the organisation’s goals (Bruch & Ghoshal, 2003; Cole *et al*., in press; Cole, Bruch & Vogel, 2005). It follows that positive organisational energy can therefore have a substantial influence on activating employee behaviour and activities to achieve the organisation’s strategy.

However, research in the field of organisational energy and its impact on the organisational environment is relatively new (Bruch & Ghoshal, 2003; Bruch & Vogel, 2011; Cameron, 2007; Cameron & Spreitzer, 2011; Cole *et al*., in press; 2005; Cross, Baker, & Parker, 2003; Quinn & Dutton, 2005; Schiuma, Mason, & Kennerly, 2007: Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005; Tosey & Llewellyn, 2002), and proponents of organisational energy have called attention to the dearth of research regarding reliable, valid instruments to measure organisational energy (Cole *et al*., in press; Cameron, 2007; Cameron & Caza, 2004). Furthermore, the researcher is aware of only two studies carried out on Organisational Energy in the South African context (Derman, 2009; Derman, *et al*., 2011; Lamberti, 2010).

An extensive search of electronic journal databases, including Emerald Insight, EBSCOHost, Proquest and Google scholar has revealed that there is a lack of academic research that firstly validates instruments for the measurement of organisational energy in the South African context, and secondly explores organisational energy as experienced in the South African organisation.

An investigation into the construct of organisational energy as experienced in the South African context will hopefully bring about an increased awareness which will allow South African organisations to develop an environment with the ability to energise employees in

the organisation in a way that has a positive effect on both the organisation's bottom line, and the individual employee.

The remainder of this chapter presents the problem and purpose statements of the research, followed by the research objectives. An indication of the importance and benefits of the research study is given before the chapter concludes with a list of definitions and abbreviations used frequently in the study.

## 1.2 PROBLEM STATEMENT

Although research is currently making inroads in the area of organisational energy, an exhaustive search of the literature has indicated that there has been little research into measurement instruments applicable to the South African context, with two empirical studies having been conducted in South Africa on organisational energy. Moreover, the bulk of the research which has been conducted on organisational energy has been carried out by European and American researchers, with a negligible amount on concepts in the South African context. This is an indication of the necessity for the research.

## 1.3 PURPOSE STATEMENT

The aim of this study is to take an exploratory approach by delving into the construct of organisational energy in the South African context. As there is limited research into organisational energy measures which are most appropriate for use in the South African context, this study will evaluate two measures of organisational energy and investigate both their metric properties, and their applicability to South Africa.

This research will also provide the impetus for exploring the concepts of organisational energy in relation to the South African organisation and its employees. As there is limited research into organisational energy in the South African context, the research will add to the empirical subject matter relating to this.

## 1.4 RESEARCH OBJECTIVES

The research objectives of the study have to do with the metric properties of two measures of organisational energy and their applicability to the South African context.
The research objectives are as follows:

- To validate an adapted version of the EnergyScapes Profile (ESP) in the South African context;
- To validate the Productive Organisational Energy Measure (PEM) in the South African context;
- To determine the interrelationships between organisational energy as measured by the ESP, and productive organisational energy as measured by the PEM;
- To determine whether there are any significant differences in organisational energy as measured by the ESP based on demographic characteristics; and
- To determine whether there are any significant differences in productive organisational energy as measured by the PEM based on demographic characteristics.

## 1.5 IMPORTANCE AND BENEFITS OF THE STUDY

From a theoretical perspective, the study will make four valuable contributions to the present body of knowledge on the construct of organisational energy. Firstly, as far as could be determined, this is the first study to make use of the PEM in South Africa. Secondly, the study will attempt to identify which measure of organisational energy is more appropriate for use in South Africa. Thirdly, this study will add to the limited body of knowledge on organisational energy in the South African context. Finally, additional data on the ESP will be generated and added to the current body of knowledge.

From a metric perspective, this study is expected to make a contribution to the body of knowledge surrounding organisational energy measurement instruments. The reliability and validity of the PEM in the South African context will be explored.

From a practical perspective, the findings should assist organisations in identifying practices, processes and initiatives which can have a positive impact on organisational energy and, in turn, on the productivity and satisfaction levels of their employees. The study of measures of organisational energy which can be applied in the South African context will thus provide insight into the relevance of measurement instruments, and will assist those interested in measuring organisational energy in the workplace. Using this information, interventions that facilitate positive organisational energy, or address organisational energy challenges, can then be developed.

## 1.6 DEFINITION OF KEY TERMS

The study refers to specific key concepts, for example, energy and organisational energy. The manner in which these key terms are defined for the purposes of this document is laid out below.

*Energy*

The Oxford English Dictionary Online defines energy as "the strength and vitality required for sustained physical or mental activity (Oxford University Press, 2011). Similarly, the Collins English Dictionary Online defines energy as "the capacity for intense activity or vigour" and an "intensity of action, expression or forcefulness (Harper Collins, 2011).

*Individual Energy*

Spreitzer *et al*. (2011 define energy as the "force or effect that drives our behaviour" (p155). Quinn and Dutton (2005) describe energy as a "type of positive arousal which people can experience as emotion – short responses to specific events, or mood – or longer lasting affective states that need not be a response to a specific event" (p. 36).

*Organisational Energy*

Schiuma, *et al*. (2007) define organisational energy as "…the sum of the energies of all the employees, plus the sum of the social network energy created within and between teams". They go on to add that energy is also "…an emergent energy that is the result of a synergetic integration and combination of all other forms of energy" within the organisation (Schiuma, *et al*, 2007, p. 71).

*Organisational Energy as Defined by Tosey (1994) and Tosey and Smith (1999)*

Organisational energy is created by the interaction between individuals and the work context or organisation. Energy is related to "…human consciousness rather than a purely physical phenomenon" (Tosey & Smith, 1999, p.111). It can be seen as an outward representation of the characteristics of the relationship between individual and work context (Tosey & Smith, 1999).

*Organisational Energy as defined by Cole et al. (in press; 2008; 2005)*

Cole, Bruch & Vogel (2008) define organisational energy as the "joint experience and demonstration of positive affect, cognitive activation and agentic behaviour among members of a collective in their shared pursuit of organisationally salient objectives" (p.9).

*Positive Psychology*

Positive psychology can be explained as the study of positive emotions, behaviours and societies (Seligman & Csikszentmihalyi, 2000). Gable and Haidt (2005) define positive psychology as "the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups and institutions" (p.104).

*Positive Organisational Scholarship*

Positive Organisational Scholarship (POS) can be defined as "the study of that which is positive, flourishing, and life giving in organisations" (Cameron & Caza, 2004, p. 731). Dutton elaborates further on this definition by articulating POS as "organisational research occurring at the micro, meso and macro levels which points to unanswered questions about what processes, states and conditions are important in explaining individual and collective flourishing" (Dutton, 2010).

*Positive Organisational Behaviour*

Luthans (2002) defines Positive Organisational Behaviour (POB) as "the study and application of positively-oriented human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement in today's workplace" (p.59).

*Validity*

Babbie and Mouton (2001) define validity as “the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration”. The primary goal when validating a measuring instrument is to demonstrate the validity of an assessment or measurement tool by empirical means, that is the extent to which the instrument measures what it purports to measure (Foxcroft & Roodt, 2006).

*Content Validity*

Content validity refers to the extent to which a measurement instrument provides an acceptable representation of the concept or behaviour which it purports to measure (Foxcroft & Roodt, 2006).

*Reliability*

Reliability refers to the consistency of measurement of an instrument (Foxcroft & Roodt, 2006). An instrument can be considered reliable when independent administration of the instrument by the same respondent under similar circumstances produces the same or similar results (Kumar, 2005).

*Internal Consistency Reliability*

Internal consistency refers to the extent to which a measurement instrument measures the same theoretical concept or characteristic. Internal consistency is determined by examining how robustly the items in a specific theoretical construct are related to each other (Foxcroft & Roodt, 2006).

The following list explains the abbreviations which are used in this document.

| Abbreviation | Meaning |
|---|---|
| ANOVA | Analysis of Variance |
| CFA | Confirmatory Factor Analysis |
| CFI | Comparative Fit Index |
| EFA | Exploratory Factor Analysis |
| ESP | The Energy Scapes Profile |
| MANOVA | Multivariate Analysis of Variance |
| NNFI | Non-Normed Fit Index |
| PEM | The Productive Organisational Energy Measure |
| POB | Positive Organisational Behaviour |
| POS | Positive Organisational Scholarship |
| RMSEA | Root Mean Square Error of Approximation |

## 1.7 CHAPTER OUTLINE OF THE STUDY

The chapter outline highlighting the overview of this research is as follows:

*Chapter 1: Introduction*

Chapter 1 introduces the concept of organisational energy in the broader context of the organisation, and provides the impetus for the research study by highlighting the problem statement and research objectives. An indication of the importance and benefits of the research study is given before the chapter concludes with a list of definitions and abbreviations used frequently in the study.

*Chapter 2: The Conceptual Framework of Organisational Energy*

Chapter 2 contains a detailed review of the available literature on the concept of organisational energy. The chapter commences with a discussion of the theoretical foundations of organisational energy, elucidating on systems and complexity theory, organisational climate and culture, positive psychology, positive organisational behaviour and positive organisational scholarship. Attention is then given to multiple definitions of energy and organisational energy, before a timeline of organisational research is presented. The levels of energy in the organisation are discussed, before three models of organisational energy are described and the chapter is concluded.

*Chapter 3: The Measurement of Organisational Energy*

Chapter 3 contains a detailed review of three measures of organisational energy based on the three models of organisational energy discussed in Chapter 2. The chapter commences with an overview of metric properties if measurement instruments are used, with specific focus on reliability and validity. This is followed by a synopsis of the transfer of metric properties across cultural groups. The discussion then turns three measures of organisational energy, which are discussed in terms of test development and adaption, metric properties and any prior studies in South Africa which make use of the instrument. The chapter is then concluded.

*Chapter 4: Research Design*

Chapter 4 involves a detailed discussion of the research design and methods which were selected as the framework through which the research questions of the study were answered. The chapter begins with an overview of the research paradigm of the study, before a description of the strategy of inquiry and broad research design is given. A discussion of the sampling strategies and techniques utilised in the study then follows and the data collection methodology is presented. Issues that affect the reliability and validity of the research are considered before ethical concerns related to the study are contemplated. The final section of this chapter consists of the development of research hypotheses for study, as well as the rationale for each hypothesis.

*Chapter 5: Results*

Chapter 5 commences with a brief discussion of each of the statistical techniques employed in the study, before the results of the statistical analysis of the ESP are presented. The statistical findings for the PEM are then presented, before the investigation moves on to the exploration of the relationship between the two measures, and the chapter is then concluded.

*Chapter 6: Discussion of Results*

In Chapter 6, a discussion of the empirical results presented in Chapter 5 is undertaken. Each of the five hypotheses of the research study are presented and are accepted or rejected based on the evidence garnered from the research study.

*Chapter 7: Conclusions, Limitations and Recommendations*

Chapter 7 consists of an overview of the research findings of the study in relation to the literature reviewed and the statistical analysis undertaken. The limitations of the study are addressed and selected recommendations for further study in the field of organisational energy are made. In conclusion, final comments are made.

# 2 THE CONCEPTUAL FRAMEWORK OF ORGANISATIONAL ENERGY

## 2.1 INTRODUCTION

*"While the term energy is pervasive in much of organisational life, it is also a highly elusive concept in that context" (Cross, et al., 2003, p.51)*

To contextualise the concept of organisational energy, it is first necessary to explore the nature of the organisation and its environment, as well the theoretical foundation which underpins organisational energy. This chapter presents a comprehensive overview of the available literature on the concept of organisational energy. The chapter orientation is presented diagrammatically in Figure 2-1below.

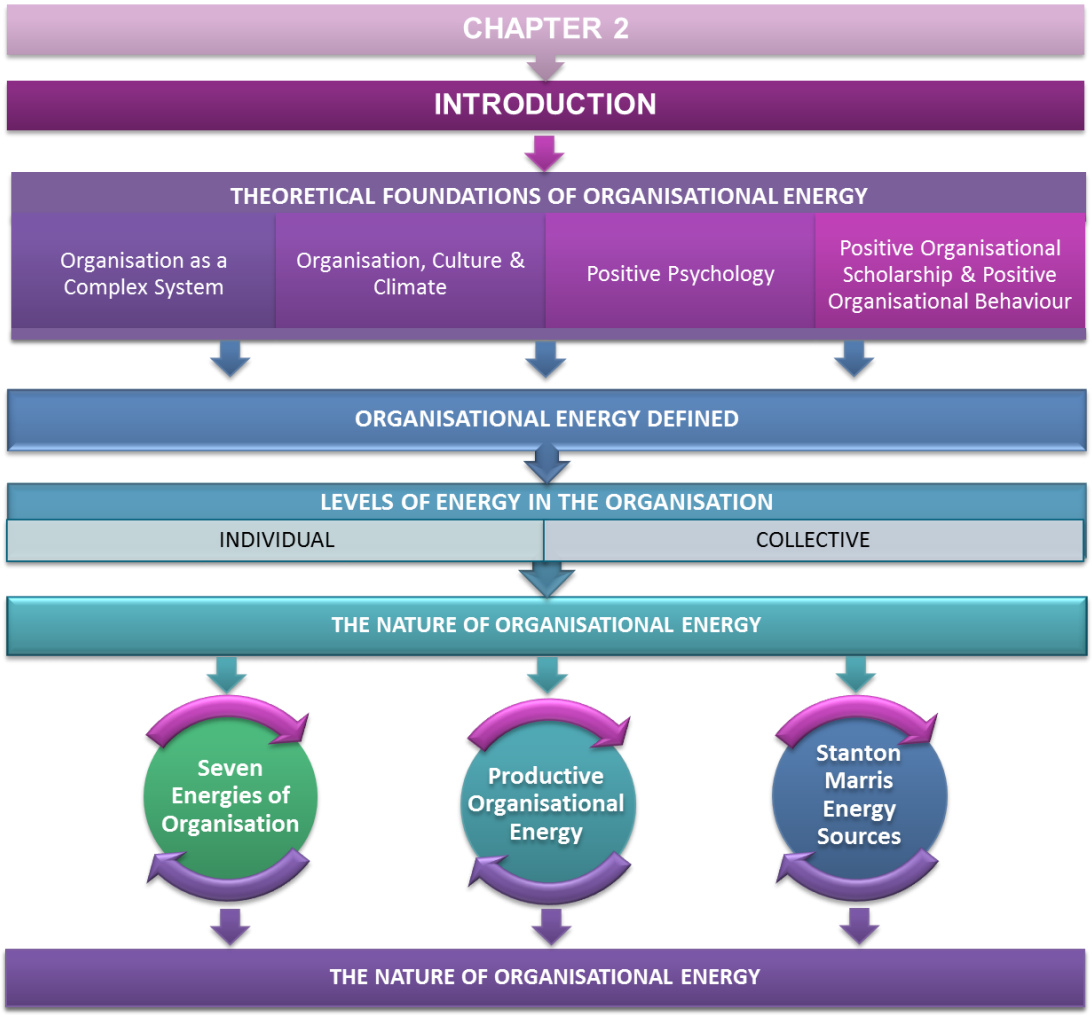


**Figure 2-1: Chapter 2 Orientation**

As is illustrated by the figure, the literature of organisational energy is separated into two chapters. This first chapter commences with a discussion of the theoretical foundations of organisational energy, elucidating on Systems and Complexity Theory, organisational climate and culture, positive psychology, positive organisational behaviour, and positive organisational scholarship. Attention is then given to multiple definitions of energy and organisational energy, before a timeline of organisational research is presented. The levels of energy in the organisation are discussed, before three models of organisational energy are described, before the chapter is concluded.

## 2.2 THEORETICAL FOUNDATIONS OF ORGANISATIONAL ENERGY

Although a clear theoretical foundation for organisational energy has yet to be adopted, a growing body of research suggests that this concept arises from the fields of positive psychology, positive organisational scholarship, and positive organisational behaviour. This theoretical foundation stems from the idea that positive behaviours can have a constructive impact on organisation members and the organisation as a whole.

A brief discussion of the organisation based on complexity and systems theories is presented in the ensuing section, followed by an overview of the concepts of organisational climate and culture, positive psychology, positive organisational scholarship, and positive organisational behaviour.

### 2.2.1 The Organisation as a Complex System

In an attempt to improve on the understanding of the nature of organisations and the various processes which occur within the organisation, an understanding of the joint perspectives of Systems Theory and Complexity Theory is helpful (Cao & McHugh, 2005). The Systems Theory perspective views the organisation as a dynamic system which is comprised of multiple subsystems and parts, which in turn interact with one another and the environment (Mason, 2007). However, owing to the increasingly complex environment which organisations must operate in, the systems perspective is not always adequate in dealing with complex phenomena. This has led to the emergence of complexity theory. Complexity theory considers systems as continually evolving or adapting, based on the

inter-and intra-relationships of the system (White, 2000). This implies that changes are produced on the basis of several inter-connected causes and effects, which makes the effect and outcomes of a change process difficult to predict (Fioretti & Visser, 2004). The combination of complexity and systems theories results in:

- An understanding of the connections and interactions of the various organisational subsystems of the organisation, and how they function (Sullivan, 2004);
- An understanding of the behaviour of organizations in coping with continuous change in the organisational set-up (Sullivan, 2004);
- a conceptual and theoretical foundation which assists in categorising the performance levels of the organisational system, and examines how it proactively and collectively adapts to new situations (White, 2000); and
- Therefore, when conceptualising phenomena in the organisation, one should keep in mind the complex dynamics and behaviours of an organisation (Mason, 2007).

Two phenomena in the organisation which have a bearing on this study are organisational climate and organisational culture. These two concepts are discussed in more detail in the ensuing section.

### 2.2.2 The Organisation, Organisational Culture and Organisational Climate

When it comes to the study of the interaction of individuals and the workplace, two closely related concepts are of interest, namely organisational culture and organisational climate. Organisational climate as a concept arose from the work of Kurt Lewin, who put forward the notion that social climates, which affect the productivity and efficiency of individuals, are created in the organisation (Schneider, Brief, & Guzzo, 2008). On an individual level, organisational climate is related to individual awareness and understanding of patterns of emotions, behaviours and thoughts that occur in an interpersonal context. This can be seen as a psychological climate experienced by individual organisation members (Isaksen & Lauer, 1999). The combined psychological climates of organisation members are aggregated at the collective level to form the organisational climate of a team or organisational unit (Isaksen, 2007). This can be defined as the shared perceptions of the organisational context within which the collective functions.

Organisation members' understanding of climate is created by the organisation policies, procedures and practices (Ahmed, 1998). Schneider *et al*. (2008) propose four facets of organisational climate, namely: the nature of interpersonal relationships, the nature of the organisation's hierarchy, the nature of work and the focus of support and rewards. These interact to form an enduring belief about what is valued by the organisation, how business is done in the organisation and what the organisation's priorities are (Ahmed, 1999). These enduring values and beliefs form the framework of organisational culture, viz "a system of shared values (that define what is important) and norms that define appropriate attitudes and behaviours for organisational members…." (O'Reilly & Chatman, 1996, p. 160). Ahmed (1999) maintains that culture is created and manifested by the policies, procedures and practices of the organisation's climate. However, culture is not directly observable but "exists as [a] cognitive schema which governs behaviour and actions given environmental stimuli" (Ahmed, 1999, p. 32). Organisational culture is a deeply held belief system. It is difficult to change and thus organisational climate provides the means to effect changes in the organisation which eventually will impact on the culture.

According to Isaksen (2007) organisational climate can have an impact on individual psychological processes such as problem-solving, motivation and commitment, as well as organisational processes, such as communication, co-ordination and group decision-making and problem-solving. Individual and organisational processes which are valued by the organisation as positive behaviours, attitudes and processes can be reinforced by the nature of the policies and systems in place in an organisation. Consequently the policies and systems demonstrate to organisation members what behaviours and attitudes are important to the organisation, thus they impact on individual and organisational performance. Therefore climate can have an effect on both individual and organisational performance (Isaksen, 2007). This creates a conceptual link between organisational climate, performance and a positive view of the organisation. The concepts of positive psychology, positive organisational behaviour and positive organisational scholarship are discussed in the ensuing section.

### 2.2.3 Positive Psychology

Positive psychology can be explained as the study of positive emotions, behaviours and societies (Seligman & Csikszentmihalyi, 2000). Gable and Haidt (2005) define positive psychology as "the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups and institutions" (p.104). The intention of positive psychology is to gain an understanding of the positive aspects of human functioning and experience (Linley, Joseph, Harrington, & Wood, 2006; Seligman, 2002; Seligman & Csikszentmihalyi, 2000). This does not mean that positive psychology is meant as a substitute for the scientific knowledge about dysfunctional behaviours, disorders, or suffering that human beings can experience. Rather, the intention is to develop a more holistic and balanced perspective of the human condition (Seligman, Steen, Park, & Peterson, 2005). So, instead of asking the questions "what doesn't work?"; "what is broken" and "how can we fix it"; positive psychology asks "what is right" and "how can we take what we have learned here, generalise it, and apply it more broadly to enable more people to improve their lives" (Linley, *et al*., 2006, p. 7).

The awareness that individuals and their experiences are entrenched in a social setting is a key aspect of positive psychology. This means that the groups, communities, institutions and societies in which individuals function should be factored into the study of the human condition (Seligman, 2000). This study of individuals in the social setting forms the overlap between positive psychology and organisational behaviour. While the emphasis of positive psychology is primarily in the field of clinical psychology, positive organisational behaviour and positive organisational scholarship transfer the philosophy of positive psychology into the organisational context. These two concepts are discussed in the ensuing section.

### 2.2.4 Positive Organisational Behaviour and Positive Organisational Scholarship

Luthans (2002) defines Positive Organisational Behaviour (POB) as "the study and application of positively-oriented human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement in today's workplace" (p.59).

The field of POB emphasises the exploration and effective application of positive emotions, behaviours and attributes of individual organisation members, and how they are related to optimisation of performance, or the well-being of individuals (Luthans, Norman, Avolio, & Avey, 2008; Luthans & Youssef, 2007). The individual positive psychological condition, characterised by self-efficacy, optimism, hope and resilience is termed psychological capital (Luthans, Youssef, & Avolio, 2007; Avolio & Luthans, 2006). This condition is best described by Luthans, *et al*. (2007, p 3.) as a four-faceted concept consisting of "(1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity (resilience), sustaining and bouncing back and even beyond to attain success" (p. 3). Individuals who display higher levels of these four aspects tend to display higher functioning, which in turn can be linked to more optimal individual performance (Luthans & Avolio, 2009).

According to Cameron and Caza (2004), Positive Organisational Scholarship (POS) can be defined as "the study of that which is positive, flourishing, and life giving in organisations" (p. 731). Dutton elaborates further on this definition by articulating POS as "organisational research occurring at the mico, meso and macro-levels which points to unanswered questions about what processes, states and conditions are important in explaining individual and collective flourishing. Flourishing refers to being in an optimal range of human functioning" (Dutton, 2010). POS makes use of a continuum in which collective behaviours, experiences and cognitions range from negative to positive, with normal falling somewhere in-between. The aim is to realign individuals from a state of "normal" functioning to a state of positive deviance, where individuals display vitality, resilience and a state of flourishing. This state of positive deviance in functioning has been linked to increased organisational performance (Cameron & Levine, 2006; Spreitzer & Sonenshein, 2003).

Since POS can include a broad range of processes, perceptions and outcomes which fall within the positive dimension, it is clear that there is some overlap between the definitions provided above for POB and POS. The major differentiator between the two concepts is

the level of analysis which each discipline is focused on. POS is primarily concerned with the organisational and team level of analysis. In contrast, POS focuses on the individual and interpersonal levels (Luthans & Avolio, 2009). The idea that positive behaviours on an individual and a collective level can have a positive impact on organisational performance brings us to the need to identify organisational energy.

## 2.3 ORGANISATIONAL ENERGY DEFINED

To fully understand the concept of organisational energy, it is necessary to define energy, and how it relates to the organisation. The Oxford English Dictionary Online defines energy as “the strength and vitality required for sustained physical or mental activity (Oxford University Press, 2011). Similarly, the Collins English Dictionary Online defines energy as “the capacity for intense activity or vigour” and an “intensity of action, expression or forcefulness (Harper Collins, 2011). In physics, energy refers to an indirectly observed quantity which is generally associated with the ability to influence the system in which it occurs (White, 2010). Thus energy is seen as a catalyst for action to take place in a system.

The concept of energy in the organisational setting is a relatively recent development, with Cole *et al*. (2005) highlighting Adams (1984) as one of the first to identify energy in the context of the organisation. Adams (1984) defines energy as “the potential for action or accomplishment of work” (p. 277). This is supported by Loehr and Schwartz (2001) who state that “…energy can be defined most simply as the capacity to do work” (p. 122). Although some early work does elaborate minimally on energy conceptualised in relation to the organisation (see Katz & Kahn, 1963, Etzioni, 1968 and Stodgill, 1972, as cited in Vogel & Bruch, 2011), the bulk of research carried out in organisational energy has occurred within the last 17 years Bruch & Ghoshal, 2003; Bruch & Vogel, 2011; Cameron, 2007; Cameron & Caza, 2004; Cameron & Levine, 2006; Cameron & Spreitzer, 2011; Cole *et al*., in press; 2005; Cross, Baker, & Parker, 2003; Quinn & Dutton, 2005; Schiuma, Mason, & Kennerly, 2007; Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005; Tosey, 1994; Tosey & Llewellyn, 2002; Tosey & Smith, 1999),

Quinn and Dutton (2005) describe energy as a "type of positive arousal which people can experience as emotion – short responses to specific events, or moods – or longer lasting affective states that need not be a response to a specific event" (p. 36). Schiuma, *et al*. (2007) defines organisational energy as "…the sum of the energies of all the employees, plus the sum of the social network energy created within and between teams". They go on to add that energy is also "…an emergent energy that is the result of a synergetic integration and combination of all other forms of energy" within the organisation (Schiuma, *et al*, 2007, p. 71). This is supported by Bruch and Vogel (2011), Cole *et al*. (in press; 2005) and Bruch and Ghoshal (2003) who conceptualise organisational energy as a force which the organisation can use as a catalyst to action key activities and initiatives. Thus the intensity of organisational energy can be seen as "the extent to which a company has mobilised its emotional, cognitive and behavioural potential in pursuit of its goals" (Cole *et al*., 2005, p. 2).

A timeline of development of the concept of organisational energy is provided in Figure 2-2. The timeline is by no means a comprehensive list, but serves to illustrate the proliferation of research in the organisational energy field over the last two decades.

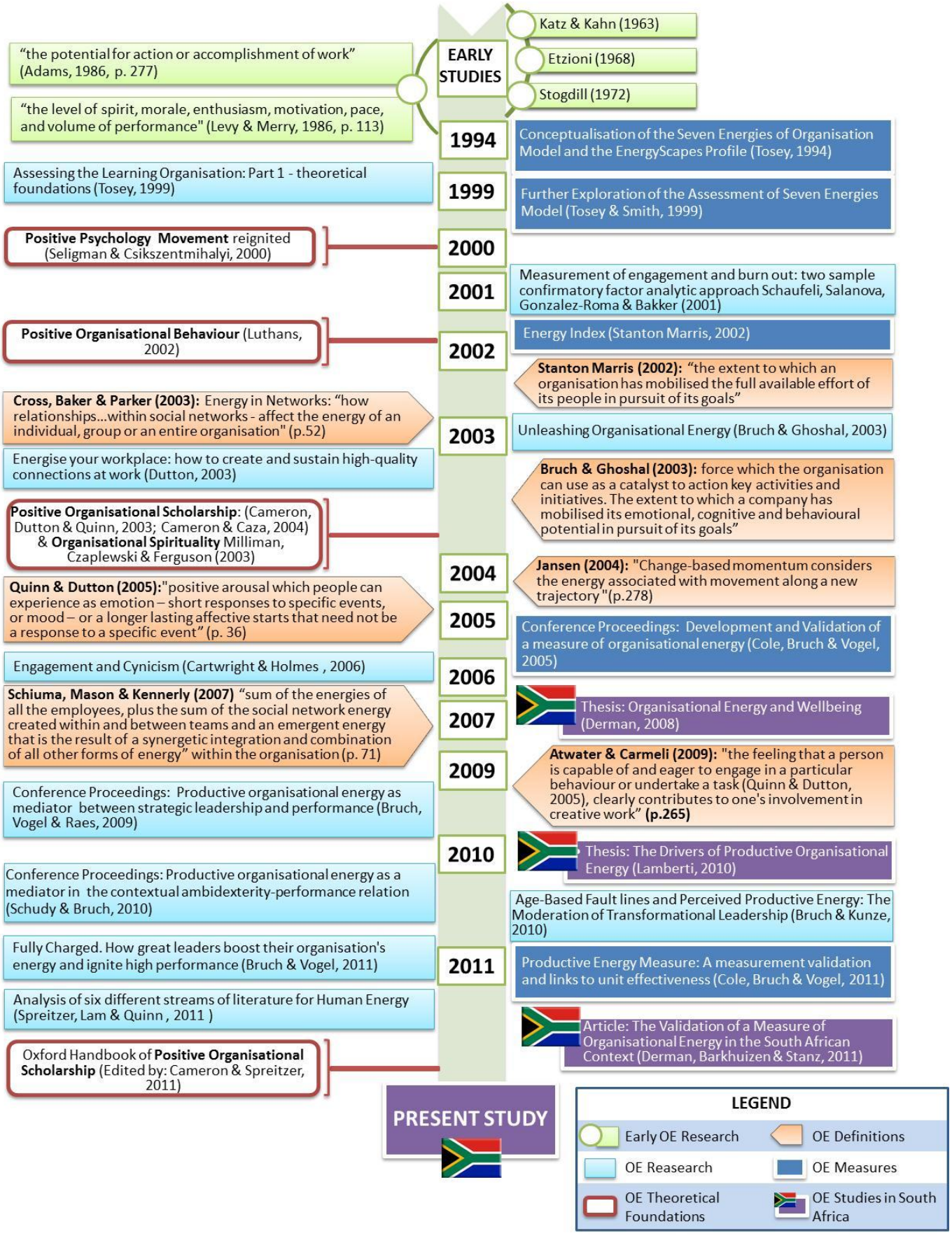


**Figure 2-2: Timeline Illustrating the Progression of Organisational Energy Research**

## 2.4 THE LEVELS OF ENERGY IN THE ORGANISATION

The foundations of organisational behaviour theory lie within the view that an organisation functions as a multi-level system (Kozlowski & Klein, 2000a). Examples of such theories include Lewin's field theory (1951), Likert's theory of organisational effectiveness (1961) and Katz and Kahn's (1966) social organisational theory (as cited in Kozlowski & Klein, 2000a). The organisation is seen as a dynamic system which is composed of multiple subsystems and parts, which in turn interact with one another and the environment (Mason, 2007). This means that the organisation can be viewed from multiple perspectives. The micro-perspective of the organisation finds its origins in psychology: the assumption is that the nuances of individual behaviour result from the various forms of diversity of people. In contrast, the macro-level perspective of the organisation is founded in sociology and assumes that there are considerable consistencies in social behaviour within certain contextual or demographic conditions (Kozlowski & Klein, 2000a).

Both these perspectives have merit, but to truly capture the essence of the complex nature of the organisation, it is necessary to take a multi-level approach which unites both these perspectives (Kozlowski & Klein, 2000b). This is because the dynamics that occur between certain variables on the individual level are not necessarily equivalent to the dynamics of those same variables on the team or organisation level (Chen, Ployhart, Cooper Thomas, Anderson, & Bliese, 2011; Chen, Bliese, & Mathieu, 2005).

Organisational energy is a multi-level phenomenon which is comprised of human energy, collective energy and organisational infrastructure (Schiuma, *et al*., 2007). Hence for purposes of this discussion, a distinction is made between human level energy and collective organisational energy. These are discussed in more detail in the following section, which focuses firstly on the micro-level of individual human energy, and then on the macro-level of collective organisational energy.

### 2.4.1 Human Level Energy

Spreitzer, Lam, & Quinn (2011) rrecently conducted a review of the literature available from scholars in psychology, sociology and organisational behaviour in an attempt to

integrate and expand the knowledge available on human energy within the organisational context. They found that much of the existing literature on self-regulation and motivation had underlying and implied references to energy as the “force or effect that drives our behaviour” (Spreitzer *et al*., 2011, p155). Six distinct streams of literature with well-defined theoretical reasoning and empirical research that examine the logic behind the theory were identified (Spreitzer, *et al*., 2011). These six streams are summarised briefly in Table 2-1 and discussed in the ensuing section.

**Table 2-1: Summary of the Six Streams of Human Energy Identified by Spreitzer *et al*. (2011)**

| Theory | Nature of Energy as Defined by the Theory | Key Characteristics and Insights |
|---|---|---|
| **Ego-Depletion Theory** | • Energy is finite, a limited resource (Gailliot, *et al*., 2007)<br>• Energy is a biological construct generated by creating and breaking down chemical bonds in the human body (Muraven & Baumeister, 2000).<br>• If there is no opportunity to rest and replenish energy, performance on subsequent self-control tasks is negatively impacted (Gailliot, *et al*., 2007; Muraven & Baumeister, 2000). | • Energy is depleted by activities which required individuals to exert control over themselves (Muraven & Baumeister, 2000).<br>• Individuals expend large amounts of energy when engaging in self-regulation activities, for example supressing thoughts, regulating emotions, coping with stress (Gaillot *et al*., 2007; Muraven & Baumeister, 2000).<br>• Regular observance of self-regulation activities results in less energy being expended on self-regulation (Baumeister, Gailliot, DeWall & Oaten, 2006, as cited in Spreitzer, *et al*., 2011; Gailliot, *et al*., 2007). |
| **Attention Restoration Theory** | • Energy is conceptualised as “directed attention”: the ability of individuals to focus their mental attention or concentration on cognitive and physical tasks (Kaplan, 1993, as cited in Spreitzer *et al*., 2011).<br>• Energy is finite and can be depleted. | • Energy is depleted over time by inhibiting distractions, e.g. stress, unrelated thoughts, processing information and problem-solving (Kaplan, 2001).<br>• Restoration of attention energy can be achieved by consuming glucose, being away from a demanding work environment, and engaging in preferred activities (Kaplan, 2001). |
| **Self-Determination Theory** | • Energy is conceptualised as “subjective vitality”: feelings of enthusiasm, aliveness and positive energy (Ryan & Frederick, 1997).<br>• Intrinsic motivation results in individuals experiencing more vitality and needing less regulation of behaviours and activities (Gagne & Deci, 2005; Ryan & Deci, 2000, as cited in Spreitzer *et al*, 2011). | • Social setting can contribute to vitality by satisfying psychological needs of autonomy and affiliation (Ryan & Frederick, 1997).<br>• Individuals can still feel energised despite diminishing levels of physical energy, indicating that the energy or vitality experienced by individuals is more than physical energy (Spreitzer, *et al*., 2011). |

| Theory | Nature of Energy as Defined by the Theory | Key Characteristics and Insights |
|---|---|---|
| **Energetic Arousal** | • Energy is conceptualised as "energetic arousal": the individual's experience of vitality, interest and excitement which goes together with the activation of the physical body (Thayer, 1989, as cited in Spreitzer, *et al*, 2011).<br>• Energy is mental and physical | • The physiological reactions resulting from energetic (positive) or tense (negative) arousal impact on the individual's emotions, behaviours and outputs (Spreitzer, *et al*., 2011).<br>• Energetic arousal associated with positive individual outcomes in the organisational context (Spreitzer, *et al*, 2011). |
| **Conservation of Resources** | • Energy is conceptualised as an "intrinsic energetic resource" of vigour.<br>• Defined as an individual possessing physical presence, cognitive alertness and emotional energy (Hobfall & Shirom, 2001, as cited in Spreitzer *et al*., 2011).<br>• Energy is split into physical, cognitive and emotional energy<br>• Energy is a valuable resource<br>• Linked to vigour (Shirom, 2003). | • Resources must be conserved or replenished to maintain psychological well-being (Shirom, 2003; Hobfall & Shirom, 2001, as cited in Spreitzer, *et al*., 2011).<br>• Vigour can be predicted by job resources and job demands (Shirom, 2003; Schaufeli, Gonzalez-Roma, Salanova, & Bakker, 2002).<br>• Recovery experiences that replace diminished energy have a positive impact on future functioning in a job, and on well-being in general (Spreitzer, *et al*., 2011). |
| **Interaction Ritual Chain Theory** | • Emotional energy is conceptualised as the activation that people feel in their everyday experience (Collins, 1993).<br>• Ranges from passion, excitement and self-assurance to indifference, depression and anxiety (Collins, 1993).<br>• Emotional energy can be used as a means to describe the creation of social structures (Collins, 2004, as cited in Spreitzer, *et al*., 2011). | • Individuals tend to have enough energy to accomplish their daily tasks (Collins, 1993).<br>• Individuals tend to notice deviations in the experience of more or less energy (Spreitzer, *et al*., 2011).<br>• Successful interactions between individuals, who have similar expectations about the boundaries, focus and response to the interaction can lead to emotional energy outcome. Positive energy outcome motivates repetition of successful interactions (Collins, 1993; Spreitzer, *et al*., 2011). |

**Ego-Depletion Theory** establishes that the practice of applying self-control is driven by the physiological energy gained from the chemical reactions taking place in the human body as a result of the ingestion of nutrition (Gailliot, *et al*., 2007; Muraven & Baumeister, 2000). Ego-Depletion theory provides valuable insight into the link between self-regulation activities which are undertaken in the work environment and the large quantities of human energy required to maintain them (Spreitzer, *et al*., 2011). Self-regulation or self-control activities could include suppressing or regulating thoughts and emotions or coping with stress (Gailliot *et al*., 2007; Muraven & Baumeister, 2000). Furthermore, if individuals do not have the opportunity to replenish their physiological energy, their performance on subsequent self-control tasks is negatively impacted (Gailliot *et al*., 2007; Muraven & Baumeister, 2000).

**Attention-Restoration Theory** builds on the ideas of Ego-Depletion Theory, but is primarily focused on mental tasks and the energy which must be expended to focus or direct mental attention (Berman, Jonides, & Kaplan, 2008; Kaplan, 2001). Successful emotional and cognitive functioning, as well as general well-being has been illustrated as an outcome of being away from the work environment or engaging in preferred activities. This has the result of invoking modest involuntary attention, which provides the mechanisms that control direct attention, and give emotions and cognition the opportunity to be replenished Berman *et al*., 2008; Kaplan, 2001).

**Self-Determination Theory** expands upon both Ego-Depletion and Attention-Restoration theory by positing that even though physiological energy is consumed by human action, individuals can experience vitality or an energised state by undertaking activities which satisfy psychological needs related to autonomy and affiliation (Gagne & Deci, 2005; Ryan & Frederick, 1997). This experience of an energised state can be felt by individuals even though their physical energy reserves are decreasing (Spreitzer *et al*., 2011). This means that the experience of vitality (or energy) is not only influenced by physical factors such as physical wellbeing, sickness or tiredness, but also by emotional and psychological aspects (Gagne & Deci, 2005; Ryan & Frederick, 1997). Self-Determination Theory can be linked to the concept of “thriving at work” put forward by Spreitzer, Sutcliffe, Dutton, Sonenshein and Grant (2005) where individuals experience a sense of vitality and learning in an organisation. Such thriving can be seen as an adaptive function which organisation

members can use to “navigate and change their work contexts to promote their own development… and positive health” (p. 537).

However, it is clear that certain activities require more human energy that others and thus it is important to understand how organisational circumstances can have a negative or positive impact on the utilisation of human energy. This is explained by the Theory of Energetic Arousal which differentiates between states of energetic (positive) and tense (negative) arousal and the impact that these states have on human energy (Thayer, 1989, as cited in Spreitzer, *et al*, 2011, Schimmack & Grob, 2000; Fredrickson & Levenson, 1998) Individuals in the state of energetic or positive arousal are much more efficient in the use of their energy, as their activities tend to occur in an unconscious and instinctual manner.
Furthermore, they tend to undertake adaptive behaviours, and to participate in their environment (Fredrickson, 2001; Fredrickson & Levenson, 1998). In contrast, those acting in a state tense or negative arousal expend much more energy because they must direct their attention consciously while taking action (Fredrickson & Levenson, 1998).

In the workplace, an understanding of the causes and effects of energetic and tense arousal can result in a more effective use of individual energy if conditions in the workplace are structured to encourage energetic arousal and minimise tense arousal (Spreitzer, *et al*., 2011). Thus it is clear that the energetic arousal of individuals has the potential to be a valuable resource if harnessed correctly. This is supported by the **Conservation of Resources Theory**, which approaches the use of energetic arousal as an important resource which should be managed by encouraging individuals to invest their efforts in physical, emotional or cognitive behaviours which help an organisation attain a competitive advantage (Collins, 1993). Thus individual energy is seen as a valuable resource which can be used to acquire other objects of value (Shirom, 2003). Furthermore, the demands of a job and the resources it entails can have a significant impact on the energetic arousal or “vigour” that an individual experiences in an organisation (Spreitzer, *et al*, 2011). The concept of Vigour, as described by Shirom (2003) is derived from the conservation of resources theory. Vigour is a “positive affective response to one’s ongoing interactions with significant elements in one’s job and work environment that comprises the interconnected feeling of physical strength, emotional energy and cognitive liveliness”

(Shirom, 2003, p. 147). Human energy from the Conservation of Resources Theory perspective could thus be perceived as the fundamental resource which an organisation can generate (Spreitzer *et al*., 2011).

There are two common threads running throughout the first five streams. The first commonality is the idea that individual energy is made up of three key aspects, namely a mental or cognitive aspect, a physiological aspect and an emotional aspect. The three aspects of individual energy combine to form a synergistic resultant energy made up of cognitive, emotional and physical energy (Cole *et al*, in press; Spreitzer, 2011; Schiuma *et al*., 2007; Cole *et al*., 2005; Shirom, 2003; Schaufeli *et al*., 2002).

The second commonality relates to the idea that the energy, vitality, vigour or positive arousal experienced by individuals can be generated and depleted. It follows that it could be possible to create and maintain individual human energy by influencing the thoughts and behaviours which have an impact on cognitive, emotional and physical capacity (Schiuma, *et al*., 2007). Thus the individual human response can be seen as an important contributor to the creation of positive organisational practices (Bruch & Ghoshal, 2003; Cameron, Bright, & Caza, 2004; Cameron & Caza, 2004; Cole *et al*., in press; 2005; Shirom, 2003). However, while the notion of individual human energy in the form of ideas such as vigour, vitality, energetic arousal, and emotional energy can help bring about an understanding of the forces which inspire and engage individuals in the workplace, scholars have postulated that energy in the organisation can also be seen as shared human forces in the organisation (Bruch & Vogel, 2011; Cole *et al*., in press; 2005; Jansen, 2004; Schiuma *et al*., 2007).

**Interaction Ritual Chain Theory** begins to synthesise the knowledge of individual energy into a shared construct, where the unit of analysis is interactions between individuals, and there are social and organisational causes and consequences of energetic arousal (Spreitzer, *et al*. 2001, Collins, 1993). Interaction Ritual Chain Theory postulates that individuals attempt to increase their energetic arousal by seeking successful interactions with individuals who have equivalent expectations about the focus, outcomes and experience of a particular interaction (Collins, 1993). Repeated successful interactions can result in an alignment between individuals, which can then increase their individual

energy, and motivate them to participate in further interactions which will have a positive impact on their energetic arousal (Collins, 1993). This leads to the understanding that individuals tend to pursue interactions which maximise their energetic arousal, and to avoid those which have a negative impact on their energetic arousal. This brings us to a discussion of collective organisational energy.

### 2.4.2 Collective Energy – Organisational Energy

A fundamental tenet of the multi-level perspective of organisations is the idea that "micro phenomena are embedded in macro contexts" and "macro phenomena often emerge through the interaction and dynamics of lower-level elements" (Kozlowski & Klein, 2000b, p. 6). When "lower level variables are aggregated to represent higher level constructs" this is known as an emergent effect (Bliese, Chan, & Ployhart, 2007, p. 552).

When applied to the concept of collective organisational energy, this theory supposes that the collective energy that is created by the joint affect of individuals in a work group or organisation is an "emergent energy" (Cole *et al*., in press). Whereas individual human energy manifests itself as the emotional, cognitive and behavioural response to a job, interpersonal relationships in the organisation and the organisational environment itself, and collective or organisational energy refers to the shared energy among organisation members (Bruch & Vogel, 2011; Cole, *et al*. 2011; Bruch & Kunze, 2010; Cole *et al*., 2005; Bruch & Ghoshal, 2003).

Organisational energy thus refers to the collective energy shared among individuals working in an organisation or work group (Bruch & Vogel, 2011; Cole *et al*., in press; Schiuma, *et al*., 2007). This energy results from shared experiences and responses to contextual or situational influences, as well as the emotional, behavioural and cognitive states of individual members of the organisation or work unit (Cole, *et al*, 2011; Marks, Mathieu & Zuccaro, 2001).

Research has shown that group members have the ability to create shared social ideas and thoughts (Cannon-Bowers & Salas, 2001; Cannon-Bowers, Salas, & Converse, 1993). It is suggested that effective teams have a sense of shared, compatible knowledge which

can be utlised to co-ordinate thoughts and behaviour towards specific and organisationally relevant accomplishments (Cannon-Bowers & Salas, 2001). Furthermore, the shared experiences, social processes and responses in a group can form an "emotional contagion effect" where the emotional states and behaviours of individuals interacting in the organisation are influenced by the emotions or behaviours of another person or group in the organisation (Barsade, 2002; Hatfield, Cacioppo, & Raps, 1993) and feelings, thoughts and actions are proliferated through the organisation. The power of the collective is thus reinforced by the group interaction to create an emergent energy which is transferred between individuals in the organisation. In this way, the nature of collective energy is greater than the sum of all the individual states (Bruch & Vogel, 2011).

Just as human energy is a distinctive characteristic of the individual, so the nature of the energy which occurs on the collective level of groups or organisations is particular to the organisational unit that created it (Schiuma *et al*., 2007). The nature of collective energy is influenced by the context in which it occurs and the inputs, processes, and outcomes in the energy system (Marks, *et al*., 2001). The integrated, multi-level process of energy creation and depletion discussed in the preceding section is illustrated in Figure 2-3.

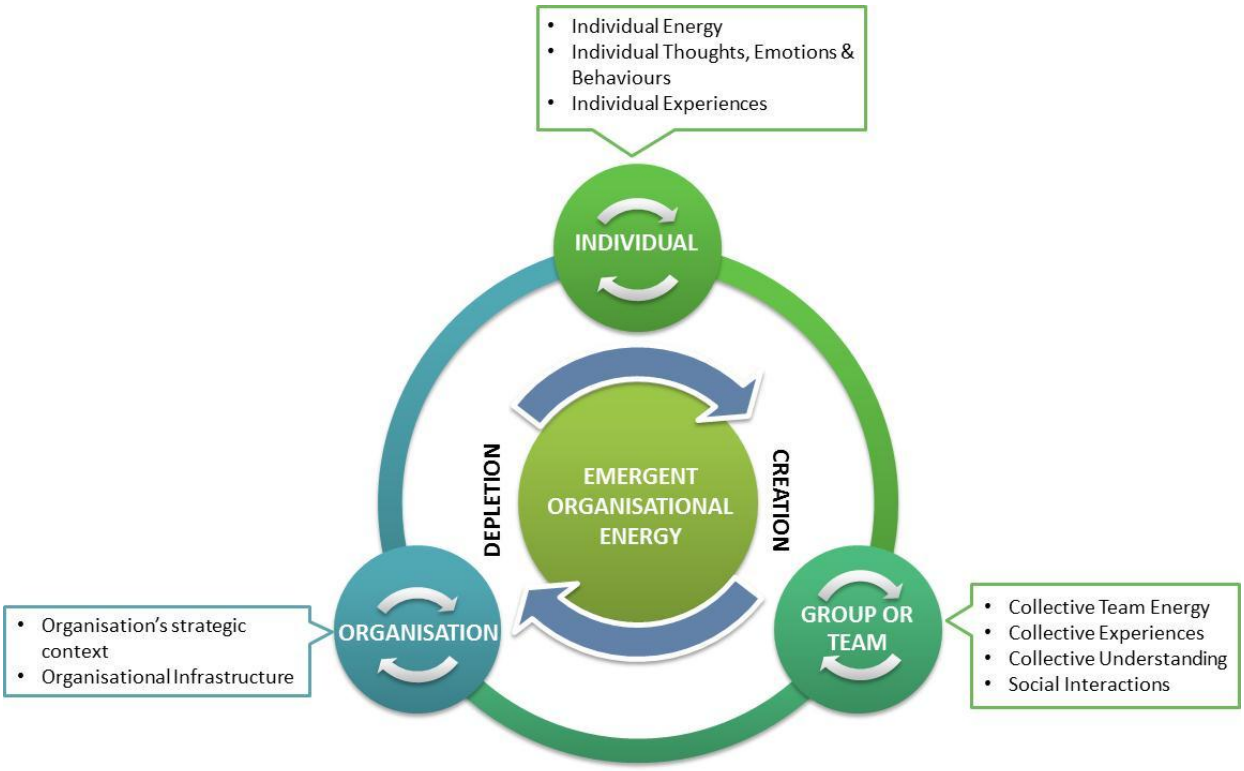


**Figure 2-3: Energy Creation and Depletion in Organisations**

Adapted from Schiuma *et al*. (2007)

As is illustrated in Figure 2-3, there are three basic sources of energy in the organisation namely, the individual, groups or teams, and the organisation itself. These form an "energy engine" which can create and deplete energy on the multiple levels on which it occurs. While the preceding discussion has addressed the individual and collective forms of energy (as depicted in the diagram) it is importance that the organisation itself and the impact it has on energy creation and depletion are considered. The organisation's strategic context provides the setting for the creation and depletion of energy. All organisations exist as part of a broader external business environment which includes competitors, customers, government regulations and a myriad of other entities. Organisations are complex systems which are able to learn from their environment, and to change their functioning and internal structure to ensure that they can meet their strategic objectives (Sherif, 2006).

Organisational infrastructure includes tangible infrastructure such as facilities, assets or equipment needed by organisation members to carry out work, as well as intangible infrastructure. This includes the policies, systems and procedures in place in the organisation, for example the organisation's strategy, HR practices, and/or the shared values and culture (Schiuma *et al*., 2007). Organisational infrastructure provides a mechanism which can promote the creation or depletion of energy on the individual and collective levels. It can be devised to drive the creation of an energy within the organisation which is productive and sustainable (Schiuma *et al*., 2007). Scholars maintain that the ability to create positive energy within an organisation is the key to a productive and successful company (Bruch & Vogel, 2011; Cole *et al*., in press; 2005; Bruch & Ghoshal, 2003).

The next section discusses the nature of organisational energy, as conceptualised by three different models of organisational energy.

## 2.5 THE NATURE OF ORGANISATIONAL ENERGY

The precise nature of collective organisational energy and how it manifests in the organisation is still an area of debate among scholars (Bruch & Ghoshal, 2003; Bruch & Vogel, 2011; Cole *et al*., in press; 2005; Schiuma *et al*; 2007; Stanton Marris, 2002; Tosey, 1994; Tosey & Llewellyn, 2002). For purposes of this literature review, three models of organisational energy in the workplace are reviewed, namely:

- The Seven Organisational Energies Model as postulated by Tosey and Llewellyn (2002); Tosey and Smith (1999) and Tosey (1994);
- The Productive Organisational Energy as postulated by Cole *et al*. (in press; 2005); and
- The Stanton Marris (2002) Organisational Energy Model.

While the focus of this study is on the first two models, attention is given to the third model in the interests of presenting a well-rounded literature review.

### 2.5.1 The Seven Energies of the Organisation Perspective

The conceptual background of the Seven Energies of Organisation Model is grounded in the joint concepts of organisational climate and the learning organisation (Tosey & Llewellyn, 2002; Tosey, 1994). Learning Organisations are recognised as complex social systems which interact closely with the environment, and pursue the opportunities brought about by changing conditions in the surroundings (Duesterberg & London, 2001).The learning organisation is conceptualised as “an organisation that facilitates the learning of all its members and continuously transforms itself” (Burgoyne, 1994, p. 1). Learning organisations focus on increasing their capacity to engage in problem-solving and behavioural changes with the aim of enhancing their performance on the organisation, group and individual levels (Burgoyne, 1994). Learning is thus seen as an emergent “energy” or variable which arises from the interactions occurring within the organisational levels (Tosey & Smith, 1999).

The Organisational Energies model views organisational energy as created by the interaction between individuals and the work context or organisation. Energy is related to "…human consciousness rather than a purely physical phenomenon" (Tosey & Smith, 1999, p.111). It can be seen as an outward representation of the characteristics of the relationship between individual and work context (Tosey & Smith, 1999). The model also provides the framework with which individuals can contextualise their perceptions of the organisational experience, reality (Tosey & Llewellyn, 2002), and the relationships created and maintained by interpersonal interaction and organisational systems and processes (Tosey & Smith, 1999). Tosey (1994) conceptualises energy as having an influence on behaviour, but stresses that it is not a cause of behaviour or action. Therefore, the use of energy as an explanation of causality in the organisation is discouraged. Rather, the manifestation of energy is evidence of underlying processes, procedures and activities within the organisation, as sensed through the physical, mental, emotional and spiritual aspects of individuals (Tosey, 1994).

The model of organisational energy as formulated by Tosey and Llewellyn (2002) can be characterised by:

- A holistic and integrated view of human experiences as several currents of energy;
- The notion that an organisation is an energy system; and
- The belief that all aspects of human experiences can be found in the organisational experience.

The characteristics of organisational energy are represented on seven dimensions or energies, which provide individuals with a means to express and examine their personal experience of energy within their organisation. The seven energies are inspiration, integration, meaning, community control, activity and existence (Tosey & Llewellyn, 2002). The so-called higher energies of integration and inspiration are comprehensible by the senses. However, they tend to relate to less tangible aspects of the organisation (Tosey, 1994). These are discussed in the ensuing paragraphs.

#### 2.5.1.1 *Inspiration*

The inspiration energy is associated with the organisation's alignment with a higher purpose or vision, and the inspiration of organisation members (Tosey & Llewellyn, 2002). The creation of a compelling vision of the organisation's desired future is the first step in creating a positive and productive environment which inspires organisation members and fosters actions that are congruent with the organisational vision (Quebein, 1999). This vision must be cultivated by charismatic and "resonant" leaders, who inspire organisation members through their "clarity of vision, optimism and a profound belief in their – and their people's-ability…" to turn the organisational vision into a concrete reality (Boyatzis & McKee, 2005, p. 3). However, the vision must be owned by organisation members, and should permeate all levels of the organisation, and so conscious, deliberate action should be undertaken to manage energy shifts in the organisation which could result in the vision becoming "dry and lifeless" (Richards, 2006, as cited in Derman, Barkhuizen, & Stanz, 2011, p. 3).

#### 2.5.1.1 *Integration*

The energy of integration relates to the sense of holism which is achieved by integrating differences and opposing forces within the organisation. This energy calls for strategic insight, integrity, wisdom, integration of differences and synergy (Tosey & Llewellyn, 2002). The nature of globalisation is such that organisations are becoming increasingly diverse. This poses an important challenge for organisations that must integrate the differences of organisation members to gain a competitive advantage (Hicks-Clarke & Ilez, 2000). This is supported by Bruch and Kunze (2010) who highlight the importance of effective teamwork as an essential element of an organisation's competitive advantage. It is widely accepted that the culture of an organisation can play a pivotal role in an organisation's strategy (Sadri & Lees, 2001). Thus an environment which integrates and unleashes the fill creativity and diversity of its organisation members can have the effect of motivating and retaining employees, and creating a true competitive advantage (Hicks-Clarke & Ilez, 2000).

#### 2.5.1.2 *Meaning*

The meaning energy is concerned with the ways in which meaning can be created and maintained within the organisation through communicating values and beliefs to others,

and expressing oneself effectively. As such, the ideal qualities which are associated with this energy are those of honesty and truth (Tosey & Llewellyn, 2002).

A positive organisational environment is created and sustained by organisational values that are congruent with both the strategic objectives of the organisation and the individual values of employees (Quebein, 1999). It is important that organisations have an understanding of the deep-seated values and desires of organisation members. Such an understanding can be utilised to create a meaningful work environment, with the aim of inspiring, motivating and retaining employees (Cartwright & Holmes, 2006; Milliman, Czaplewski, & Ferguson, 2003).

A related consideration is that of spirituality in the workplace. Although organisations have traditionally been viewed as rational, scientific systems governed by rules and order, there is an increasing awareness that organisation members are individuals who need to experience a sense of purpose and meaning in their work (Asmos & Duchon, 2000). The organisational spirituality movement is not about religion, but rather about recognising that organisations should engage both the head and the heart of employees by creating workplaces in which employees experience meaning, purpose and a sense of community (Asmos & Duchon, 2000). Milliman, Czaplewski and Ferguson (2003) define the concept of organisational spirituality on three levels. Firstly, the individual level, which is manifested as meaningful work. Secondly, on the group level, organisational spirituality is observable as a "sense of community" and finally, alignment with organisational values and mission is the manifestation of organisational spirituality on the organisational level. The energy of meaning can also be seen as the individual level manifestation of workplace spirituality (Milliman, Czaplewski, & Ferguson, 2003), and has close linkages with the energies of inspiration and community.

#### 2.5.1.3 *Community*

The community energy focuses on interpersonal interactions and social needs (Tosey & Llewellyn, 2002). In the context of an organisation, individuals must interact and work together to promote the common goals of the organisation (Cummings & Worley, 2005). The energy of community involves a sense of connection between organisation members, which can be experienced as a feeling of belonging, support and empowerment (Milliman,

Czaplewski, & Ferguson, 2003). A sense of community in the organisation fosters connections between organisation members on a mental and emotional level (Neal & Bennet, 2000), and is positively related to employee satisfaction and motivation (Milliman, Ferguson, Trickett, & Condemi, 1999). The ideal qualities associated with this energy are democracy, harmony, cooperation and negotiation (Tosey & Llewellyn, 2002).
This energy can be likened to the group level of workplace spirituality, which manifests itself as the experience of connectedness between individuals and their work community (Milliman, Czaplewski, & Ferguson, 2003; Asmos & Duchon, 2000) and "…meaningful work in the context of [the organisational] community" (Asmos & Duchon, 2000, p.137).

The community energy focuses on interpersonal interactions and social needs (Tosey & Llewellyn, 2002). In the context of an organisation, individuals must work together to promote the common goals of the organisation (Cummings & Worley, 2005). The ideal qualities associated with this energy are democracy, harmony, cooperation and negotiation.

#### 2.5.1.4 *Control*

The energy of control is related to the "…conscious intent or control… which structures events… and guide the energy of activity" (Tosey & Llewellyn, 2002, p.69). In the context of the organisation, the value of the energy of control lies not in regulation and rationality, but rather in the achievement of a balance between order and chaos, and how control is experienced related to this balance (Tosey, 1994) so that an environment which encourages contribution is promoted. The values and behaviours reinforced within an organisation have an impact on the structures, policies and procedures of the organisation. These in turn have a direct impact on the behaviours and values reinforced (Luthans, Norman, Avolio, & Avey, 2008). As such, it is important the structures in place in the organisation maintain an optimal balance between discipline and structure, and the energies which allow creativity, innovation and development in the workplace to flourish.

#### 2.5.1.5 *Activity*

The activity energy is related to unblocking, releasing and mobilising energy, and is associated with movement, achievement and effectiveness (Tosey, 1994). The energy of activity has an impact on the direction and effort which organisation members invest

(Quinn & Dutton, 2005). This energy can be linked to the idea of thriving at work, where organisation members experience a sense of progress and momentum in their work activities, which is characterised by feelings of vitality and of learning (Spreitzer, *et al*., 2005). The qualities which are considered valuable to this energy are productivity, creation and the unblocking of energies (Tosey & Llewellyn, 2002).

#### 2.5.1.6 *Existence*

The existence energy is associated with the organisation's continuing ability to survive or continue. Organisations which learn from their experiences, and respond to changes in the environment are typically those that survive the changing nature of business today (Lawler, 2008), thus the existence energy is related to the management of transition and change in a manner that harnesses the positive possibilities of transitions (Tosey & Llewellyn, 2002). This energy also places emphasis on resources, and the "bottom line". Organisational performance is most often quantified in terms of competitive advantage, wealth creation, positive leadership or other monetary expressions (Cameron, Bright, & Caza, 2004). However, the creation of an organisation which is dynamic and resilient requires the active commitment and participation of employees who respond to the need to innovate and change (Porth *et al*., 1999).

All seven energy dimensions are present in organisations to varying degrees. However, they manifest is diverse manners, intensities and contexts. These energies have an impact on each other, and also on the overall experience of organisational energy as perceived by the individual (Tosey & Llewellyn, 2002). Thus the Seven Energies of Organisation Model can represent the infinite number of permutations of a multitude of unique organisations and subsystems (Tosey & Smith, 1999).

### 2.5.2 The Productive Organisational Energy Perspective

Cole Bruch and Vogel (2011) are in agreement with Bruch and Ghoshal (2003) in defining organisational energy. They conceptualise organisational energy as the force with which a company functions (Bruch & Ghoshal, 2003, p. 45). The level of energy present in an organisation can be expressed in terms of two key dimensions, namely quality and intensity (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003).

The quality dimension illustrates the degree to which an organisation has effectively harnessed the energy within the organisation towards organisationally salient objectives and tasks (Brush & Vogel, 2011; Bruch & Ghoshal, 2003). The quality dimension of organisational energy can be expressed in negative or positive terms. Negative organisational energy is characterised by the thoughts and behaviours of employees being disengaged from the strategic intent of the organisation, and energy being wasted on behaviours and activities that will not contribute to the organisation's competitive advantage (Bruch & Vogel, 2011). An organisation experiencing a high incidence of negative energy is also characterised by employees experiencing negative emotions, such as frustration, irritation, apprehension or distress (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003). In contrast, positive organisational energy reflects a high level of alignment between the thoughts and behaviours of employees and the strategic imperatives of the organisation (Bruch & Vogel, 2011). Employee efforts are guided towards reinforcing and enriching the objectives of the organisation. An organisation experiencing a high incidence of positive energy is also characterised by employees who experience positive emotions such as enthusiasm, passion, fulfilment and satisfaction (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003).

The intensity of organisational energy reflects the strength or concentration of organisational energy in the organisation, or the level to which the organisation has activated its energy potential. A high level of intensity denotes high concentrations of emotional involvement, engagement, communication, interaction and mental stimulation (Bruch & Vogel, 2011). In contrast, low levels of intensity are characterised by watchfulness, apathy, inertia, rigidity and cynicism (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003).

The intersection of the quality and intensity dimensions produces four energy states which typify the nature of energy in organisations and can have a direct impact on organisational competitiveness (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003). The four energy states, namely comfortable energy, productive energy, corrosive energy and resigned inertia, are illustrated in Figure 2-4.

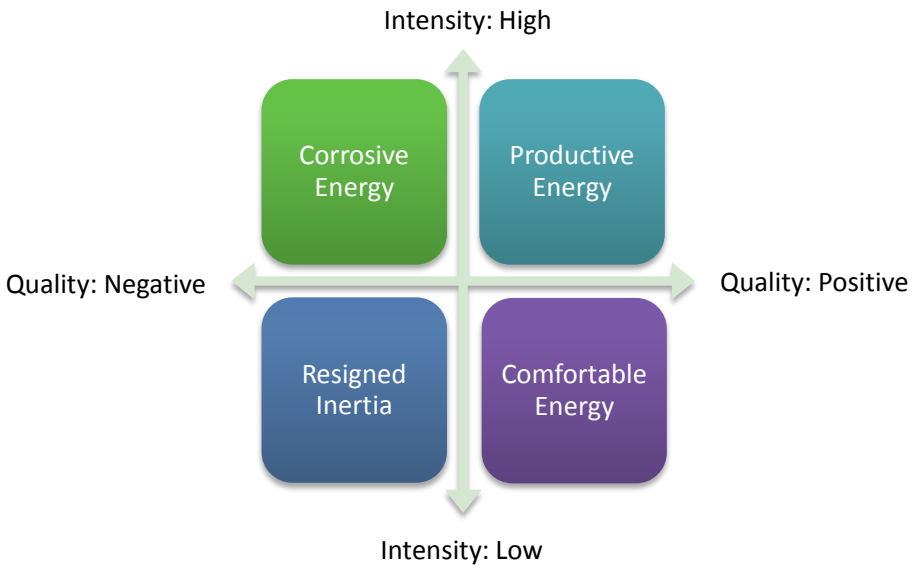


**Figure 2-4: Four Energy States**

Adapted from: Bruch & Vogel, 2011

When an organisation's energy is classified as being in a state of resigned inertia, it means that the quality of the energy in the organisation is negative, and the intensity is low. Organisations experiencing resigned inertia are characterised by low collective engagement in the organisation, high levels of cynicism, distrust and mental withdrawal (Bruch & Vogel, 2011). Employees tend to display frustration and a lack of emotional connection with company goals (Bruch & Ghoshal, 2003).

Organisations falling within the corrosive energy zone have high intensity negative energy. Organisations experiencing corrosive energy are characterised by negative and destructive behaviours, collective aggression and hostility (Bruch & Vogel, 2011). Employees tend to be disengaged from company goals, and resist efforts to change.

When an organisation's energy is classified as being in a state of comfortable energy, it means that the quality of the energy in the organisation is positive, and the intensity is low. Organisations experiencing comfortable energy are characterised by organisational complacency and low levels of mental acuity and activity (Bruch & Vogel, 2011). This means that the organisation is often satisfied with the status quo, as it lacks the energy to induce large scale changes or investigate new strategic avenues. However, employees

tend to experience a relatively high level of shared satisfaction, and subdued positive emotions such as contentment, comfort and stability (Bruch & Ghoshal, 2003).

When an organisation's energy is in the productive zone, it means that the quality of the energy in the organisation is positive, and the intensity is high. Organisations experiencing productive energy are characterised by organisational commitment and high levels of productivity, mental acuity, activity and stamina (Bruch & Vogel, 2011; Bruch & Ghoshal, 2003). Employees in the productive energy zone tend to experience intense positive emotions such as excitement and enthusiasm and to direct their attention towards shared organisational priorities (Bruch & Ghoshal, 2003).

These four energy states function independently of one another, and thus an organisation (or work unit) can experience an incidence of all four energy states. An awareness of the four energy states in the organisation is thus critical to ensure that they can be actively and continuously managed.

Keeping this in mind, Cole *et al*. (in press) further developed the concept of productive organisational energy with the intention of developing a validated measure of the state of productive energy in an organisation. They define positive organisational energy as the "joint experience and demonstration of positive affect, cognitive activation and agentic behaviour among members of a collective in their shared pursuit of organisationally salient objectives" (Cole, Bruch, & Vogel, 2008, p. 9). Therefore, the concept of positive organisational energy as expressed by Bruch, Cole and Vogel (2005) can be defined as a three-dimensional construct which occurs on the collective level.

#### 2.5.2.1 *Productive Organisational Energy as a Three-dimensional Construct*

Cole *et al*. (in press) and Bruch, *et al*. (2005) define positive organisational energy as a multi-dimensional construct which is comprised of a cognitive, emotional and behavioural dimension. This is in agreement with the approaches taken by Shirom (2003) and Schaufeli *et al*. (2002), who define their respective models of burnout and engagement and vigour at work as three-dimensional experiences using a framework of physical, emotional and cognitive aspects. The three components of productive organisational energy are complementary, so it is recognised that while a positive emotional experience

is a critical aspect of an energised workforce, so too do constructive behaviours and intellectual engagement have an important role to play (Cole *et al*., in press; Bruch & Ghoshal, 2003).

**Cognitive energy** is conceptualised as the collective experience of cognitive processes that drive employees to approach work-related activities and challenges in a productive manner (Cole, *et al*., 2005). Cole *et al*. (2005) draw attention to a discussion by Lykken (2005), who defines cognitive energy as "the ability to persist for long periods thinking productively about a problem, the ability to focus attention, to shut out distractions, to persist in search of a solution…" (p. 331). Likewise, Schaufeli *et al*. (2002), express mental energy as the display of cognitive resilience and the capacity to persist when encountering challenges. It is suggested that more effective team processes, more optimistic attitudes, enhanced organisational outcomes (Cannon-Bowers & Salas, 2001), and superior adaptation to dynamic environments (Salas & Fiore, 2004) can be outcomes of heightened and shared cognitive energy in teams.

**Affective energy** results from the positive appraisal of work-related situations and experiences. Shirom (2003) describes affect as a "highly structured response to a specific type of event or environmental interaction that gives rise to a characteristic adaptive behaviour what is relevant to the needs, goals or survival of the organisation" (p.4). It manifests as emotional arousal, homogeneous levels of positive responses within the work group and constructive feelings such as inspiration, enthusiasm and attentiveness towards work-related tasks and organisational priorities (Cole, *et al*., 2011; Cole, *et al*., 2005; Barsade, 2002; George, 1990).It is interesting to note that positive affect is closely related to cognition at the individual level. Positive affect tends to drawn the individual's attention towards positive information and situations, thereby reinforcing a positive cognitive orientation which is a requirement of cognitive energy (Forgas, 2000).

**Behavioural energy** is conceptualised as the collective and purposeful actions of employees in support of organisationally salient tasks and objectives (Cole *et al*., in press). This purposeful activity at work is known as agentic behaviour (Spreitzer *et al*., 2005), and is directly connected to the amount and intensity of the physical resources which employees devote to behaviours that benefit the organisation (Cole, *et al*., 2011).

Consequently, behavioural energy is an important resource which should be managed by encouraging individuals to invest their efforts in behaviours that help an organisation attain a competitive advantage (Collins, 1993).

#### 2.5.2.2 *Productive Organisational Energy as a Collective Construct*

Researchers such as Quinn and Dutton (2005) and Dutton (2003) have conceptualised the construct of organisational energy on the individual level of analysis. In contrast, Cole, *et al*. (2011) conceptualise positive organisational energy as a multi-level phenomenon. These researchers maintain that although organisational energy occurs on the individual level, it also makes its presence felt as a shared or collective experience at higher levels, such as in a group or at the organisational level. Therefore, although the awareness and perception of organisational energy occurs on the level of the individual, it makes its presence felt as a shared or collective experience, created by social processes and experienced collectively at higher levels, such as in a group or at the organisational level (Schudy & Brusch, 2010).

The researchers maintain that the nature of organisational energy on the individual and the collective levels is similar in content and meaning. As a result, the three dimensions of cognitive, affective and behavioural energy occur on both the individual and collective levels. However, the nature of the energy manifestation is different. On an individual level, the energy manifests itself as "biological and psychological processes" (Ryan & Frederick, 1997, as cited in Cole *et al*., in press, p.4). In contrast, on the collective level, energy is displayed as a result of the amplification of the cognitive, affective and behavioural properties of the work group; and is manifested as "mutual dependence and inter-individual interactions" (Cole *et al*., in press, p.4).

The strength of positive organisational energy in an organisation is therefore a reflection of the degree to which the organisation has activated its cognitive, behavioural and emotional activities in pursuit of its strategic objectives, on both the individual and the collective levels.

### 2.5.3 Stanton Marris Organisational Energy Perspective

Stanton Marris defines organisational energy as “the extent to which an organisation has mobilised the full available effort of its people in pursuit of its goals” (Stanton Marris, 2002, p.3). The 4C Organisational Energy Model identifies four major sources of organisational energy, namely Connection, Content, Context and Climate.

These four energy sources each have both rational and emotional aspects, and are measured on two dimensions, specifically quantum and direction. This aligns them with the work of Bruch and Ghoshal (2003) who suggest that organisational energy should be measured based on the quality and intensity of the energy. The quality of the energy denotes the impact which the energy may have on organisational tasks, whereas the intensity of the energy relates to the strength of the energy itself (Bruch & Ghoshal, 2003). The four sources of energy are discussed in the section which follows.

#### 2.5.3.1 *Connection*

The connection energy source refers to the extent to which individuals can relate their values and work to the organisation’s goals and priorities. The rational aspect of this energy relates to clearly defined job roles and responsibilities, and having a job which is clearly linked to the organisation’s goals and priorities (Stanton Marris, 2002). By creating an explicit link between the organisation’s vision, business priorities and individual jobs, the foundation is laid for the creation of a productive environment which inspires organisation members and fosters actions which are consistent with the organisation’s goals (Quebein, 1999).The emotional aspect of this energy relates to whether individuals can find meaning in the goals of their particular jobs and the organisation’s goals and priorities (Stanton Marris, 2002). An organisation that acknowledges that individuals need to experience a sense of meaning and purpose in their work can use this understanding of the deep-seated values and desires of organisation members to inspire, motivate and retain employees (Cartwright & Holmes, 2006; Asmos & Duchon, 2000).

#### 2.5.3.2 *Content*

The content energy source refers to the extent to which individuals experience their work as stimulating, and are provided with a sense of achievement. The rational aspect of this energy source highlights the fact that an individual's work should make use of existing skills, but should also provide growth and learning opportunities (Stanton Marris, 2002). This idea is supported by Spreitzer *et al*. (2005) who propose that a sense of learning and vitality in work activities can result in organisation members experiencing progress and individual growth, a phenomenon they call "thriving". The emotional aspect of this energy source is linked to having tangible results which are clearly identifiable, especially when nearing the completion of tasks or work (Stanton Marris, 2002). This is confirmed by Chalofsky (2003), who highlights the importance of individual jobs as a source of workplace meaning for organisation members.

#### 2.5.3.3 *Context*

The context energy source is concerned with the extent to which the individual experiences the work environment as enabling and supportive. From the rational perspective, this means that employees should be able to focus on the work, and not be distracted by extraneous factors (Stanton Marris, 2002).From an emotional perspective, this energy source is concerned with ensuring that employees are supported by the organisation and recognised for their contributions (Stanton Marris, 2002). This is supported by Luthans, *et al*. (2008), who found a positive association between a supportive organisational environment and the commitment and satisfaction of employees. Furthermore, positive reinforcement is found to be an important link between positive organisational behaviours and flourishing employees (Luthans, 2002).

#### 2.5.3.4 *Climate*

The climate energy source relates to the atmosphere of the organisation, and whether it encourages the individual to perform effectively, and experience the work environment as a positive one. The rational aspect of this energy source is related to ensuring that employees have the scope to learn, progress and contribute to the organisation, whereas the emotional aspect of this energy source is concerned with ensuring that the individual feels respected and important (Stanton Marris, 2002). This energy source seems to be closely linked with the context energy source, which focuses on recognition and a

supportive work environment. Linkages between the climate energy source and the content energy source also exist in the form of the employees' progression and contribution.

### 2.5.4 A Brief Comparison of the Three Models of Energy

Although a comprehensive discussion of the similarities and differences between the three models discussed in the preceding section is beyond the scope of this study, a brief comparison is given hereunder.

The focus of the models by Tosey (1994) and Stanton Marris (2002) is primarily on the individual psychological experience of the work environment. While some attention is given to work tasks and cognitive activities, they do not explicitly distinguish between the three concepts of psychological or emotional, behavioural and cognitive energy.

In contrast, Cole *et al*. (in press) recognise the importance of the psychological or emotional element of energy, but emphasise that it does not comprise the entirety of the experience of productive energy in the workplace. Therefore, the importance of the behavioural and the cognitive aspects of energy is stressed in the conceptualisation of productive organisational energy (Cole *et al*., in press; 2005). Cole, *et al*. (in press) explicitly conceptualise positive organisational energy as a multi-level phenomenon composed of cognitive, affective and behavioural energies which occur on both the individual and collective levels.

There are more resemblances between the four energy sources identified by Stanton Marris (2002) and the Seven Energies of Organisation (Tosey & Llewellyn, 2002; Tosey & Smith 1999; Smith & Tosey, 1999; Tosey, 1994). These are summarised in Table 2-2.

**Table 2-2: Summary of the Overlap between the models of Stanton Marris (2002) and Tosey (1994)**

| | | FOUR ENERGY SOURCES (STANTON MARRIS, 2002) | | | |
|---|---|---|---|---|---|
| | | Connection | Content | Context | Climate |
| SEVEN ENERGIES OF ORGANISATION (TOSEY, 1994) | Inspiration | ☑ | | | |
| | Integration | | | | ☑ |
| | Meaning | ☑ | ☑ | ☑ | |
| | Community | | | ☑ | ☑ |
| | Control | | | ☑ | ☑ |
| | Activity | | ☑ | | |
| | Existence | | | | |

The connection energy source as conceptualised by Stanton Marris (2002) has some similarity to Tosey and Llewellyn's (2002) inspiration energy. Both energies focus on creating an explicit link between the organisation's vision, business priorities and individual jobs as a means to create a productive environment which inspires organisation members and fosters actions which are consistent with the organisation's goals (Quebein, 1999). These two energies are also connected to Tosey's (1994) meaning energy, which is concerned with the ways in which meaning can be created and maintained within the organisation through communicating values and beliefs to others, and expressing oneself effectively (Tosey & Llewellyn, 2002).

The Content energy source is linked to Tosey and Llewellyn's (2002) activity energy. The activity energy is associated with the idea of thriving at work, where organisation members experience a sense of progress and momentum in their work activities, which are characterised by feelings of vitality and learning (Spreitzer, *et al*., 2005). Similarly, the content energy source refers to the extent to which individuals experience their work as stimulating, and provides them with a sense of achievement. This energy source also highlights the importance of individual jobs as a source of workplace meaning for organisation members (Chalofsky, 2003), and can therefore also be linked to Tosey's (1994) meaning energy.

The energy sources of Climate and Context can be associated with Tosey's (1994) community energy, since all three concepts highlight the organisational context and how individuals must interact and work together to promote the common goals of the organisation (Cummings & Worley, 2005). Emphasis is placed on creating an enabling and supportive work environment which encourages effective performance of employees. These energies are also focused on the sense of connection between organisation members, which can be experienced as a feeling of belonging, support and empowerment (Milliman, Czaplewski, & Ferguson, 2003). A sense of community in the organisation fosters connections between organisation members on a mental and an emotional level (Neal & Bennet, 2000), and is positively related to employee satisfaction and motivation (Milliman, Ferguson, Trickett, & Condemi, 1999).

It is interesting to note the connection between the four energy sources proposed by Stanton Marris and the seven energies proposed by Tosey and Llewellyn (2002) with the concept of organisational climate. Both these models are primarily concerned with the individual psychological experience of the work environment. Similarly, organisational climate on the individual level is related to the individual awareness and understanding of patterns of emotions, behaviours and thoughts which occur in an interpersonal context (Isaksen & Lauer, 1999). According to Isaksen (2007), organisational climate can have an impact on individual psychological processes such as problem-solving, motivation and commitment, as well as organisational processes such as communication, co-ordination and group decision-making and problem-solving. This creates a conceptual link between organisational climate, performance and the individual experience of energy, as defined by Stanton Marris (2002) and Tosey (1994).

## 2.6 CONCLUSION

This chapter undertook a detailed review of the available literature on the concept of organisational energy. A broad overview of the theoretical foundations of organisational energy was provided, and the multi-level nature of organisational energy was discussed in detail, with specific focus being given to the individual and collective levels of energy. Three models of organisational energy were discussed and a brief comparison of the three models was given, before concluding the chapter.

The next chapter is concerned with the measurement of organisational energy and contains a detailed review of three measures of organisational energy, based on the aforementioned three models of organisational energy.

# 3 THE MEASUREMENT OF ORGANISATIONAL ENERGY

## 3.1 INTRODUCTION

The measurement of human behaviour, although varied in its precision and sophistication, results in the ability to define and describe specific behaviours which are of interest. When related to the work context, the definition and description of particular behaviours on the individual, work group or organisational level can have a significant impact on the ability of an organisation to manage its employees effectively. Scholars in the field of organisational energy are of the opinion that the lack of a valid and reliable measurement instrument hampers the development of the field (Cameron, 2007; Cameron & Caza, 2004; Cole, *et al*., 2011). Therefore, three measurement instruments that purport to measure organisational energy are reviewed in this chapter.

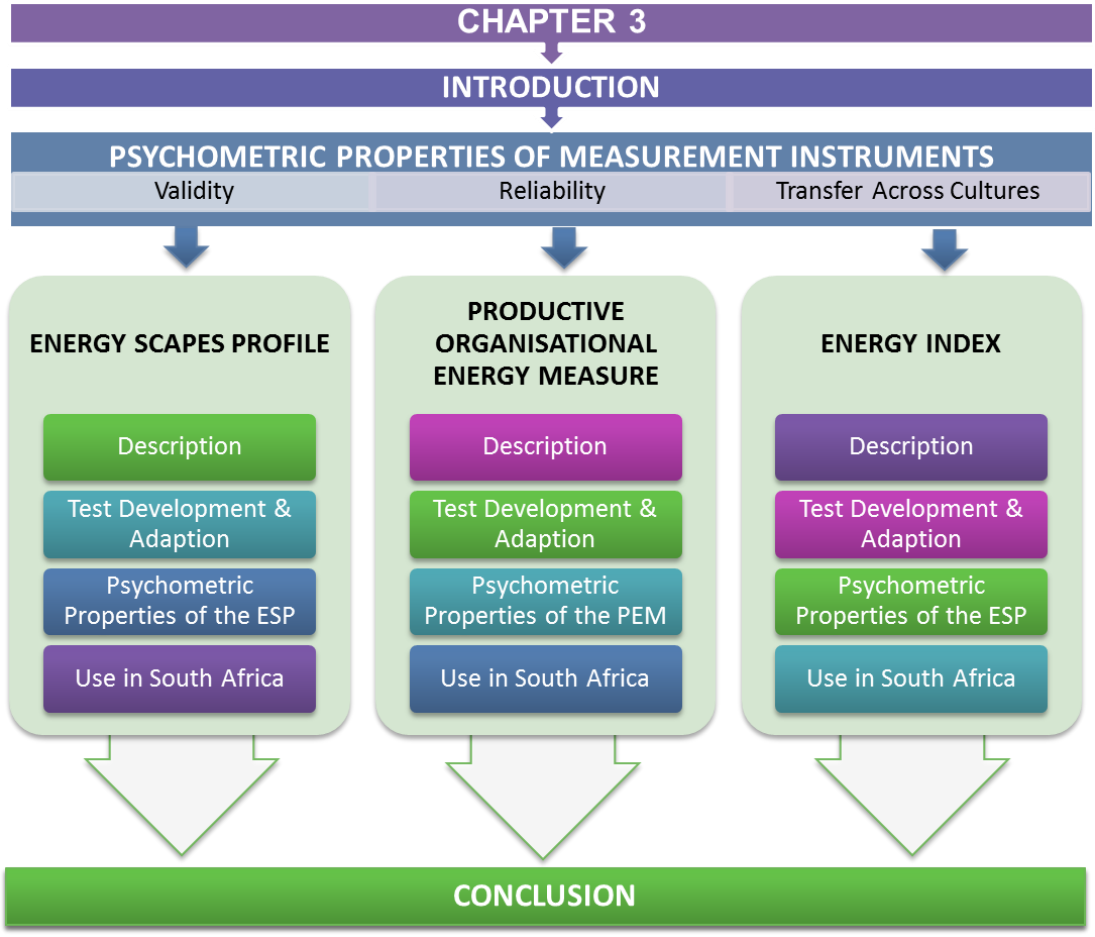


**Figure 3-1: Chapter 3 Orientation**

Firstly, an overview of the metric properties of measurement instruments is given, with specific focus on the different types of reliability and validity. Secondly, a synopsis of the transfer of metric properties across cultural groups is given. The discussion then turns to three measures of organisational energy, which are discussed in terms of test development and adaption, metric properties and any prior studies in South Africa which make use of the instrument. The chapter is subsequently concluded.

## 3.2 THE METRIC PROPERTIES OF MEASUREMENT INSTRUMENTS

The metric properties of an instrument refer to validity and reliability. These two aspects have a significant impact on the interpretation of research data collected by means of the instrument (Furr, 2011). Therefore it is important to understand the metric context of a measurement instrument so that meaningful conclusions can be drawn from the data, and generalised back to the population of interest. An overview of validity and reliability is given in the following section.

### 3.2.1 Validity

Babbie and Mouton (2001, p. 125) define validity as “the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration”. The primary goal when validating a measuring instrument is to statistically demonstrate that an assessment or measurement tool accurately represents the concept it purports to measure. Four broad types of validity can be identified, namely construct validity, face validity, criterion-related validity and construct validity.

**Content validity** refers to the extent to which a measurement instrument provides an acceptable representation of the concept or behaviour which it purports to measure (Foxcroft & Roodt, 2006). Content validity is a non-statistical form of validity and rather relies on the process followed in the construction of a measurement instrument. One of the most frequently used methods of ensuring content validity is using a panel of experts in relevant subject matter when developing a test (Foxcroft & Roodt, 2006).

**Face validity** is another non-statistical form of validity, which relies on how the respondent perceives the content of the measurement instrument (Foxcroft & Roodt, 2006). It is important that the respondent should experience the content of the measure as being appropriate for the purpose for which it is being used. Foxcroft and Roodt (2006) suggest the use of appropriate terminology and phrasing of the items of a measurement instrument to help achieve this form of validity.

**Criterion-related validity**, which is also known as instrumental validity, is a statistical form of validity. The criterion-related validity of an instrument is determined by statistically comparing the instrument with another conceptually related instrument or procedure for which validity has already been established (Field, 2009).

**Construct validity** refers to the degree to which the variable that is measured represents the construct on which it is based (Foxcroft & Roodt, 2006). Construct validity is concerned with determining the alignment between a theoretical model or concept and a specific measurement instrument. This can be determined using factor analysis which determines the relationship between the variables in the measure, as well as by correlating the measure with tests which measure the same construct. This study explores the construct validity of two organisational energy measures by statistically analysing and comparing the two measures, and by running factor analyses on them.

### 3.2.2 Reliability

While validity is concerned with the measurement instrument's success at measuring specific theoretical concepts, reliability is related to the accuracy of the measurement instrument. Reliability refers to the consistency of measurement of an instrument (Foxcroft & Roodt, 2006). An instrument can be considered reliable when independent administration of the instrument by the same respondent under similar circumstances produces the same or similar results (Kumar, 2005). It is important to note that reliability is a condition of validity (Foxcroft & Roodt, 2006). That is, if an instrument is not reliable, it cannot be valid. However, high reliability does not necessarily denote validity, and so both validity and reliability must be addressed separately to determine the metric properties of each measurement instrument. Four broad types of reliability can be identified, namely

inter-rater reliability, test-test reliability, alternate form reliability and internal consistency reliability.

**Inter-rater reliability** refers to the extent to which the scores from two or more raters who have made use of a specific rating system are consistent. This reliability is typically associated with measurements which do not utilise highly standardised administration and scoring procedures, for example, open-ended questions or projective techniques (Foxcroft & Roodt, 2006).

The remaining three types of reliability discussed tend to have standardised administration and scorning procedures. Test-retest or stability reliability is determined by administering the measurement instrument to the same group of respondents on two separate occasions. The results obtained for the two tests are then correlated to determine the similarity, and thus the test-retest reliability of the measurement instrument (Foxcroft & Roodt, 2006). However, this form of reliability testing is not recommended for most types of measurement instruments, as it neglects to take into account the influence of different test environment or respondent circumstances on test scores (Foxcroft & Roodt, 2006).

**Alternate-form** reliability makes use of two equivalent forms of a measurement instrument. These two equivalent instruments are administered to the same group of respondents on two separate occasions, and the results are correlated to determine reliability. However, this means of reliability testing is resource and time intensive, since the two tests must be equivalent in the number and complexity of items, the scale, and scoring procedures (Foxcroft & Roodt, 2006).

**Internal consistency** or split-half reliability refers to the extent to which a measurement instrument measures the same theoretical concept or characteristic. Internal consistency is determined by examining how robustly the items in a specific theoretical construct are related to each other (Foxcroft & Roodt, 2006). A related form of reliability is inter-item consistency.

This study focuses on internal consistency and inter-item consistency reliability measures, which are determined statistically.

### 3.2.3 Transfer of the Metric Properties of Measurement Instruments across Different Cultures

Psychometric and other measurement instruments are increasingly being used in countries and cultures other than those in which they have been developed in. This can largely be attributed to the ongoing interest in individual and organisational behaviour, and the shrinking of the world due to globalisation. Multiple studies have provided the empirical evidence to substantiate the notion that cultural differences may have an impact on participants' responses to particular measurement instruments (Van Eeden & Mantsha, 2007; Meiring, Van de Vijver, & Rothmann, 2006). This results in the instrument being less valid for specific cultural groups.

Although research has confirmed that the metric properties of some instruments developed in other countries are valid when applied in the South African context (Storm & Rothmann, 2003), there have also been multiple instances where instruments which were not adapted for use in the South African context resulted in difficulties with reliability and validity (Gray & Durrheim, 2006; Meiring *et al*, 2006). This can be attributed to the fact that an individual's subjective culture provides the basis through which they perceive their social environment, which in turn discourages certain behaviours and cultivates others (Anastasi, 1990, as cited in Schaap, Buys, & Olckers, 2003). This affects how that individual interprets and responds to the questions posed by a measurement instrument (Prinsloo & Ebersöhn, 2002).

When determining the cross-cultural validity of a measure, both bias and equivalence should be contemplated. Bias is a broad term which refers to all aspects of measurement which can have a negative impact on the validity of comparisons across cultural groups (Van de Vijver & Leung, 1997). Equivalence focuses on the level at which comparable observations across cultural groups can be made (van de Vijver, 2001). There are three types of equivalence, namely construct, measurement and scale equivalence. Construct indicates the extent to which the same construct is measured by a measurement instrument for differing cultural groups. According to van de Vijver and Poortinga (1997), meaningful comparison of responses from multiple cultural or language backgrounds is dependent on the equivalence of the constructs being measured.

It is important to note that construct equivalence is a prerequisite for further equivalence testing, specifically measurement and scale equivalence. Measurement equivalence is determined by establishing that the measurement unit across cultural groups is comparable. That is, differences in the scores achieved by cross-cultural respondents have the same meaning.

Scale equivalence denotes that a measure is completely biasfree. It refers to the fact that scores on a measurement instrument have consistent intervals on the scales for different cultural groups, and thus the scores obtained can be interpreted in the same manner. South Africa is an inherently heterogeneous culture, and as a result researchers should exercise caution when applying measurement instruments developed overseas in the South African context (Meiring, *et al*., 2006). It is important that instruments developed and validated overseas are re-validated for use in the South African cultural context to ensure that construct and measurement equivalence and ultimately comparability are established. For purposes of this study, emphasis has been placed on determining the construct equivalence of two organisational energy measures. Determining construct equivalence is therefore merely the first step in establishing the cross-cultural validity of a measurement instrument

The remainder of this chapter consists of a review of three measures of organisational energy. The first is the Productive Organisational Energy measure proposed by Cole, *et al*. (2011, 2005); the second is that of Tosey and Llewellyn (2002); and the third is that of a United Kingdom-based consulting firm, Stanton Marris (2002). Each measurement instrument is described, after which attention is given to test development and adaption, the metric properties of each instrument and any prior use of the instruments in the South African context.

## 3.3 THE ENERGY SCAPES PROFILE

### 3.3.1 Description

The ESP is a measure of Organisational Energy which has been developed with the aim of measuring the individual experience of Organisational Energy on seven specific dimensions or performance areas as identified by Tosey and Llewellyn (2002), Tosey and Smith (1999) and Tosey (1994). These seven dimensions are:

- Inspiration;
- Integration;
- Meaning;
- Community;
- Control;
- Activity; and
- Existence.

The scores on the seven dimensions are used to identify specific performance. Each dimension is distinguished as an energy which fluctuates based on both the individual and combined intention of performing in alignment with the organisation's business priorities (Tosey & Smith, 1999). Thus the ESP is not a definitive measure of Organisational Energy, but rather an indication of how individual employees perceive their work environment (Derman, 2009).

The original ESP consists of a total of 105 items, with 15 items for each of the seven dimensions. The adapted version of the ESP was used in this study. A shorter version of the questionnaire was compiled for use in the study. To compile the adapted version of the ESP, a factor analysis was carried out on data collected using the ESP in a prior study in the South African context. The five items on each dimension with the highest loadings were used to create a questionnaire with a total of 35 items.

The items must be answered on a four point, Likert-type scale. The values of the scale utilised in the ESP are illustrated in Table 3-1 below.

**Table 3-1: Values of the Scale Utilised in the ESP**

| Numerical Value | Explanation |
|---|---|
| 1 | Not at All |
| 2 | Sometimes |
| 3 | Regularly |
| 4 | To a Very Great Extent |

An example item from the control dimension of the ESP questionnaire is provided in Figure 3-2 below.

In your organisation, to what extent do you experience:

| | | Not at All | Sometimes | Regularly | To a Very Great Extent |
|---|---|---|---|---|---|
| 25 | Effective systems and procedures | 1 | 2 | 3 | 4 |

**Figure 3-2: Example of Item Presented in the ESP**

Derman (2009) established the overall Cronbach's Alpha Coefficient for the ESP in the South African context as 0.993, indicating a high level of reliability.

### 3.3.2 Test Development and Adaption

The ESP was developed heuristically, meaning that it was not developed to be an objective measure (Smith & Tosey, 1999). Rather, the aim of the ESP was to generate reflection and discussion between respondents. As a result, the ESP was not validated upon development.

Derman (2009) adapted the wording of the original questionnaire by means of an expert panel and focus groups to ensure optimum results in the South African context. These changes were reviewed and approved by the test developers.

### 3.3.3 Metric Properties of the ESP

Since the ESP was developed heuristically, no validation studies were undertaken upon its development. The ESP was validated by Derman (2009), which is discussed in the section which follows.

### 3.3.4 Studies Utilising the ESP in South Africa

In a study in a financial institution in South Africa, Derman (2009) undertook to investigate the metric properties of the ESP. The use of focus groups in adapting the questionnaire ensured that the adapted version of the ESP had content validity. Overall reliability and inter-item reliability were adequate, as indicated by the Cronbach's Alpha values in Table 3-5.

**Table 3-2: Reliability Values for ESP**

| | Cronbach's α |
|---|---|
| Overall ESP | .993 |
| Existence | .946 |
| Activity | .958 |
| Control | .956 |
| Community | .951 |
| Meaning | .947 |
| Integration | .954 |
| Inspiration | .957 |

An EFA established a one-factor model for the ESP, and not a seven-factor structure (Derman, 2009). It is suggested that the single factor is organisational energy.

The metric properties of the ESP in the South African context will be further investigated in this study, with the hope of building on the information generated by Derman (2009).

## 3.4 PRODUCTIVE ORGANISATIONAL ENERGY MEASURE

### 3.4.1 Description

Since Cole *et al*. (in press; 2005) subscribe to the notion that positive organisational energy is a collective construct, the Productive Organisational Energy Measure (PEM) is designed to measure organisational energy as perceived by the individual, but materialised on a collective level. The questionnaire consists of 14 items which measure three broad dimensions, namely behavioural, affective and cognitive.

Responses for the items on the affective dimension of the PEM are measured on a five-point Likert-type scale. The values of the scale utilised in the affective dimension are illustrated in Table 3-3 below.

**Table 3-3: Values of the Scale Utilised in the Affective Dimension of the PEM**

| Numerical Value | Explanation |
|---|---|
| 1 | Never |
| 2 | Rarely |
| 3 | Sometimes |
| 4 | Often |
| 5 | Frequently if Not Always |

An example item from the affective dimension of the PEM questionnaire is provided in Figure 3-3.

| | | Never | Rarely | Sometimes | Often | Frequently if Not Always |
|---|---|---|---|---|---|---|
| 1 | People in my work group feel excited in their job | 1 | 2 | 3 | 4 | 5 |

**Figure 3-3: Example of Item Presented on the Affective Dimension in the PEM**

Responses for the items on the behavioural and cognitive dimensions are measured on a five-point scale Likert-type scale. The values of the scale utilised in the behavioural and cognitive dimensions are illustrated in Table 3-4 below.

**Table 3-4: Values of the Scale Utilised in the Behavioural and Cognitive Dimensions of the PEM**

| Numerical Value | Explanation |
|---|---|
| 1 | Strongly Disagree |
| 2 | Disagree |
| 3 | Neutral |
| 4 | Agree |
| 5 | Strongly Agree |

An example item from the cognitive dimension of the PEM questionnaire is provided in Figure 3-4.

| | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 6 | My work group is ready to act at any given time | 1 | 2 | 3 | 4 | 5 |

**Figure 3-4: Example of Item Presented on the Cognitive Dimension in the PEM**

Reliability and Validity in the South African context have yet to be established for the PEM.

### 3.4.2 Test Development and Adaption

An initial item pool of 38 items was generated based on items from published sources, content analysis of 50 manager interviews and independently generated items. The item pool was independently reviewed by three doctoral scholars, and reduced to 28 items. This number was further reduced to 17 items, based on the outcomes of a content adequacy assessment. The original PEM consisted of 17 items, which were statistically analysed and reduced to the current 14 items based on the data collected from three separate studies.

### 3.4.3 Metric Properties of the PEM

Three separate studies were conducted to validate the PEM. The PEM was validated in multinational organisations, with five countries taking part in the validation study, namely France, Sweden, Switzerland, the United Kingdom and the United States (Cole, Bruch &

Vogel, 2011). The questionnaire was administered both in English and the local language spoken by the employees.

Exploratory Factor Analysis (EFA) carried out in the first study confirmed a three-factor structure that explained 57 percent of the variance on the individual level. All items with loadings of less than 0.40 were removed, resulting in the 14 item PEM (Cole, *et al*., 2011). Confirmatory Factor Analysis (CFA) carried out in the first and second study indicated a good fit of the data to the three-factor model. Cross-national and cross-language equivalence was investigated using multi-group CFA. All measures were found to be equivalent across the four language groups and the five countries (Cole, *et al*., 2011).

Overall reliability and internal consistency reliability of the PEM was adequate on both the individual and the collective level, as indicated by the Cronbach's Alpha values in Table 3-5.

**Table 3-5: Reliability Values for the PEM**

| | Cronbach's α Study 1 | Cronbach's α Study 2 | Cronbach's α Study 3 |
|---|---|---|---|
| Overall PEM | .88 | .89 | .87 |
| Affective Dimension | .90 | .89 | |
| Cognitive Dimension | .77 | .74 | |
| Behavioural Dimension | .61 | .73 | |

The use of interviews in test development ensured that the final version of the PEM had high content validity. In addition, both discriminate and predictive validity were established for the PEM.

### 3.4.4 Studies Utilising the PEM in South Africa

The PEM has yet to be used in the South African context. The Metric properties of the PEM on the individual level in the South African context will be investigated in this study.

## 3.5 STANTON MARRIS ORGANISATIONAL ENERGY PERSPECTIVE

### 3.5.1 Description

The Energy Index was designed to measure organisation energy, which is defined by Stanton Marris (2002, p. 5) as the "extent to which an organisation has mobilised the full available effort of its people in pursuit of its goals".

The Energy Index consists of three sections. Part one of the Energy Index consists of broad questions to ascertain the level and direction of the respondent's energy. It is used to express the overall organisable energy of the organisation in a single score, based on a six point scale. This is a number between 1 and 100 and is called the Energy Index Number (Stanton Marris, 2010). Part two of the Energy Index makes use of 38 paired statements, each of which is paired with one of the following four sources or drivers of organisational energy:

- Connection;
- Content;
- Context; and
- Climate.

The questionnaire has a dual rating – each participant is asked to rate the importance of the statement to them, as well as how true the statement has been over the last few months in the organisation where they are working. The dual rating allows the questionnaire to identify what aspects participants value, as well as the gaps between reality and aspiration within the organisation (Stanton Marris, 2010, 2002). Part three of the Energy Index captures the biographical information on respondents, and makes provision for participants to capture general comments and thoughts.

### 3.5.2 Test Development and Adaption

The researcher was unable to obtain this information from the test developers.

### 3.5.3 Metric Properties of the Energy Index

The Energy Index was validated in the United Kingdom, using two samples of data. The samples of 111 and 472 responses respectively were collected in the periods 2001-2005 and 2006-2009. Both samples indicated adequate internal consistency and construct validity. Factor analysis was run separately on the truth and importance statements. The results of the factor analysis revealed that five factors explained 62.87 percent and 64.6 percent of the variance in the important and truth scores respectively. Reliability analysis statistics were not available.

### 3.5.4 Studies Utilising the Energy Index in South Africa

To the knowledge of the researcher, the Energy Index has not been utilised in the South African context. The researcher obtained permission from Stanton Marris to make use of the Energy Index instrument. However, findings of the pilot study indicated that the use of three questionnaires was repetitive and made the questionnaire long and cumbersome. A significant amount of time was required to complete the questionnaire, which could have had a significant detrimental effect on the ability of the researcher to obtain an acceptable sample size. Furthermore, the Energy Index consisted of 78 items, which means that a significant increase in the sample size would be required to ensure sufficient responses to run a factor analysis.

## 3.6 CONCLUSION

This chapter provided an overview of the metric properties of measurement instruments, with specific focus on construct validity and internal consistency reliability, as these are of particular interest to the study. The transfer of metric properties across cultural groups was then discussed, and the concept of cross-cultural validity was expounded upon, with specific reference to construct validity. Three measures of organisational energy were then reviewed. It was decided to utilise only two measures in this study, specifically the PEM (Cole *et al*., in press; 2005) and the ESP (Tosey & Llewellyn, (Tosey & Llewellyn, 2002; Smith & Tosey, 1999; Tosey & Smith, 1999; Tosey, 1994). The next chapter will address the research methodology applied in the study.

# 4 CHAPTER 4 : RESEARCH DESIGN AND METHODS

## 4.1 INTRODUCTION

> *"The production of knowledge depends very much on the techniques for collecting, analysing and interpreting data and the way they are applied"* (Simon, 1980, p. 74)

This chapter involves a detailed discussion of the research design and methods which were selected as the framework through which the research questions of the study were answered. Figure 4-1 refers.

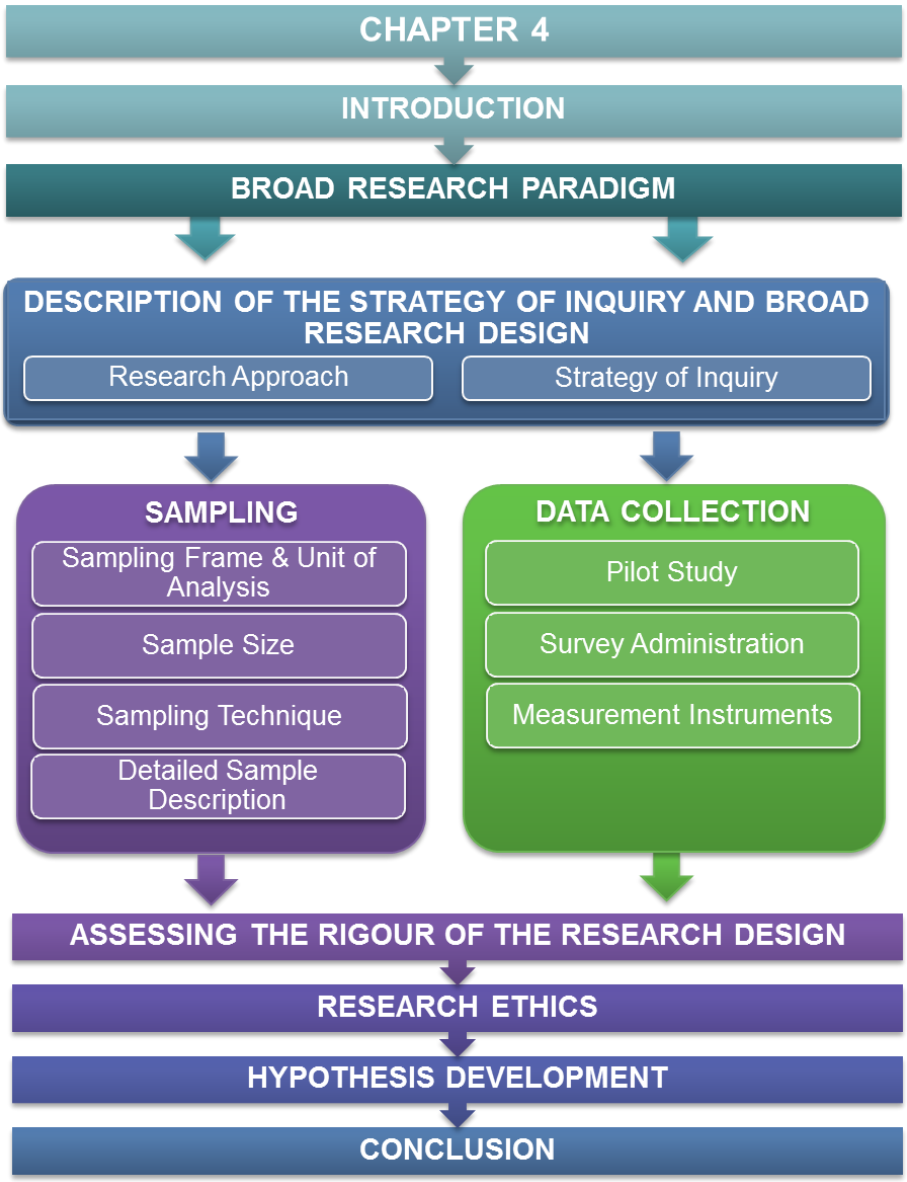


**Figure 4-1: Chapter 4 Orientation**

Firstly, an overview of the positivist research paradigm applied in this study is presented, before a description of the strategy of inquiry and broad research design is given. This is followed by a discussion of the sampling strategies and techniques utilised, as well as the data collection methodology applied. Issues which affect the reliability and validity of the research are then considered before ethical concerns related to the study are contemplated. The final section of this chapter consists of the development of research hypotheses for study, as well as the rationale for each hypothesis.

## 4.2 RESEARCH PARADIGM

Denzin and Lincoln (1994) define a paradigm as "set of feelings and beliefs about the world and how it should be understood and studied" (p.13). The research paradigm is an important consideration when undertaking a research study, as the underlying assumptions a researcher holds on reality, and how the researcher views the world has a substantial impact on how the researcher understands and approaches the topic under investigation. Hence the basic beliefs which define a research paradigm provide the interpretative framework within which the researcher collects, analyses, interprets and discusses data to develop knowledge on the subject at hand (Saunders, Lewis, & Thornhill, 2009).

The present study makes use of the positivist point of view, due to the quantitative nature of the research which is being undertaken and the aim of obtaining objective and empirical information on organisational energy in the South African context. Further characteristics of positivist research which underscore the research undertaken in the study are summarised in Table 4-1.

**Table 4-1: Characteristics of the Positivist Research Paradigm**

| Characteristic | Positivist Characteristics |
|---|---|
| Ontology:<br>the researcher's view of the nature of reality or being | • One true reality is apprehendable, identifiable and measurable;<br>• Reality consists of stable pre-existing patterns or order that can be discovered;<br>• Reality is not time or context-bound; and<br>• Reality can be generalised |
| Epistemology:<br>the researcher's view regarding what constitutes acceptable knowledge | • The researcher and the research participant are assumed to be independent and by following rigorous and standardised procedures, the participant and the topic can be studied by the researcher without bias (objectivism);<br>• The researcher can study the research participants without influencing them in any way;<br>• Replicated findings are considered "true" and provide evidence for theory verification; and<br>• Knowledge consists of verified hypotheses that can be considered as fact. |
| Axiology:<br>the researcher's view of the role of values in research | • Values of researcher have no place in research<br>• Values of researcher must be carefully controlled. |
| Researcher Role in the research | • Objective, impartial observer, passive, value-neutral |
| Most Common Data Collection Techniques | • Highly structured<br>• Large Samples<br>• Measurement, quantitative but can use qualitative |

Adapted from Ponterotto and Grieger (2007) and Saunders, *et al*. (2009)

## 4.3 DESCRIPTION OF STRATEGY OF INQUIRY AND BROAD RESEARCH DESIGN

### 4.3.1 Research Approach

The research approach of the present study is quantitative in nature since the intention of the research is to explore the validity and reliability of two organisational energy measures in the South African context. To accomplish this, the numerical data required for statistical analysis was collected by means of a questionnaire.

Quantitative research is concerned with consistent measurement of a phenomenon over time and by different researchers, usually by means of a measurement device (Cresswell, 2009). Consistent measurement forms the foundation necessary for the rigorous statistical analysis of the data (Bryman & Bell, 2007) which is required to investigate the validity and reliability of the two measurement instruments in question. Quantitative measurement also allows the researcher to statistically analyse the degree of relationships or differences between constructs (Bryman & Bell, 2007). This aligns with the need for establishing empirical, exploratory and descriptive data on Organisational Energy in the South African workplace.

### 4.3.2 Strategy of Inquiry

A non-experimental cross-sectional survey research strategy of inquiry is utilised in this study based on the need for exploratory research on organisational energy in the South Africa workplace. There are a limited number of studies on the concepts of organisational energy, specifically in the South African context. Furthermore, to the best knowledge of the researcher, there are no studies which examine the suitability of multiple organisational energy measures in the South African context. Hence, the rationale for choosing this strategy of inquiry is to establish basic empirical data on the topic of interest. Key Descriptors of the characteristics of the broad research design are summarised in the section which follows.

#### 4.3.2.1 *Non-experimental*

Non-experimental research refers to studies in which the researcher examines variables of interest as they exist in the broader environment and how these variables are related. Such studies are typically used when it is impractical or impossible to manipulate the independent variable (Belli, 2009). In the present study, organisational energy is examined in the context of the South African workplace, without manipulating any of the attribute data associated with it. However, due to the non-experimental nature of the research design the researcher has to reflect upon alternative analyses and possible alternatives since definitive causality cannot be determined (Belli, 2009).

#### 4.3.2.2 *Cross-sectional*

According to Ruane (2005), a cross-sectional research design gathers information from a single group of respondents at a particular point in time. The study can be considered cross-sectional: each respondent completed the survey once, and the data collected by the survey represents the measurement of organisational energy in South African organisations at a single point in time. The survey elicited responses regarding the topic of interest from a broad cross-section of respondents, making this approach practical and reasonable for pursuing the exploratory, descriptive and exploratory aims of the study.

The use of a cross-sectional design means that the researcher avoided subject mortality or attrition, which is associated with longitudinal designs. The disadvantage of cross-sectional research is that the design is not suitable for researching change over time, which means that correlations about the state of organisational energy or the instrument used to measure it could not be made over a changing period of time.

#### 4.3.2.3 *Survey research*

Survey research refers to the use of structured questioning to investigate the characteristics, opinions, perceptions or experiences of individuals and/or the social groups they belong to (Leedy & Omrod, 2010).

According to Cresswell (2009), survey research is a method frequently used when dealing with a large population which is too big to test in its entirety, as it allows the researcher to

"generalise from a sample to a population so that inferences can be made" about the nature of the population (p. 101).

Self-administered surveys are particularly common in social disciplines, where information collected from a sample of a particular population is organised into patterns which can be analysed statistically and reported upon (Kenett, 2006). The benefit of using self-administered questionnaires is that they allow for standardisation in the study and minimal interference from the researcher which could result in bias (O'Neil, 2010). However, survey research and specifically the quality of the data it collects is often criticised (Young, 1996, as cited in Van der Stede, Young, & Chen, 2005). Consequently, it is important that the survey utilised is constructed and administered appropriately to ensure that high quality data is obtained (Kenett, 2006). This is achieved in the present study by following a rigorous research design, as laid out in this chapter.

The ability to generalise a small sample to the wider population, in conjunction with the ability to collect large amounts of data which can be statistically analysed in a cost-effective and efficient manner make survey research an ideal strategy of inquiry for collecting data in the present study.

#### 4.3.2.4 *Primary data*

The present study makes use of primary data, as the researcher has utilised questionnaires to capture specific information which will be used to address the research objectives of the study (Saunders, *et al*., 2009).

#### 4.3.2.5 *Empirical*

The present study is considered an empirical study since the researcher has collected and analysed fundamental data.

#### 4.3.2.6 *Fundamental or basic research*

The present study is undertaken with the aim of gaining a greater understanding of organisational energy in the South African work context, and the available tools which can be utilised to measure the phenomenon. Consequently, it falls within the ambit of fundamental or basic research, as it will add to the body of scientific knowledge and

expand the theoretical conceptions of organisational energy in the South African context (Leedy & Omrod, 2010; Saunders, *et al*., 2009).

#### 4.3.2.7 *Quantitative*

The present study can be classified as quantitative in nature, since it makes use of numerical data, which will be statistically analysed to determined trends and make conclusions about the topic at hand (Belli, 2009).

#### 4.3.2.8 *Exploratory*

Exploratory research can be defined as "research that aims to seek new insights into phenomena, to ask questions and to assess the phenomena in a new light" (Saunders, *et al*., 2009, p592).

## 4.4 SAMPLING

### 4.4.1 Sampling Frame and the Unit of Analysis

The unit of analysis for the study is the organisation, in keeping with other studies on organisational energy (Bruch & Ghoshal, 2003; Cole, *et al*., 2011; Derman, 2009; Schudy & Brusch, 2010). In particular, this study is concerned with the South African organisation as an environment for using two measures of organisational energy. As this population is too vast to measure, it was necessary to identify a smaller sample of this population.

### 4.4.2 Sample Size

It is important that the highest sample size possible is attained to ensure that the results gained are not so specific to the sample that they cannot be generalised back to the wider population (Hertzog & Boomsma, 2009). A sample size of approximately 100 is generally sufficient for exploratory research (Ruane, 2005). However, factor analysis is one of the primary statistical techniques used in the study. Sample size plays a significant role in ensuring the statistical stability of the results of a factor analysis and it is therefore critical that a large enough sample is obtained. The literature raises two key considerations used

to determine minimum sample sizes for factor analysis: firstly, the subject-to-variable (STV) ratio and secondly, the absolute number of cases.

The STV ratio refers to the minimum ratio of the sample size to the number of items in the instrument which will undergo factor analysis (MacCallum, Widaman, Zhang, & Hong, 1999). Gorsuch (1983) recommended five subjects per item, with a minimum of 100 subjects, regardless of the number of items. In the instance of ideal STV ratios, Bryant and Yarnold (1995, as cited in Garson, 2011), as well as Gorsuch (1983) all maintain that the STV ratio should not be less than five cases per variable, whereas Garson (2011) and Everitt (1975) indicate a minimum of ten cases for each item in the measurement instrument.

The questionnaire in the study comprises a total of 49 items, with the ESP and the PEM containing 35 and 14 items respectively. This means that an ideal sample size range for the study based on STV ratios of between 5 and 10 would fall between 245 and 490 respondents.

In terms of absolute number of cases, Tabachnik and Fidell (2001) indicate that a sample of at least 300 cases is considered appropriate for factor analysis. This is supported by Comrey and Lee (1992, as cited in Field, 2009), who classify a minimum of 300 as a good sample size.

Taking into account the above discussions on the STV and the absolute number of cases, the minimum sample size for this study was set at 300 cases. The final sample contained 313 respondents, which resulted in a STV ratio of approximately 6.

### 4.4.3 Sampling Technique

Initially, a large organisation expressed interest in taking part in the study. However, a directive was issued from executive management preventing the distribution of surveys in the organisation and as a result the researcher was forced to pursue other avenues to obtain an adequate sample.

The researcher made use of multiple sampling techniques in this study to ensure the highest probability of ensuring a sufficient response rate to carry out quantitative statistical analysis. This was the most appropriate approach considering the financial and time constraints placed on the researcher, despite the fact that the approach is not necessarily the most scientifically suitable sampling strategy. The sampling strategies utilised in the study are discussed in more detail in the ensuing section.

#### 4.4.3.1 *Census sampling*

Three medium-sized consulting organisations and a small financial services organisation indicated their willingness to participate in the study. All individuals in the aforementioned organisations were asked for their participation in completing the questionnaire to ensure a sufficient sample size research (Welman & Kruger, 2001).

Once all individuals within the aforementioned organisations had had the opportunity to complete the questionnaires, additional non-probability sampling was utilised. Non-probability sampling is particularly valuable when testing a research instrument (Maree & Pietersen, 2010). Additional respondents were accessed by the two most convenient methods to ensure that the sample size was adequate for statistical analysis by means of factor analysis. The non-probability sampling techniques used were convenience and snowball sampling.

#### 4.4.3.2 *Convenience sampling*

Convenience sampling refers to the use of a population which is easily available (Maree & Pietersen, 2010). The researcher had access to nursing management and post-graduate human resources management students who were working in South African organisations. These individuals were asked to complete the questionnaire.

#### 4.4.3.3 *Snowball Sampling*

Snowball sampling refers to a sampling strategy where the researcher makes contact with respondents who fall within the target population, and asks them to identify further individuals who meet the requirements of the target population (Saunders, *et al*., 2009). All individuals within the consulting and financial services organisations who were involved in

the research were asked to send the measurement instrument to any individuals working in South African organisations who they thought would participate.

The use of non-probability sampling allows the researcher to include a variety of respondents without considering the impact of the proportions of their responses in the study, nor the representativity thereof (Welman & Kruger, 2001). However, it is important to note that the generalisability of the research results to the broader population could be adversely affected should a significant portion of the sample be obtained by non-probability means (Cresswell, 2009).

### 4.4.4 Detailed Sample Description

The sampling techniques utilised in the study resulted in a diverse group of respondents. The sample consisted of 305 respondents who work in organisations in South Africa. This sample is of a size that is adequate for statistically testing the metric properties of the two organisational energy measures. The following section provides more insight into the biographical composition of the sample group.

Table 4-1 represents the gender distribution of the sample group. It is apparent that male respondents are by far in the minority (23.9%), with female respondents accounting for 75.4 percent of the sample group. Two respondents (.7%) did not specify their gender.

**Table 4-2: Frequency Distribution for Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Unspecified | 2 | .6 | .6 | .7 |
| Valid | Female | 230 | 75.4 | 75.4 | 76.1 |
| | Male | 73 | 23.9 | 23.9 | 100 |
| Total | | 305 | 100.0 | 100.0 | |

The relationship status of the sample group was also considered in the biographical information. As is evidenced by Table 4-3, almost half of respondents were married (46.2%); with 37.7 percent of respondents being single and 11.1 percent of respondents being in a relationship, or engaged. Thirteen respondents (4.3%) were divorced, and one individual (.3%) indicated that they were separated. One respondent (.3%) did not specify their relationship status.

**Table 4-3: Frequency Distribution for Relationship Status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 1 | .3 | .3 | .3 |
| | Divorced | 13 | 4.3 | 4.3 | 4.6 |
| | Engaged / in a relationship | 34 | 11.1 | 11.1 | 15.7 |
| | Married | 141 | 46.2 | 46.2 | 62.0 |
| | Separated | 1 | .3 | .3 | 62.3 |
| | Single | 115 | 37.7 | 37.7 | 100.0 |
| Total | | 305 | 100.0 | 100.0 | |

The frequency distribution for relationship status is illustrated in the pie chart below.

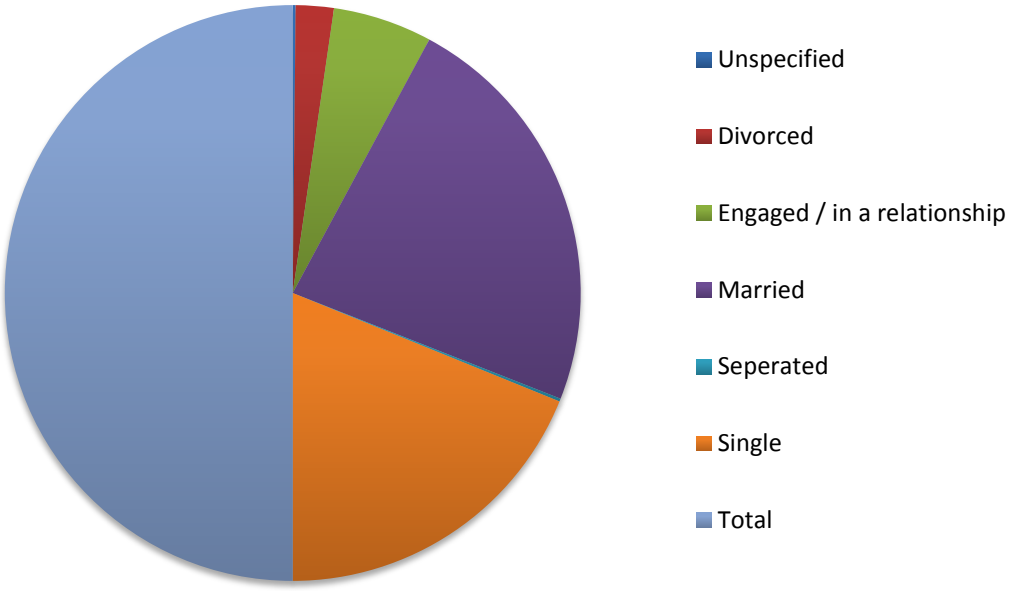


**Figure 4-2: Pie Chart Illustrating Relationship Status Distribution**

As indicated in Table 4-4, home language of respondents was grouped into the following groups: Afrikaans, English, Indigenous, Other and Unspecified. 182 respondents (59.7%) indicated that their home language was one of the nine Indigenous languages recognised as official languages in South African. A further 21 percent indicated that their home language was Afrikaans, and 18 percent indicated that their home language was English. One respondent (.3%) selected other as their home language, and a single respondent (.3%) did not specify a home language.

**Table 4-4: Frequency Distribution of Home Language**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 1 | .3 | .3 | .3 |
| | Afrikaans | 66 | 21.6 | 21.6 | 22.0 |
| | English | 55 | 18.0 | 18.0 | 40.0 |
| | Indigenous | 182 | 59.7 | 59.7 | 99.7 |
| | Other | 1 | .3 | .3 | 100.0 |
| Total | | 305 | 100.0 | 100.0 | |

Various ethnicities were represented by respondents in the present study, with the largest proportions of respondents being of African (62%) and White (33.8%) descent. Indian and other had two respondents (.7%) each while 1 respondent (.3%) did not specify their ethnicity.

**Table 4-5: Frequency Distribution for Ethnicity**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 1 | .3 | .3 | .3 |
| | African | 189 | 62.0 | 62.0 | 62.3 |
| | Coloured | 8 | 2.6 | 2.6 | 64.9 |
| | Indian | 2 | .7 | .7 | 65.6 |
| | Other | 2 | .7 | .7 | 66.2 |
| | White | 103 | 33.8 | 33.8 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

The frequency for ethnicity is well illustrated in the pie chart in Figure 4-3.

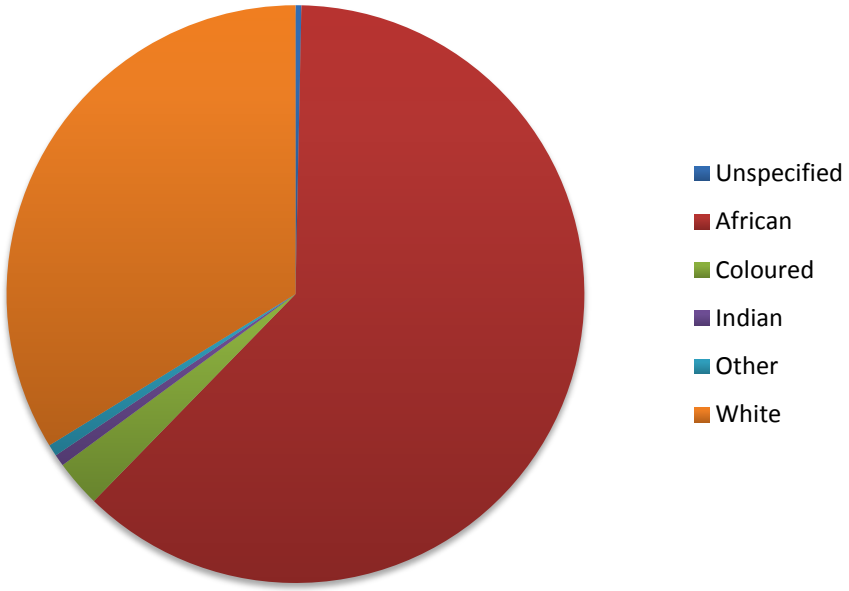


**Figure 4-3: Pie Chart Illustrating the Frequency Distribution of Ethnicity**

The classification of respondents according to their highest qualifications disclosed that the majority of respondents possessed a Diploma (40%) followed by those who had a Bachelor's Degree (28.2%). Eighteen percent of respondents had an Advanced Diploma. The remainder of respondents possessed Master's Degrees (5.2%); Grade 12 (4.3%); and Doctorates (.3%). Six respondents (2%) did not specify their highest qualifications.

**Table 4-6: Frequency Distribution for Highest Qualifications**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Advanced Diploma | 55 | 18.0 | 18.0 | 17.77 |
| | Bachelor's Degree | 86 | 28.2 | 28.2 | 45.97 |
| | Certificate | 6 | 2.0 | 2.0 | 47.94 |
| | Diploma | 122 | 40.0 | 40.0 | 87.94 |
| | Doctorate | 1 | .3 | .3 | 88.26 |
| | Grade 12/ Matric | 13 | 4.3 | 4.3 | 92.53 |
| | Master's Degree | 16 | 5.2 | 5.2 | 97.77 |
| | Not Specified | 6 | 2 | 2 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

The pie chart in Figure 4-4 figuratively illustrates the frequency distribution based on the highest qualifications of respondents.

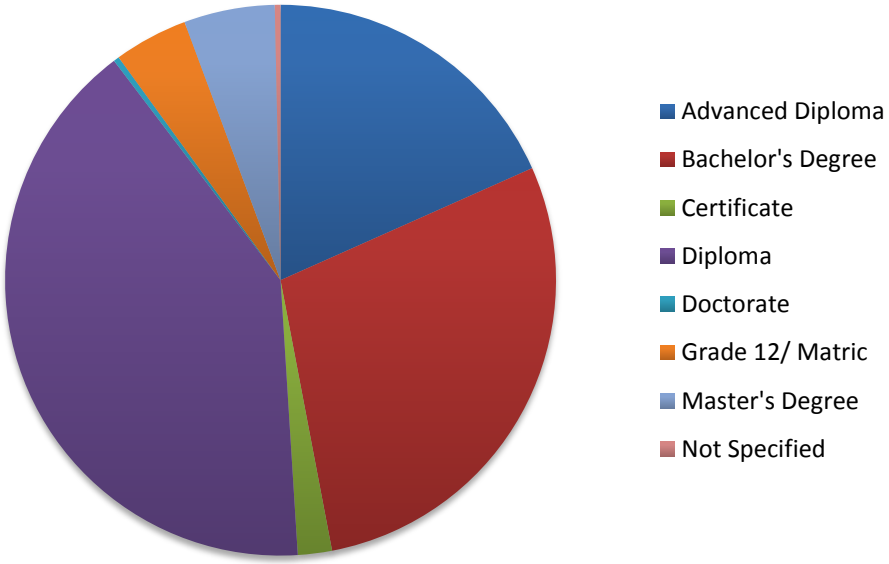


**Figure 4-4: Pie Chart Illustrating Highest Qualifications Frequency Distribution**

A classification of respondents according to industry divulged that the majority of the sample were from Health Services (49.2%); Other (14.8%); Engineering (13.1%) and

Government (11.1%) industries. The remainder of respondents could be classified in the Consulting (7.9%) and Unspecified (3.9%) industry categories.

**Table 4-7: Frequency Distribution of Industry**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 12 | 3.9 | 3.9 | 3.9 |
| | Consulting | 24 | 7.9 | 7.9 | 11.8 |
| | Engineering | 40 | 13.1 | 13.1 | 24.9 |
| | Government | 34 | 11.1 | 11.1 | 36.1 |
| | Health Services | 150 | 49.2 | 49.2 | 85.2 |
| | Other | 45 | 14.8 | 14.8 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

The pie chart in Figure 4-5 illustrates the frequency distribution according to the Industry in which respondents work.

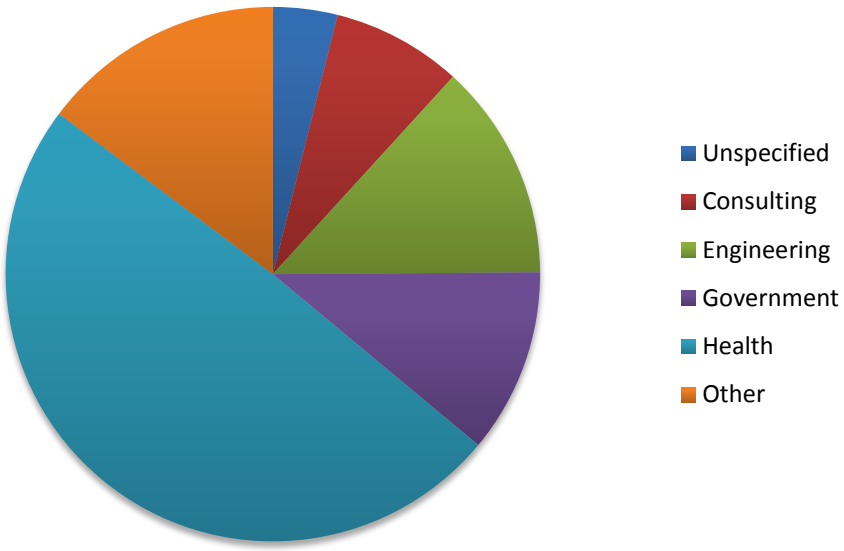


**Figure 4-5: Pie Chart Illustrating the Frequency Distribution of Industry**

Respondents were classified in terms of the geographic areas in which they work in South Africa. Table 4-8 summarises the sample group according to the Province in which they work. As can be seen in the table, the majority of respondents worked in Gauteng (75.1%), followed by Mpumalanga (11.8%) and Limpopo (8.9%). The remainder of respondents are employed in Western Cape (1.3%); Northern Cape (.7%), Eastern Cape (1%), North West (.3%), Kwa-Zulu Natal (.3%) and Free State (.3%). One respondent (.3%) did not specify the province in which they work.

**Table 4-8: Frequency Distribution of the Province in which Respondents Work**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 1 | .3 | .3 | .3 |
| | Free State | 1 | .3 | .3 | .7 |
| | Gauteng | 229 | 75.1 | 75.1 | 75.7 |
| | Kwa-Zulu Natal | 1 | .3 | .3 | 76.1 |
| | Limpopo | 27 | 8.9 | 8.9 | 84.9 |
| | Mpumalanga | 36 | 11.8 | 11.8 | 96.7 |
| | North West | 1 | .3 | .3 | 97.0 |
| | Northern Cape | 2 | .7 | .7 | 97.7 |
| | Eastern Cape | 3 | 1.0 | 1.0 | 98.7 |
| | Western Cape | 4 | 1.3 | 1.3 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

The following pie chart figuratively illustrates the frequency distribution according to the Province in which respondents work.

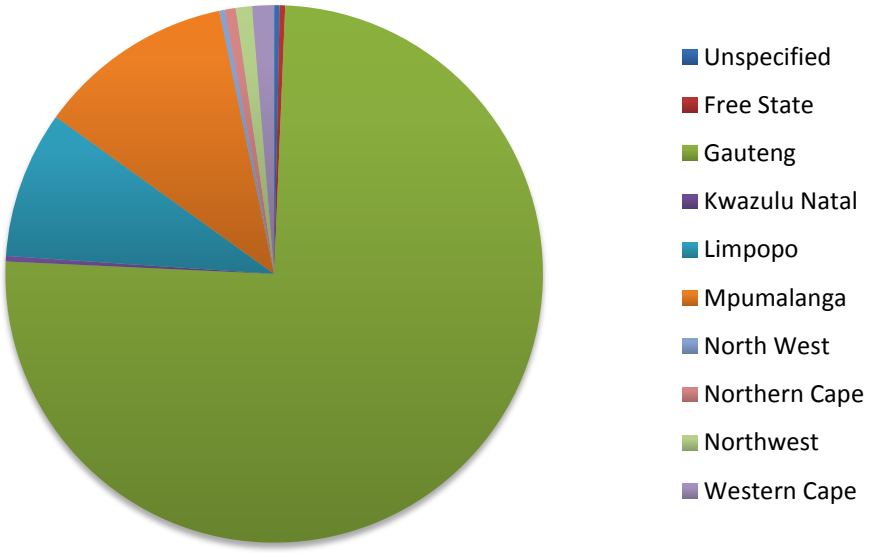


**Figure 4-6: Pie Chart Illustrating the Frequency Distribution of Provinces**

Respondents were asked to indicate their job level within the organisation they work for. As is evidenced by Table 4-9, the majority of respondents indicated that they were are on staff level (51.1%). 73 (23.9%) and 56 (18.4%) respondents respectively indicated that they hold supervisory and middle management positions, followed by six respondents (2%) who indicated that they are on a top management level. Three respondents (1%) did not specify their job level.

**Table 4-9: Frequency Distribution of Job Level**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 3 | 1.0 | 1.0 | 1.0 |
| | Middle Management | 56 | 18.4 | 18.4 | 19.3 |
| | Senior Management | 11 | 3.6 | 3.6 | 23.0 |
| | Staff | 156 | 51.1 | 51.1 | 74.1 |
| | Supervisory | 73 | 23.9 | 23.9 | 98.0 |
| | Top Management | 6 | 2.0 | 2.0 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

Table 4-10 below illustrates the frequency distribution of years of service that respondents have with their present organisation. 58 percent of respondents have been with their present organisation for a period of 0 to 10 years, and 26.6 percent have spent 11 to 20 years with their present company. The remainder of the respondents (7.5%) have been with their present organisation for 21 to 30 years.

**Table 4-10: Frequency Distribution of Years of Service with Current Company**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 to 10 years | 178 | 58.4 | 63.1 | 63.1 |
| | 11 to 20 years | 81 | 26.6 | 28.7 | 91.8 |
| | 21 to 30 years | 23 | 7.5 | 8.2 | 100.0 |
| | Total | 282 | 92.5 | 100.0 | |
| Missing | System | 23 | 7.5 | | |
| Total | | 305 | 100.0 | | |

Table 4-11 below illustrates the frequency distribution of years of service that respondents have with their present position. 62.6 percent of respondents have been with their present job for a period of 0 to 10 years, and 21.3 percent have spent 11 to 20 years with their present company. The remainder of the respondents (5.6%) have been with their present organisation for 21 to 30 years.

**Table 4-11: Frequency Distribution of Years Working in Current Job**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 to 10 years | 191 | 62.6 | 70.0 | 70.0 |
| | 11 to 20 years | 65 | 21.3 | 23.8 | 93.8 |
| | 21 to 30 years | 17 | 5.6 | 6.2 | 100.0 |
| | Total | 273 | 89.5 | 100.0 | |
| Missing | System | 32 | 10.5 | | |
| Total | | 305 | 100.0 | | |

The final variable associated with descriptive statistics is the respondents' nature of employment. As evidenced in Table 4-12, the majority of respondents (91.8%) are permanent employees. The remainder of respondents classified the nature of their jobs as: Temporary (3.0%); Fixed-Term (2.6%) and Paid Hourly (2.0%). Two respondents (.6%) did not specify the nature of their employment.

**Table 4-12: Frequency Distribution of Nature of Employment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Unspecified | 2 | .6 | .6 | .7 |
| | Fixed-Term | 8 | 2.6 | 2.6 | 3.3 |
| | Paid Hourly | 6 | 2.0 | 2.0 | 5.2 |
| | Permanent | 280 | 91.8 | 91.8 | 97.0 |
| | Temporary | 9 | 3.0 | 3.0 | 100.0 |
| | Total | 305 | 100.0 | 100.0 | |

## 4.5 DATA COLLECTION

### 4.5.1 Pilot Study

Pre-testing of a survey is recommended by many researchers to ensure that the survey obtains useful data (Forza, 2002; Hutchinson, 2004). The wording of the original ESP questionnaire was adapted for use in the South African context in a previous study. Derman (2009) utilised an expert panel and focus groups to ensure optimum results in the South African context.

Although no formal pilot study was undertaken in this study, the researcher followed the recommendations of Forza (2002) and conferred with subject matter experts in the field of survey testing, academic professionals and employees from the target population. The individuals consulted in pre-testing did not take part in the final study, but provided the researcher with insights on the face validity, wording and content of the items in the questionnaire, the time taken to complete the questionnaire and any other insights which may have had an impact on the quality of the data collected by the questionnaire.

### 4.5.2 Survey Administration

The use of a questionnaire is appropriate for the research aims of the study. Since neither of the data collection instruments are psychometric instruments, the survey was be self-administered by participants in the organisations which participated in the study.

Multiple modes of administration were considered for the present study. According to Hutchinson (2004), the decision regarding the means of administering a survey for a research study should be centred on the following considerations:

- The nature of the information which is to be collected by the survey;
- The characteristics of the population being targeted;
- The characteristics and size of the sample required for the study; and
- The nature of the questionnaire being administered to respondents.

Maree and Pieterse (2010) distinguish between four key methods of survey administration: Telephonic Survey, Face-to-Face Survey, Group Administration, and Postal Survey. However, both telephonic and face-to-face administration are costly, time consuming, and are not practical for use when large sample sizes are required (Leedy & Omrod, 2010) which played a significant role in the researcher choosing not to utilise them in the present study.

Group Administration of surveys involves the researcher distributing the questionnaire to a group of individuals at a given time, and waiting until the group completes the questionnaire before collecting it again (Maree & Pietersen, 2010). This method of data collection has the advantage of enabling the researcher to target a large group of respondents in a shorter time-frame and is relatively inexpensive. In addition, it allows the researcher to check the accuracy of questionnaires as they are collected (Maree & Pietersen, 2010). The disadvantages of this method stem from limited control which the researcher has over the administration of the questionnaire when secondary administrators are utilised (Maree & Pietersen, 2010).

Postal Survey involves mailing the questionnaire to respondents, who complete the questionnaire and return it to the researcher (Maree & Pietersen, 2010). The increased use of computer-based communication and the internet has led to a variation of this administration method where email is used to send questionnaires to respondents (Nie & Ebring, 2000; Nie, Hillygus, & Erbring, 2002). Although this method allows the researcher to target a large number of respondents and allows the respondents to complete the questionnaire when it is convenient (Maree & Pietersen, 2010), this distribution method also lacks contact between the respondent and the researcher. Consequently, the researcher is unable to control the testing environment or to provide clarification of respondents questions (Cresswell, 2009) and low response rates are common (Maree & Pietersen, 2010). However, these disadvantages could be outweighed by the fact that the researcher can access large numbers of respondents with ease.

In addition to the four methods of survey identified by Maree & Pietersen (2010), the internet can also be used to place surveys online, which affords the researcher the ability to save time and money by interacting with respondents who would be difficult to access

by other administration means (Garton, Haythornthwaite, & Wellman, 1999; Witmer, Colman, & Katzman, 1999)

The decision was made to employ a multi-mode form of survey administration in the present study with the intent of reaching the most respondents, as a large sample size was required to undertake the chosen method of statistical analysis for the study. Although the researcher considered the impact that different means of survey administration would have on the data collected, studies have shown that there is a high level of congruence between the responses to self-report questionnaires administered electronically and online, and the same questionnaires administered in a traditional "pen-and-pencil" format (Fouladi, McCarthy, & Moller, 2002; Stanton, 1998).

Initially, the survey was conducted by emailing the questionnaires to individuals currently employed within organisations in South Africa with a letter explaining the study and informed consent. An online version of the questionnaire was also made available to all respondents. The survey was administered once, without the intent of following up. The researcher counteracted the disadvantages of this data collection method by emailing the questionnaire directly to the participants, and giving the participants a specific time frame within which their response was to be submitted to the researcher. Where responses were not submitted in the specified time frame, the researcher personally followed up with participants as far as possible to identify why the respondent has not participated, and to address questions or concerns.

In addition to emailing the questionnaire and making an online link available to possible respondents, five group administration sessions were held. The researcher administered all group sessions in the present study, thus avoiding the aforementioned disadvantages associated with secondary administrators

### 4.5.3 Measurement Instruments

The survey consists of two questionnaires, namely the ESP and the PEM as well as a section to capture biographical information. This section provides a brief description of the measurement instruments utilised. For an in-depth discussion of each measure, including

a test description, test development and adaption, and the metric properties of the instruments, please refer to the literature review, which explores the measurement instruments in more detail.

The questionnaire used for data collection is included in Appendix A. The researcher has obtained permission from the test developers to make use both these instruments.

#### 4.5.3.1 *Productive Organisational Energy Measure*

The PEM was used to measure organisational energy as conceptualised by Cole *et al*. (in press; 2005). The PEM consists of 14 items which measure three broad dimensions, namely behavioural, affective and cognitive. Although content validity, overall reliability and inter-item consistency have been determined in three studies utilising data from five countries, the PEM has yet to be utilised in the South African context. Thus validity and reliability of the PEM in the South African context were explored in this study.

#### 4.5.3.1 *Energy Scapes Profile*

The ESP was used to measure organisational energy as conceptualised by Tosey (1994) and Tosey and Llewellyn (2002). An adapted version of the ESP was used in this study. The adapted version consists of a total of 35 items, with 5 items for each of the seven dimensions, namely: inspiration, integration, meaning, community, control, activity and existence. Content validity, overall reliability and inter-item consistency have been determined in the South African context (Derman, 2009). Thus validity and reliability of the ESP in the South African context were explored further in this study.

#### 4.5.3.2 *Biographical information*

A section to collect biographical information was included in the beginning of the questionnaire. Since the information collected by this section is generally non-threatening and simple for respondents to provide, it was intended to serve as a means to put respondents at ease.

Biographical information was collected in two broad categories, namely demographic characteristics about the individual respondent, and information which related to their positioning within the organisation they worked for. Information about the demographic

characteristics of the individual respondent related to: Gender, Marital Status, Home Language, Race, Age, and Highest level of Education. Information related to their positioning within the organisation they worked for included: the industry or economic sector of the organisation, the geographic region of the organisation, job level, years of service with the organisation, and the basis of their employment.

## 4.6 ASSESSING AND DEMONSTRATING THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

To determine and evaluate the suitability of the research design and the credibility of the findings of the research, issues which affect the reliability and validity of the research must be considered. These issues are discussed in the section to follow.

### 4.6.1 Reliability

Reliability refers to the consistency of measurement of an instrument (Foxcroft & Roodt, 2005). That is, the extent to with the questionnaires used in the study will produce consistent and dependable results (Saunders, *et al*., 2009). In the case of the present study, reliability refers to the internal consistency of the instrument, and the subsequent degree of generalisability across the items within the instrument. The reliability of the instruments used in the study was determined after all data in the form of responses to the survey have been collected and statistically analysed by means of a statistics programme, namely SPSS (SPSS Inc., 2011) and EQS (EQS, 2011). A detailed discussion of the reliability of both the PEM and the ESP follows in the Results section of this report.

### 4.6.2 External Validity

Two specific considerations which may impact on the external validity of the research study, namely population validity and ecological validity are discussed below.

#### 4.6.2.1 *Population validity*

Population validity refers to whether or not the findings obtained for the sample group selected for the study can generalised to the total population (Welman & Kruger, 2001). The fact that participation in the study was voluntary may have an effect on the population validity results. This is because the characteristics of respondents who volunteer for research may differ from those of the target population (Welman & Kruger, 2001). However, the exploratory aims of the study mean that generalisation to the rest of the population is less feasible.

#### 4.6.2.2 *Transferability*

Transferability is described as the degree to which the results of research can be transferred (or generalised) to other contexts (Welman & Kruger, 2001). Transferability cannot be established due to the fact that the research design does not make provision for field research. Therefore, threats to construct and internal validity such as experimenter and subject effects (discussed hereafter) will have an impact on the degree to which results of the study can be generalised to the target population. The sampling strategy discussed in preceding sections, and the adequate sample size may assuage this threat to some degree.

### 4.6.3 Internal Validity

Due to the exploratory nature of the study, and the researcher's choice of a non-experimental research design, it is not possible to determine the extent to which variables may co-vary. This has a negative impact on the internal validity of the study, and thus it is likely to be relatively low. A discussion of possible threats to the internal validity of the present study is undertaken in the ensuing section.

#### 4.6.3.1 *Temporal requirement of causality*

The use of a cross-sectional research design in the present study means that to ascertain whether changes in the dependent variables are caused by the independent variables, the researcher would have to pursue other means of determining causality. The lack of current research on organisational energy measures in the South African context had the effect that the researcher could not refer back to previous bodies of research to determine potential causality. Therefore, the researcher explored the presence of a relationship between the constructs under scrutiny, and did not attempt to determine if a causal relationship exists.

#### 4.6.3.2 *Selection bias*

The sampling strategy utilised in the present study was not random, and therefore individuals in the sample group may have specific characteristics which may not by common across all respondent categories. Thus the internal validity of the study is at risk

of selection bias, which could produce differences in the results of the study which are not expected.

#### 4.6.3.3 *History*

Events which occur concurrently with the study may have an effect on the dependent variable, and as a result, changes in the dependent variable would not necessarily be attributed to the independent variable being studied (Ruane, 2005).

#### 4.6.3.4 *Third variable problems*

Due to the non-experimental nature of the research design, it is impossible to control for all possible nuisance or intervening variables. Therefore, results of the study will be less internally valid than if an experimental study was being undertaken.

### 4.6.4 Construct Validity

Construct validity can be defined as the extent to which the study measures what it purports to measure (Foxcroft & Roodt, 2006), or the degree to which the variable that is measured represents the construct on which it is based. Threats to construct validity of the present study will be mitigated by ensuring that the following considerations are observed in all activities related to the study.

#### 4.6.4.1 *The experimenter effect*

The researcher could manipulate and interpret the data generated from the study based on preconceived suppositions and expectations. Therefore a comprehensive literature review which incorporates multiple viewpoints on the topic of interest was undertaken. This, in conjunction with a critical awareness of the possible threat should ensure that the experimenter effect is avoided as much as possible.

#### 4.6.4.2 *The subject effect*

Participants are aware of the fact that their experience of organisational energy is being assessed, and this may alter their responses (either consciously or subconsciously) to questions in such a way that they do not reflect their true experiences of organisational energy. This is known as measurement reactivity.

### 4.6.5 Face Validity

For purposes of the study, face validity of the measurement instruments utilised will be inferred by the nature of the items comprising the questionnaires.

## 4.7 RESEARCH ETHICS

Research ethics provide the moral framework within which the researcher operates when conducting research. According to Cresswell (2009), research ethics encompass data collection and analysis, the interpretation of findings, and the subsequent reporting and dissemination of the research findings. Ethical considerations which are relevant to the study are discussed in more detail below.

### 4.7.1 Risk of Harm

One of the first and most important considerations for research with human participants is that the research should not cause harm to those participants. This means that there should be no unreasonable risks taken with the emotional, physical and psychological health of the subjects (Ruane, 2005).

While the study appears to meet this consideration, it is also important to note that not all harmful consequences can be predicted or known in advance. To combat this, the researcher made her contact details available on all versions of the measurement instruments. Participants were invited to approach the researcher with any questions which may have troubled them during the course of the study, or to seek additional information on the research study. This is also gave the researcher the opportunity to obtain feedback from the participants on their experiences, or any negative after-effects so that development areas which needed to be addressed in the research approach could be identified.

### 4.7.2 Informed Consent

The participants in any study have the right to make an informed choice on whether they wish to be part of the study or not. To do this, they must be fully informed on what the study entails and any risk involved (Ruane, 2005). Furthermore, permission was gained from the organisations in which the study took place. The organisation consent form is included in Appendix C.

The following aspects of informed consent should be considered:

#### 4.7.2.1 *Information*

The subjects in a research study should receive all information which may affect their decision to participate. This was achieved by including detailed information on the nature and purpose of the study in an information leaflet which accompanied the data collection questionnaire.

#### 4.7.2.2 *Voluntary participation*

Participants must be free to decide to take part in the study. That is, that there would be no negative consequences if the individual does not take part in the study. The organisational setting of the study can be classified as an institutional setting, and does therefore have the potential to infringe upon the concept of voluntarism, since the authority relationships (for example, an individual's manager) in the setting conflict with true voluntarism (Welman & Kruger, 2001). Therefore, it is important that the researcher make every effort to ensure that individuals understand that participation in the study is voluntary. Furthermore, the individual's right to privacy means that direct consent must be obtained from each individual and that they have the right to withdraw their consent at any time.

#### 4.7.2.3 *Informed consent form*

The informed consent form was designed to ensure that participants with different backgrounds, qualifications and home languages would be able to comprehend it. The informed consent form was distributed with an information leaflet to ensure that all participants received complete information about the study, and the processes which were to be followed. The informed consent form is included in Appendix B.

#### 4.7.2.4 *Dissemination of individual results*

Individual results from the research were not made available to respondents. However, all respondents were informed of their right to have access to the final research report should they wish to read it.

#### 4.7.2.5 *The Subjects' Right to Privacy*

This refers to the researcher's ability to control when and under what circumstances, any other party will have access to the information gathered during the course of the study.

#### 4.7.2.6 *Confidentiality*

The information collected during the study should be used only for the purposes stated by the researcher. Furthermore, no personal information about the individual participant will be made available or discussed without consent (Babbie & Mouton, 2001). The Energy Index is being used with the consent of Stanton Marris. In return, the researcher has agreed to share the raw data collected on the instrument with Stanton Marris. Respondents will be informed of this on the informed consent form.

#### 4.7.2.7 *Anonymity*

Participants will remain anonymous throughout the study. Neither names nor any identifiable demographic information on participants will be disclosed. Furthermore, the raw data provided to Stanton Marris will not contain any names to ensure that participants' anonymity is retained

### 4.7.3 Measuring Instruments

To ensure that the information disseminated in the final research report is accurate and fair, statistical analysis will be undertaken to determine the reliability and validity of the measurement instruments in the South African context. This information and the interpretation thereof will be included in the final report.

### 4.7.4 Ethical Reporting

It is important to realise that the research findings can be altered to agree with the researcher's preconceived ideas, rather than being an accurate and fair rendering of results. Therefore, data pertaining to statistical analysis are included in the final report so that the public can scrutinise it. In addition, the researcher ensured that all references were cited in agreement with the academic requirements of the University

### 4.7.5 Institutional Review Board

The study was guided by the Ethical Code of Conduct stipulated by the Health Professions Council of South Africa (Babbie & Mouton, 2001). This ethical code of conduct provides

clear guidelines to the research in terms of ethical practices for the research process, from inception to publication.

## 4.8 RESEARCH HYPOTHESES DEVELOPMENT

Based on the literature reviewed, and the findings of previous empirical studies conducted on organisational energy, the five research hypotheses were formulated to achieve the objectives of the study. These are presented in the section which follows, along with the rational for each as drawn from the literature. For ease of discussion and to facilitate hypothesis testing, longer research hypotheses have been split into sub-hypotheses.

### 4.8.1 Hypothesis 1

**Hypothesis 1:** Organisational energy, as measured by the adapted ESP is a seven - dimensional construct consisting of Inspiration, Integration, Meaning, Community, Control, Activity and Existence. Acceptable internal consistencies exist for all scales.

- **Sub-Hypothesis 1.1:** Organisational energy as measured by the ESP is a seven-dimensional construct consisting of inspiration, integration, meaning, community, control, activity and existence.
- **Hypothesis 1.2:** There are no significant differences in organisational energy of employees as measured by the ESP based on demographic characteristics.

The ESP was developed based on the Seven Energies of Organisation model, as proposed by Tosey and Llewellyn (2002), Tosey and Smith (1999) and Tosey (1994). It aims to measure the individual experience of organisational energy on seven specific dimensions, namely inspiration, integration, meaning, community, control, activity and existence. A previous study in South Africa (Derman *et al*., 2011; Derman, 2009) established the ESP as a valid and reliable measurement instrument in the South African context. However, the results of the previous study revealed a single factor structure for the ESP. Thus further investigation of the measurement instrument and its factor structure is required. The present study makes us of an adapted version of the ESP.

### 4.8.2 Hypothesis 2

**Hypothesis 2:** There are no significant differences in organisational energy of employees (as measured by the ESP) based on demographic characteristics

- Based on the limited literature available on the demographic characteristics of employees and their experience of organisational energy as measured by the ESP, the hypothesis was stated in a non-directional manner.

### 4.8.3 Hypothesis 3

**Hypothesis 3:** Productive organisational energy, as measured by PEM, is a three-dimensional construct consisting of an affective dimension, a behavioural dimension and a cognitive dimension. Acceptable internal consistencies exists for all scales and construct equivalence exists for both White and Indigenous employees.

- **Sub-Hypothesis 3.1:** Productive organisational energy, as measured by the PEM, is a three-dimensional construct consisting of an affective dimension, a behavioural dimension and a cognitive dimension.
- **Sub-Hypothesis 3.2:** Construct equivalence exists for both White and Indigenous employees.
- **Sub Hypothesis 3.3:** Acceptable internal consistencies exist for the PEM

The PEM was developed to measure productive organisational energy as defined by Cole *et al*. (2011; 2005). This definition conceptualises productive organisational energy as a three-dimensional construct consisting of affective, behavioural and cognitive dimensions. Furthermore, the PEM has been validated for use in five countries, namely France, Sweden, Switzerland, United Kingdom and United States, using both an English and a local language version of the measurement instrument (Cole, Bruch & Vogel, 2011). It is thus reasonable to suppose that construct equivalence would exist for White and Indigenous Employees in the South African context.

### 4.8.4 Hypothesis 4

**Hypothesis 4:** There are no significant differences in productive organisational energy of employees (as measured by the PEM) based on demographic characteristics

Since no clear literature or empirical studies exist on the demographic characteristics of employees and their experience of productive organisational energy, the hypothesis was stated in a non-directional manner.

### 4.8.5 Hypothesis 5

**Hypothesis 5:** There is no significant relationship between organisational energy (as measured by the ESP) and productive organisational energy (as measured by the Productive Energy Measure).

- Although an examination of the literature in the present revealed the possibility of a relationship between certain aspects of the PEM and the ESP, no explicit literature or empirical studies exist in this regard. Thus the hypothesis is stated in a non-directional manner.

## 4.9 CONCLUSION

This chapter involved a detailed discussion of the research design and methods applied in the study. The chapter began with an overview of the research paradigm of the study, before a description of the strategy of inquiry and broad research design is given. A detailed discussion of the sampling strategies and techniques utilised in the study was then given, with specific focus on the importance of sample size for the statistical techniques utilised. A detailed description of the sample was also provided, and the data collection methodology was subsequently discussed. Issues which impacting on the reliability and validity of the research were considered before ethical concerns related to the study were contemplated. The emphasis of the final section of this chapter was on hypothesis development. The next chapter presents the results of the statistical analysis carried out on two measures of organisational energy, namely the PEM and the ESP.

# 5 CHAPTER 5: STATISTICS

## 5.1 INTRODUCTION

This chapter presents the results of the statistical analysis carried out on two measures of organisational energy. The chapter will focus on depicting and interpreting the results gained from the statistical procedures. The chapter outline is illustrated diagrammatically in Figure 5-1 below.

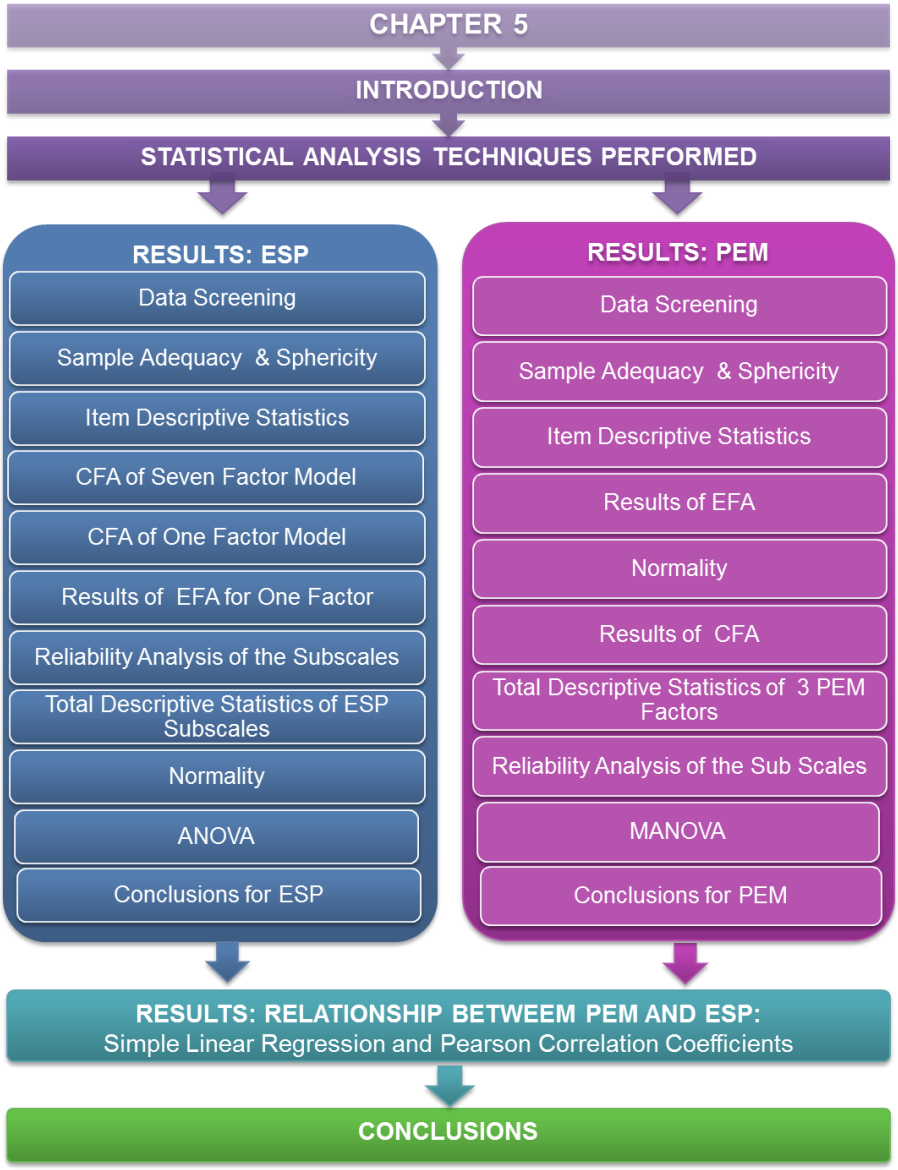


**Figure 5-1: Chapter 5 Orientation**

The chapter commences with a brief discussion of each of the statistical techniques employed in the study, before presenting the results of the statistical analysis of the ESP. The statistical findings for the PEM are then presented, before the investigation moves to the exploration of the relationship between the two measures, and the chapter is subsequently concluded.

## 5.2 STATISTICAL ANALYSIS TECHNIQUES PERFORMED

The following section explores the data analysis techniques which were utilised during the study, and offers the rationale for each technique. As multiple research objectives were been identified, the analysis of the data was aligned with these objectives in order to sufficiently meet the research objectives. Statistical analysis was carried out on two measures of organisational energy using the SPSS Program (SPSS Inc., 2011) and EQS Program (EQS, 2011) to determine the reliability and validity of these measures in the South African Context. A more detailed explanation of the statistical analysis techniques utilised is contained within the ensuing section.

### 5.2.1 Descriptive Statistics

Descriptive statistics are used to describe and organise variables for presentation (Ruane, 2005). According to Pallant (2005), descriptive statistics have numerous uses: the researcher may use them to describe the sample, to ascertain whether the assumptions required for specific statistical techniques to use for data analysis are met, to screen and clean the data, and to answer specific research questions. Descriptive techniques utilised in the present study to describe the sample and the data collected included means, standard deviations, frequencies, skewness, and kurtosis. These techniques are briefly described below.

- The mean refers to the arithmetic average of a group of scores.
- The standard deviation is a measure of the dispersion in a group of scores from its mean value. The more dispersed the data is, the higher the standard deviation value will be.
- Frequencies refer to the number of observations or cases within a given interval.

- Kurtosis is a measure of the relative concentration of data values in the central point of a frequency distribution. In other words, it refers to how peaked or flat the shape of the distribution is. Data which are perfectly normally distributed has a kurtosis value of zero (Pallant, 2005).
- Skewness is a measure of the symmetry of a frequency distribution. A perfectly symmetrical frequency distribution would have a skewness value of zero. A frequency distribution which has extreme values below the mean would be negatively skewed, whereas a frequency distribution with extreme values above the mean would be positively skewed. Data which is perfectly normally distributed has a skewness value of zero (Pallant, 2005).

### 5.2.2 Normality

Normality is a prerequisite of parametric statistics, meaning that if the condition of normality (and the other assumptions for parametric statistics) was not met, the researcher would have to make use of non-parametric statistics. Secondly, the normality distribution of the sample and of the responses on a specific item is directly related to the generalisability of the results of the study to other populations. Normality will be determined using the Kologrov-Smirnov statistics. A non-significant result ($p \geq 0.05$) indicates normality. Normality can also be visually identified using Q-Q plots and histograms

### 5.2.3 Sample Adequacy and Sphericity

When determining the suitability of the data for factor analysis, two primary considerations should be taken into account, namely the sample size in terms of absolute number of cases and the subject-to-variable (STV) ratio, and the strength of the inter-correlations between the items. Although sample size for the study is discussed in detail in 4.4.2, it is worth noting that the sample size is 303 respondents, which is well within the recommended number of cases required for the statistical techniques applied.

If factor analysis is to be applied successfully, sufficient correlations must exist in the inter-item correlation matrix of the data set (Hair, Black, Babin, & Anderson, 2010). The appropriateness of the data for factor analysis can determined by applying the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity to the inter-item correlation matrix of the measurement instrument.

The KMO measures the degree of inter-correlations between the variables (Hair, *et al*., 2010; Field, 2009). According to Hair *et al* (2010), a KMO measure of 0.6 or above is considered acceptable for factor analysis. This is supported by (Pallant, 2005) and Kaiser (1974). Table below proposes a framework for how the KMO Statistic can be interpreted, as presented by (Kaiser, 1974).

**Table 5-1: Interpretation of the Kaiser-Meyer-Olkin Measure of Sample Adequacy**

| KMO Statistic | Interpretation |
|---|---|
| In the .90's | Marvellous |
| In the .80's | Meritorious |
| In the .70's | Middling |
| In the .60's | Mediocre |
| In the .50's | Miserable |
| Below .50 | Unacceptable |

Source: Kaiser, 1974

Bartlett's Test of Sphericity evaluates the probability of significant correlations among the variables of the measurement instrument (Hair *et al*, 2010). Bartlett's Test of Sphericity should be significant ($p \leq 0.05$). Significance demonstrates that there are acceptable correlations among the variables.

Therefore, if the KMO statistic is above 0.6 and Bartletts Test of Sphericity is significant ($p \leq 0.05$), Factor Analysis could successfully be applied to the data.

### 5.2.4 Factor Analysis

Factor Analysis is a technique which may be used to determine the construct validity of a measurement instrument. That is, the degree to which the variable that is measured represents the construct on which it is based.

Factor analysis entails assessing the degree to which the items within a measurement instrument relate (Field, 2009,). Items which measure similar aspects of a construct are clustered together, allowing the researcher to identify the dimensions of each instrument (Hair *et al*., 2010). This will establish whether the items contained within the measurement instruments are relevant to the construct being tested, in this case organisational energy.

According to Darlington (1997) factor analysis can answer the following questions about the data:

- How many different latent dimensions or factors are required to explain the relationships among the items or variables?
- What is the nature of these latent dimensions?
- How well do the theoretical or hypothesised dimensions explain the data?
- How much unique variance does each item comprise of?

Factor analysis is also a useful tool to measure construct equivalence as it can provide information about whether the construct is structurally similar for different culture groups (Van der Vijver & Leung, 1997).

In the present study, both Exploratory and Confirmatory Models of Factor Analysis are used. Although there is information about the composition of the ESP based on previous studies, only one study regarding the validity in the South African context could be found (Derman, *et al*. 2011; Derman, 2009). Furthermore, an adapted version of the ESP was utilised and needed to be validated. Similarly, there is information about the composition of the PEM in previous studies. However, no studies study regarding the validity in the South African context could be found. Therefore, the researcher chose to undertake both an

Exploratory Factor Analysis (EFA) and a Confirmatory Factor Analysis (CFA). These two means of factor analysis are discussed in more detail in the ensuing section.

#### 5.2.4.1 *Exploratory Factor Analysis*

EFA is an approach that can used to reveal the underlying structure of a set of items on questionnaire without imposing predetermined ideas on the data. One of the primary characteristics of an EFA is that it does not apply a preconceived structure on the data – rather the data is used to derive an empirical model of the underlying factors from the data (Hair, 2010).

During an EFA, the items which comprise the measurement instrument are related to any factors which may underpin the responses which are gathered from respondents (Worthington & Whittaker, 2006). These items can then be grouped into sub-scales which describe and measure various factors in the questionnaire (Kahn, 2006) and items which asses several factors concurrently or do not measure a factor as proposed can be removed from the measurement instrument (Worthington & Whittaker, 2006).

An Exploratory factor analysis was conducted to ascertain the ideal number of underlying factors by identifying Eigenvalues which were larger than 1. The extent of the correlation between the underlying factors and individual items on the questionnaire was examined, and the following interpretations of factor loadings gleaned from Hair *et al*. (2010) were applied:

- A factor loading of 0.4 was considered to meet the minimum requirements for interpretation of structure;
- Loadings of 0.5 and above were considered practically significant;
- Factor loadings which exceed 0.7 reveal a well-defined structure and
- Items which loaded on more than one factor with a factor loading of 0.35 and above where identified as “cross loading” across multiple factors and were thus not unique indicators of a single factor.

While the EFA is most commonly deemed to be a “theory-generating” analysis technique which requires substantial inductive reasoning by the researcher; the CFA tends to be

founded upon strong empirical and theoretical information (Stevens, 2002). Thus an EFA is often followed by a CFA to gain a more comprehensive outcome.

#### 5.2.4.2 *Confirmatory Factor Analysis*

Confirmatory factor analysis (CFA) is an approach used to assess the extent to which a theoretical factor structure or model represents actual data (Hair *et al*., 2010). In other words, it evaluates the validity of the theoretical model, using empirical data.

During a CFA, the items which comprise the measurement instrument are systematically assigned to specific factors identified in the theoretical model (Hair, *et al*., 2010). The CFA is then used to confirm the extent to which the prescribed theoretical factor structure is supported by the data (Kahn, 2006).

The researcher identified underlying theoretical factors which the items of the two organisational energy measures were expected to cluster, and made use of structural equation modelling to make a judgment on how well the proposed factors fit the data. This was achieved by examining chi-squared goodness-of-fit statistics, goodness-of-fit indices and co-variance of the factors.

Goodness-of-fit indices are a measure of the similarity between the observed and estimated co-variance matrices (Hair *et al*., 2010). To establish evidence acceptable fit, it is advisable to use three to four different indices, including Chi-Squared and at least one each of the incremental and absolute measures (Hair *et al*., 2010; Stage, King, Nora, and Barlow, 2006). For purposes of the present study, the following goodness-of-fit indices were utilised:

- Chi-squared statistic and degrees of freedom;
- Two absolute fit measures, namely the Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Residual (SRMR); and
- Two incremental fit measures, namely the Non-normed Fit Index (NNFI) and the Comparative Fit Index (CFI).

Hair *et al*. (2010) provides guidance on the index cut-off points based on model characteristics which can be used to determine goodness of fit. Since the present study

has a sample size of 304 with the ESP containing 35 items, the table below summarises the advised cut off points for a sample size larger than 250 which contains more than 30 observed variables or items. This is supplemented by the interpretation recommendations of Schreiber, *et al*. (2006) and Hu and Bentler (1999).

**Table 5-2: Interpretation of the Goodness-of-Fit Indices Utilised in the Study**

| Fit Index | Hair *et al*., 2010 (where 12< m* <30) | Hair *et al*., 2010 (where m* ≥30) | Schreiber, *et al*. (2006) | Hu & Bentler (1999) |
|---|---|---|---|---|
| Chi-Squared ($\chi^2$) | $\chi^2$ to Df ≥ 2 indicates good fit; 2 ≥ $\chi^2$ to Df ≥ 5 indicates acceptable fit | $\chi^2$ to Df ≥ 2 indicates good fit; 2 ≥ $\chi^2$ to Df ≥ 5 indicates acceptable fit | Ratio: $\chi$2 to df ≤ 2 or 3 | - |
| CFI | Above .92 | Above .90 | .95 ≤CFI ≤1.00 | Above .95 |
| NNFI/TLI | Above .92 | Above .90 | .95 ≤ NNFI ≤ 1.00 | Above .95 |
| SRMR | .08 or less (with CFI above .92) | .08 or less (with CFI above .92) | SRMR ≤ .08 | SRMR ≤.08 |
| RMSEA | Values < .07 (with CFI of .92 or higher) | Values < .07 (with CFI of .90 or higher) | RMSEA ≥ .06 | RMSEA ≥.06 |

**m = number of observed variables*

### 5.2.5 Reliability Analysis

Reliability refers to the consistency of measurement of an instrument (Foxcroft & Roodt, 2005). For the purposes of the present study, Cronbach's Alpha Coefficient (α) will be used as a measure of internal consistency. Internal consistency refers to the extent to which the items which comprise a scale measure the same underlying dimension (Pallant, 2005). The closer the value of Cronbach's Alpha is to 1, the more reliable the measuring instrument (Field, 2009). The following table summarises the interpretation of the values of Cronbach's Alpha, as given by George and Mallery (2003).

**Table 5-3: Interpretation of Cronbach's Alpha Values**

| Value of Cronbach's Alpha | Interpretation |
|---|---|
| > 9 | Excellent |
| > 8 | Good |
| > 7 | Acceptable |
| > 6 | Questionable |
| > 5 | Poor |
| > 4 | Unacceptable |

From the Table 5-3 it is important to note that a Cronbach's Alpha score of 0.7 can be considered an acceptable indicator of reliability (George & Mallery, 2003). This is supported by Field (2009). In the present study, reliability analysis encompasses the following:

- Overall reliability analysis of the whole questionnaire using Cronbach's Alpha;
- Reliability analysis per sub-scale (or dimension) of the questionnaire using Cronbach's Alpha to determine internal consistency; and
- Inter-item reliability analysis, with specific focus on the corrected item-total correlations and Cronbach's Alpha if item deleted aspects.

It is important to note that reliability is a condition of validity (Foxcroft & Roodt, 2005). That is, if a scale is not reliable, it cannot be valid. However, high reliability does not necessarily denote validity, and thus validity was assessed using Factor Analysis.

### 5.2.6 Analysis of Variance

Analysis of Variance (ANOVA) is a statistical technique utilised to compare the mean score of more than two groups on a single dependant measure (Pallant, 2005). For purposes of this study, a one-way between groups ANOVA with post-hoc tests was utilised. The one-way ANOVA is used to measure differences between more than two groups on one variable. If the ANOVA presents a significant result ($p \leq 0.05$), this indicates that there is a significant different among the mean scores of the dependent variable for the different groups.

Further post-hoc testing is used to discover which dependent variables are affected. Once it has been identified which dependent variables are affected, it is important to determine what the impact of the independent variable on the dependent variable is. This is also known as effect size or ETA. ETA squared is a representation of the proportion of variance of the dependent variable which can be explained by the independent variable (Pallant, 2005). Cohen (1988, as cited in Pallant, 2005) provides the guidance on the interpretation of effect size. This is summarised in Table 5-4.

**Table 5-4: Interpretation of Effect Size in MANOVA**

| Effect Size | Interpretation |
|---|---|
| .01 | Small Effect |
| .6 | Moderate Effect |
| .14 | Large Effect |

### 5.2.7 Multivariate Analysis of Variance

Whereas the ANOVA examines groups based on one dependent measure, the Multivariate Analysis of Variance (MANOVA) compares groups on two or more dependent variables.

Wilks' Lambda, also known as the maximum likelihood statistic or multivariate *F*, is one of four fundamental statistics which is utilised to test the significance of the effects revealed between groups on independent variables (Hair *et al*., 2010). An overall *F* value is calculated to determine whether there are any significant differences among the groups of interest for specific variables. A significant value ($p \leq 0.05$) indicates that there are differences between groups.

When a result is significant in a MANOVA ($p \leq 0.05$), further post-hoc testing is used to discover which dependent variables are affected. This is accomplished using a Bonferroni adjustment to the Alpha level used to evaluate statistical significance (Hair *et al*., 2010). The Bonferroni adjustment sets a more stringent alpha value for each comparison of the groups, which adjusts for inflated Type 1 errors (Pallant, 2005). Once it has been identified

which dependent variables are affected, it is important to determine what the impact of the independent variable on the dependent variable is by examining the effect size (Pallant, 2005). For guidance on the interpretation of effect size, please consult Table 5-4 above. For purposes of this study, one-way between-groups MANOVA was performed.

### 5.2.8 Regression Analysis

Regression analysis is a term which encompasses techniques which model and analyse variables with the aim of exploring the forms of the relationship between a dependent variable and one or more independent variables (Sykes, 1993). The aim of a regression analysis is to predict the dependent variable from knowledge which the research has of one or more independent variables (Hair *et al*., 2010). When a single independent variable is utilised, this is known as simple regression. For purposes of this study, as simple linear regression analysis was conducted. Statistics which are of interest in a regression analysis are summarised below.

- The **Significance Value *(p)*** represents the amount of unique contribution that an independent variable is making towards the prediction of a dependent variable. If p is significant ($p \leq 0.05$), it can be deduced that the independent variable in question is making a significant and unique contribution to the prediction of the dependent variable. However if the value of p is not significant ($p \geq 0.05$) then it can be concluded that the independent variable in question is not making a unique contribution to the prediction of the dependent variable (Hair *et al*., 2010).
- **Multiple R** represents the correlation coefficient for the simple regression of the independent variable and the dependent variable. This represents the degree of association between the two variables, and can be interpreted using the guidelines laid out by Cohen (1988), as summarised in Table 5-5. The higher the value of the multiple R, the stronger the relationship between the two variables and the greater the predictive accuracy (Hair *et al*., 2010)
- **R squared**, also known as the coefficient of determination, indicates the percentage of total variation in the dependent variable which can be explained by the regression model (Hair *et al*., 2010).

- The **Regression Coefficients (*b*)** and the **Standardised coefficient (β)** are a reflection of the "change in the dependent measure for every unit change in the independent variable" (Hair *et al*., 2010, p. 211).

### 5.2.9 Pearson Correlation Coefficient

The Pearson Correlation Coefficient (*r*) is used to quantify the strength and direction of a linear relationship between two variables (Field, 2009; Pallant, 2005). When investigating correlations, the two primary aspects examined are strength and direction of the relationship. The direction of the relationship is indicated by the sign in front of the r value. A negative correlation coefficient signifies a negative relationship between the two variables of interest. In other words, high scores on one variable are characterised by low scores on the other variable. Conversely, a positive relationship is associated with high scores on both variables (Pallant, 2005).

The strength of the relationship between the two variables is denoted by the size of the Pearson value. Cohen (1988, as cited in Pallant, 2005) provides guidelines for interpreting the correlation coefficient. These are summarised in Table 5-5.

**Table 5-5: Interpretation of Pearson Correlation Coefficient**

| Correlation Coefficient | Strength of the Relationship | Direction of the Relationship |
|---|---|---|
| r = .10 to .29 | Small | Positive |
| r = -.10 to -.29 | Small | Negative |
| r = .3 to .49 | Medium | Positive |
| r = -.3 to -.49 | Medium | Negative |
| r = .5 to 1 | Large | Positive |
| r = -.5 to -1 | Large | Negative |

### 5.2.10 Recording and Storage of Data Collected in the Study

The responses of participants on each of the two measurement instruments and the biographical questions were captured into a database so that statistical analysis could be undertaken. Results of the study will be retained for a minimum of five years.

## 5.3 RESULTS: ENERGY SCAPES PROFILE

The emphasis of this section is on the statistical analysis of the data to determine whether the adapted version of the ESP can be considered a reliable and valid instrument for use in the South African context. This was achieved by applying the following statistical techniques:

- The Keyser-Meyer Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity;
- Confirmatory Factor Analysis of a Seven-Factor Model;
- Confirmatory Factor Analysis of a One-Factor Model;
- Exploratory Factor Analysis;
- Reliability Analysis of the whole questionnaire and of each of the three sub-scales; and
- Analysis of Variance.

Due to the sample composition, as well as the large number of items in the ESP, the decision was taken to conduct the statistical analysis in the study a single group, and not on African and White Groups, as was carried out on the PEM.

### 5.3.1 Data Screening

The data were screened for univariate outliers. Out-of-range values due to errors by respondents while completing the questionnaire or capturing of the data were identified and recorded as missing data. Missing data was excluded listwise.

### 5.3.2 Sample Adequacy and Sphericity

The Sampling Adequacy and Sphericity of the inter-item correlation matrix was determined by applying the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity to the inter-item correlation matrix of the ESP. The results of the KMO for the ESP are presented in Table 5-17 below.

**Table 5-6: KMO and Bartlett's Test of the Inter Item Correlation of the ESP**

| Test or Measure | | Statistic |
|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | **.967** |
| **Bartlett's Test of Sphericity** | Approx. Chi-Square | 7110.305 |
| | df | 595 |
| | Sig. | .000 |

As evidenced in Table 5-17 above, the KMO measure verified the sampling adequacy for factor analysis, since the value of KMO is 0.967 which is above the 0.6 cut off point set by Pallant (2005) and Hair *et al*. (1998). Bartlett's Test of Sphericity was significant ($p<0.05$), indicating correlations between items were sufficiently large for a factor analysis. Thus the sample is suitable for further analysis by means of factor analysis.

### 5.3.3 Item Descriptive Statistics

Descriptive statistics were used to explore the data. Table 5-7 below provides the item descriptive statistics of the ESP before the Factor Analysis was conducted.

**Table 5-7: Item Descriptive Statistics of the ESP**

| Item | | N Statistic | Mean Statistic | Std. Deviation Statistic | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| ESP1 | Concern for you, personally | 304 | 2.70 | .930 | .018 | -.580 |
| ESP2 | Closeness between colleagues | 304 | 2.96 | .795 | .229 | -.168 |
| ESP3 | Permission for people to be fully themselves | 304 | 2.74 | .916 | .253 | .423 |
| ESP4 | People being able to express themselves | 304 | 2.81 | .893 | .223 | .758 |
| ESP5 | Effective systems and procedures | 304 | 2.74 | .867 | .095 | -.130 |
| ESP6 | People being honest with each other | 304 | 2.39 | .898 | .615 | 1.129 |
| ESP7 | People as spontaneous | 304 | 2.45 | .786 | .246 | .067 |
| ESP8 | People are able to be who they are | 304 | 2.62 | .893 | .343 | .418 |
| ESP9 | Encouragement to pursue ideals | 304 | 2.54 | .907 | .135 | -.454 |
| ESP10 | Alignment of your personal goals and the company goals | 304 | 2.66 | .901 | .195 | -.146 |
| ESP11 | A sense of contribution | 304 | 2.79 | .881 | .052 | -.139 |
| ESP12 | Things being well-organized | 304 | 2.64 | .911 | .157 | -.153 |
| ESP13 | Self-expression through work | 304 | 2.71 | .871 | -.012 | -.688 |
| ESP14 | People being dynamic | 304 | 2.64 | .860 | .302 | .132 |
| ESP15 | People being supported by others | 304 | 2.65 | .896 | .384 | .288 |
| ESP16 | The environment as non-threatening | 303 | 2.67 | .950 | .205 | .020 |
| ESP17 | A strong and healthy `drive' to the | 304 | 2.68 | .934 | .309 | .370 |

| Item | | N Statistic | Mean Statistic | Std. Deviation Statistic | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| | organisation | | | | | |
| ESP18 | People being unafraid to speak their minds | 304 | 2.51 | .905 | .482 | .411 |
| ESP19 | A peaceful atmosphere | 304 | 2.62 | .965 | .347 | .229 |
| ESP20 | A comfortable working environment | 304 | 2.69 | .966 | .167 | .163 |
| ESP21 | A helpful rhythm to work | 304 | 2.57 | .857 | .332 | .452 |
| ESP22 | People 'practicing what they preach' | 304 | 2.26 | .917 | .436 | .004 |
| ESP23 | A capacity to see beyond the day-to-day | 304 | 2.48 | .828 | .158 | .162 |
| ESP24 | People feeling cared for | 304 | 2.42 | .941 | .506 | .401 |
| ESP25 | People being able to 'walk their talk' | 304 | 2.34 | .898 | .701 | 1.517 |
| ESP26 | A strong bond between people | 304 | 2.50 | .926 | .366 | .471 |
| ESP27 | People are motivated | 304 | 2.38 | .933 | .211 | -.481 |
| ESP28 | A sense that you belong to the community | 304 | 2.66 | .868 | .206 | -.050 |
| ESP29 | A vibrant atmosphere | 304 | 2.46 | .847 | .217 | -.086 |
| ESP30 | Warmth in interpersonal relationships | 304 | 2.60 | .858 | .211 | .282 |
| ESP31 | People are empowered | 304 | 2.57 | .931 | .118 | -.584 |
| ESP32 | A sense of direction | 304 | 2.65 | .865 | .146 | .022 |
| ESP33 | People are open to feedback | 304 | 2.58 | .941 | .165 | .173 |
| ESP34 | Clarity on what is expected | 304 | 2.60 | .843 | -.020 | -.284 |
| ESP35 | People valuing each other's' differences | 304 | 2.48 | .852 | .395 | .507 |
| Valid N (listwise) | | 303 | | | | |

Table 5-7 provides an overview of the number of valid cases (N) per group for each of the 35 variables of the ESP, measures of central tendency and dispersion. The sample group consists of a total of 304 respondents.

A four-point response scale ranging from "Not at All" to "To a Very Great Extent" was utilised. The mean values for the respondents ranges between 2.34 and 3.96. This indicates that respondents tended to have answers which fell between above the middle of the range and the top of the range.

Standard Deviation values for group range between 0.786 and 0.966, indicating a small degree of dispersion. The skewness values for the group range between -0.12 and 0.701, indicating a slightly positively skewed distribution. The kurtosis values for the group ranged between -0.688 and 1.517

### 5.3.4 Confirmatory Factor Analysis of a Seven Factor Model

A Confirmatory Factor Analysis (CFA) of the ESP was undertaken on the data. The structural equation models for the seven dimensions underlying the ESP are depicted in Table 5-8 below. Latent variables were allowed to correlate with one another.

**Table 5-8: Maximum Likelihood Estimates of the Seven-Factor Model**

| Fit Indices | Seven-factor solution |
|---|---|
| S-B $x^2$ | 1170.6514 |
| *Df* | 539 |
| CFI | .822 |
| NNFI | .804 |
| RMSEA | .062 |
| 90% confidence Interval of RMSEA | .057; .067 |
| SRMR | .050 |

Table 5-8 indicates the goodness-of-fit for the seven-factor model of the ESP. The Satorra-Bentler chi-square for the seven-factor model of this sample was 1170.6514 on 539 degrees of freedom. The ratio of chi-squared to the degrees of freedom is 2.172, which falls within the range of both Hair *et al*. (2010) and Schreiber *et al*. (2006) for indicating an acceptable fit of the seven-factor model.

The seven-factor model yielded a Comparative Fit Index (CFI) value of 0.822. This is less than the minimum value of 0.90 recommended by Hair *et al*. (2010) to indicate an acceptable fit for a model with more than 30 observed variables and a sample size of above 250. Similarly, it is below the minimum value of 0.95 recommended by Schreiber *et al*., 2005 and Hu and Bentler (1999). The seven-factor model also has a Non-Normed Fit Index (NNFI) of 0.804 which is less than the recommended values of 0.90 and above (Hair *et al*, 2010) and 0.95 and above (Schreiber, *et al*., 2006; Hu and Bentler, 1999). Thus neither the CFI nor the NNFI values for the seven-factor model could be considered acceptable.

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The value for the Root Mean Square Error of Approximation (RMSEA) was estimated at 0.062. This value falls within the guidelines provided by Hair *et al*. (2010) which recommend that the value of RMSEA be below 0.07. Both Schreiber *et al*. (2006) and Bentler and Hu (1999) recommend RMSEA values which fall below 0.06. Using the 90 % confidence interval for the RMSEA, it can be concluded that the true value of RMSEA is between 0.057 and 0.067.Thus both the upper and lower bounds of RMSEA are within the acceptable range in this case. The RMSEA value therefore substantiates the fit of the seven-factor measurement model to the data.

Hair *et al*., (2010) recommend an SRMR value of 0.08 or less for a sample greater than 250, with more than 30 observed variables. This is supported by Schreiber *et al*. (2006) and Hu and Bentler (1999). The seven-factor model yielded a Standardised Root Mean-Square (SRMR) value of 0.050, which is well below the recommended cut off value.

The co-variance values of the seven factors of the ESP were examined. Multiple items loaded on more than one factor with a factor loading of 0.35 and above. These factors “cross loaded” across multiple factors and were thus not unique indicators of a single factor.

Although the chi-squared/Df ratio, the RMSEA and the SRMR meet the minimum recommended standards for acceptable fit, the values of the NNFI and CFI did not substantiate the acceptable fit. Therefore, the data is inconclusive and does not clearly indicate whether the seven-factor model is a good fit of to the data. Due to the inconclusive fit of the seven factor model, a CFA was carried out for a one factor model. The results of this CFA are presented in the section which follows.

### 5.3.5 Confirmatory Factor Analysis of a One Factor Model

The structural equation models for a single dimension underlying the ESP are depicted in Table 5-9. Latent variables were allowed to correlate with one another.

**Table 5-9: Maximum Likelihood Estimates of the One-Factor Model**

| Fit indices | One-factor solution |
|---|---|
| S-B $x^2$ | 1239.0478 |
| *Df* | 560 |
| CFI | .809 |
| NNFI | .797 |
| RMSEA | .063 |
| 90% confidence Interval of RMSEA | .059 to .068 |
| SRMR | .050 |

Table 5-9 indicates the goodness-of-fit for a one-factor model of the ESP. The Satorra-Bentler chi-square for the one-factor model of this sample was 1239.00478 on 560 degrees of freedom. The ratio of chi-squared to the degrees of freedom is 2.213, which falls within the range of both Hair *et al*. (2010) and Schreiber *et al*. (2006) for indicating an acceptable fit.

The one-factor model yielded a CFI value of 0.809, which is less than the cut-off point of 0.90 required to indicate good fit for a model with more than 30 observed variables and a sample size of above 250 (Hair *et al*., 2010). Similarly, it is below the minimum value of 0.95 recommended by Schreiber *et al*., 2005 and Hu and Bentler (1999). The one-factor model also has a NNFI of 0.797 which is less than the recommended values of 0.90 and above (Hair *et al*, 2010) and 0.95 and above (Schreiber, *et al*., 2006). Therefore, neither the CFI nor the NNFI values for the one-factor model could be considered acceptable.

The RMSEA was estimated at 0.063. This value falls within the guidelines provided by Hair *et al*. (2010) which recommend that the value of RMSEA be above 0.07. Both Schreiber *et al*. (2006) and Bentler and Hu (1999) recommend RMSEA values which fall below 0.06. Using the 90 % confidence interval for the RMSEA, it can be concluded that the true value of RMSEA is between 0.059 and 0.068.Thus both the upper and lowers bounds of RMSEA are within the acceptable range in this case. The RMSEA value therefore substantiates the fit of the one-factor measurement model to the data.

Hair *et al*., (2010) recommend an SRMR value of 0.08 or less for a sample greater than 250, with more than 30 observed variables. This is supported by Schreiber *et al*. (2006)

and Hu and Bentler (1999). The one-factor model yielded a SRMR value of 0.050, which is well below the recommended cut off value.

Although the chi-squared/Df ratio, the RMSEA and the SRMR meet the minimum recommended standards for acceptable fit, the values of the NNFI and CFI did not substantiate the acceptable fit. Therefore the data is inconclusive and does not clearly indicate whether the one-factor model is a good fit to the data.

Due to the inconclusive fit of the one-factor model, an EFA was carried out for a one factor model to determine a more valid factor structure. The results of this EFA are presented in the section which follows.

### 5.3.6 Results of an Exploratory Factor Analysis for One Factor

A principal component analysis was conducted on the 35 items of the ESP for the total sample to determine the number of factors of the ESP. The 35 items of the ESP were inter-correlated and the Eigenvalues of the unreduced inter-correlation matrix were calculated. An analysis of the scree plot and Eigenvalues which were larger than one indicated that three factors could be extracted. Principal Axis Factoring was then conducted on the extracted factors. The resulting total variance statistics are provided in Table 5-10.

**Table 5-10: Total Variance Explained for the ESP**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | **17.156** | 49.017 | 49.017 | 16.650 | 47.571 | 47.571 |
| 2 | **1.575** | 4.501 | 53.518 | | | |
| 3 | **1.276** | 3.644 | 57.162 | | | |
| 4 | **1.050** | 3.001 | 60.163 | | | |
| 5 | .970 | 2.771 | 62.933 | | | |
| 6 | .828 | 2.367 | 65.300 | | | |
| 7 | .783 | 2.238 | 67.538 | | | |
| 8 | .750 | 2.144 | 69.682 | | | |
| 9 | .698 | 1.993 | 71.675 | | | |
| 10 | .676 | 1.930 | 73.605 | | | |
| 11 | .641 | 1.830 | 75.436 | | | |
| 12 | .622 | 1.776 | 77.211 | | | |
| 13 | .587 | 1.677 | 78.888 | | | |
| 14 | .569 | 1.625 | 80.514 | | | |
| 15 | .522 | 1.492 | 82.006 | | | |
| 16 | .500 | 1.430 | 83.435 | | | |
| 17 | .478 | 1.366 | 84.801 | | | |
| 18 | .427 | 1.221 | 86.022 | | | |
| 19 | .398 | 1.138 | 87.160 | | | |
| 20 | .385 | 1.101 | 88.262 | | | |
| 21 | .379 | 1.082 | 89.344 | | | |
| 22 | .362 | 1.033 | 90.377 | | | |
| 23 | .343 | .980 | 91.358 | | | |
| 24 | .341 | .974 | 92.332 | | | |
| 25 | .314 | .897 | 93.228 | | | |
| 26 | .303 | .867 | 94.095 | | | |
| 27 | .284 | .811 | 94.906 | | | |
| 28 | .270 | .771 | 95.677 | | | |
| 29 | .251 | .718 | 96.395 | | | |
| 30 | .244 | .696 | 97.092 | | | |
| 31 | .231 | .659 | 97.751 | | | |
| 32 | .212 | .605 | 98.356 | | | |
| 33 | .208 | .594 | 98.950 | | | |
| 34 | .187 | .534 | 99.485 | | | |
| 35 | .180 | .515 | 100.000 | | | |

Extraction Method: Principal Axis Factoring.

Initially 4 factors with Eigenvalues above 1 were identified, with the first factor exhibiting an extremely high Eigenvalue (17.156) followed by a marked decline to 1.575, 1.276 and 1.050 for the second, third and fourth factor Eigenvalues. Upon closer inspection, a single factor was extracted and accounted for 47.571 percent of the Extraction Sums of Squared Loadings.

The extracted factors should account for at least 50 percent of the combined variance explained in the data (Stevens, 2002) which would indicate that it is the ESP factor which explains organisational energy and not another underlying variable which has not been identified by the data. Since the single factor contributed to 47.571 of the total variance explained, it is possible that the single factor explains organisational energy.

#### 5.3.6.1 *Scree plot*

An examination of the inflection points present in the scree plots for the ESP Groups was undertaken. The scree plot for the ESP is presented in Figure 5-2.

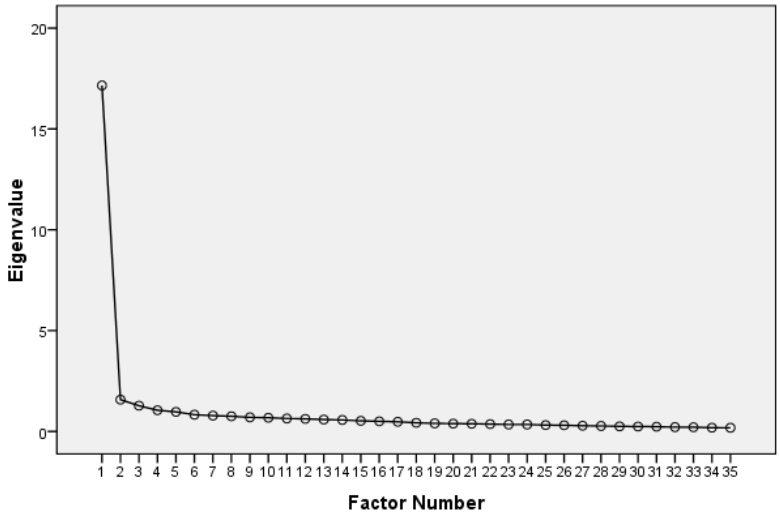


**Figure 5-2: Scree Plot for the ESP**

As is indicated by the scree plot, a single inflection point confirms the extraction of a single factor.

#### 5.3.6.2 *Factor Matrix*

A factor matrix contains the factor loadings of each item of the questionnaire on the underlying factors. The correlations between each item and the single extracted factor are illustrated in the factor matrix for the ESP reported in Table 5-11.

**Table 5-11: Factor Matrix of the ESP**

| Item | Item Description | Factor 1 |
|---|---|---|
| **ESP1** | Concern for you, personally | .518 |
| **ESP2** | Closeness between colleagues | .488 |
| **ESP3** | Permission for people to be fully themselves | .639 |
| **ESP4** | People being able to express themselves | .665 |
| **ESP5** | Effective systems and procedures | .598 |
| **ESP6** | People being honest with each other | .678 |
| **ESP7** | People as spontaneous | .526 |
| **ESP8** | People are able to be who they are | .648 |
| **ESP9** | Encouragement to pursue ideals | .684 |
| **ESP10** | Alignment of your personal goals and the company goals | .668 |
| **ESP11** | A sense of contribution | .684 |
| **ESP12** | Things being well-organized | .701 |
| **ESP13** | Self-expression through work | .643 |
| **ESP14** | People being dynamic | .724 |
| **ESP15** | People being supported by others | .709 |
| **ESP16** | The environment as non-threatening | .631 |
| **ESP17** | A strong and healthy `drive' to the organisation | .791 |
| **ESP18** | People being unafraid to speak their minds | .597 |
| **ESP19** | A peaceful atmosphere | .682 |
| **ESP20** | A comfortable working environment | .734 |
| **ESP21** | A helpful rhythm to work | .734 |
| **ESP22** | People 'practicing what they preach' | .724 |
| **ESP23** | A capacity to see beyond the day-to-day | .687 |
| **ESP24** | People feeling cared for | .800 |
| **ESP25** | People being able to 'walk their talk' | .779 |
| **ESP26** | A strong bond between people | .752 |
| **ESP27** | People are motivated | .722 |
| **ESP28** | A sense that you belong to the community | .720 |
| **ESP29** | A vibrant atmosphere | .768 |
| **ESP30** | Warmth in interpersonal relationships | .695 |
| **ESP31** | People are empowered | .727 |
| **ESP32** | A sense of direction | .742 |
| **ESP33** | People are open to feedback | .709 |
| **ESP34** | Clarity on what is expected | .681 |
| **ESP35** | People valuing each other's' differences | .757 |

Extraction Method: Principal Axis Factoring.
1 factor extracted. 3 iterations required.

It is clear that all the items of the ESP load onto the single identified factor, with factor loadings ranging between 0.488 and 0.800. These values are all above the 0.4 value recommended by Hair *et al*. (2010) as the minimum value for the interpretation of structure. Furthermore, apart from a single factor loading of 0.488, all factor loadings were above the 0.5 value, indicating that they are practically significant (Hair, *et al*., 2010).

Almost half of the factors had factor loadings above 0.7 indicating that they were indicative of a well-defined structure (Hair *et al*., 2010).

From the above table, it is clear that only one factor was extracted, and therefore rotation could not be applied.

Thus to summarise, only one factor was discovered in the structure of the ESP. Based on the review of the literature on the Seven Energies of Organisation, and the ESP itself, it is likely that this single factor is organisational energy. However, it is supposed that by investigating the relationship between the two measures of organisational energy, namely the PEM and the ESP, further clarity could be given on the nature of the dimension revealed by the Factor analysis of the ESP.

### 5.3.7 Total Descriptives of Variables

Table 5-12 provides a summary of the descriptive statistics of the seven factors of the ESP identified by the theory, as well the descriptive statistics of the combined variable, organisational energy.

**Table 5-12: Total Descriptive Statistics of the ESP**

| Factor | N | Mean | Std. Deviation | Skewness | Kurtosis | Cronbach's Alpha |
|---|---|---|---|---|---|---|
| ESP Overall Score | 303 | 2.5909 | .62214 | .756 | 2.509 | .969 |
| Existence | 303 | 2.6521 | .69324 | .526 | 1.709 | .802 |
| Community | 304 | 2.6283 | .69062 | .703 | 1.720 | .845 |
| Integration | 304 | 2.4612 | .69800 | .864 | 2.343 | .850 |
| Meaning | 304 | 2.6079 | .66556 | .689 | 2.133 | .801 |
| Activity | 304 | 2.5007 | .65803 | .433 | 1.147 | .808 |
| Inspiration | 304 | 2.6671 | .69527 | .357 | 1.130 | .827 |
| Control | 304 | 2.6329 | .68974 | .501 | 1.089 | .834 |
| Valid N (listwise) | 303 | | | | | |

It is apparent that the scales of the ESP have relatively low values of skewness and slightly higher values of kurtosis. Standard Deviation values for all seven scales, as well as the overall ESP indicate a small degree of dispersion.

The Cronbach's Alpha Coefficients of the sub-scales range from 0.801 to 0.845, indicating a high level of internal consistency for all the sub-scales, when compared with the guidelines of George and Mallery (2003). The overall value of Cronbach's Alpha for the ESP is 0.969 indicating that an excellent level of reliability for the ESP overall.

Considering that a four-point scale was utilised for responses, it is apparent that respondents tended to have slightly above average scores on all seven dimensions, with the Inspiration Dimension scores being marginally higher than those of the Existence, Community, Meaning and Control Dimensions scores. The Integration and Activity Dimension scores were marginally lower than the scores of the other five dimensions.

### 5.3.8 Normality

Kolmogorov-Smirnov Test for normality was carried out on the ESP to determine the normality of the scale obtained in the factor analysis. The results of the normality tests are summarised in Table 5-13 below.

**Table 5-13: Normality Tests for the ESP**

| | | ESP Overall |
|---|---|---|
| N | | 303 |
| **Normal Parameters** | Mean | 2.5909 |
| | Std. Deviation | .62214 |
| **Most Extreme Differences** | Absolute | .058 |
| | Positive | .058 |
| | Negative | -.030 |
| **Kolmogorov-Smirnov Z** | | **1.018** |
| **Asymp. Sig. (2-tailed)** | | .252 |

The z statistic for the ESP is 1.018. The value is non-significant ($p \geq 0.05$), indicating that the ESP scale conforms to normality. This indicates that the ESP is suitable for parametric statistical procedures.

### 5.3.9 Analysis of Variance

Due to the fact that the factor analysis revealed a single factor structure for the ESP, one way between groups ANOVA was conducted to explore the impact of biographical variables on the overall score of the ESP. The results of the ANOVA are presented in Table 5-14.

**Table 5-14: Results of ANOVA Investigating Biographical Differences in ESP Results**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **Gender** | Between Groups | 21.382 | 132 | .162 | .799 | .911 |
| | Within Groups | 33.855 | 167 | .203 | | |
| | Total | 55.237 | 299 | | | |
| **Home Language** | Between Groups | 84.606 | 132 | .641 | .907 | .721 |
| | Within Groups | 118.074 | 167 | .707 | | |
| | Total | 202.680 | 299 | | | |
| **Ethnicity** | Between Groups | 43.804 | 132 | .332 | 1.179 | .157 |
| | Within Groups | 47.286 | 168 | .281 | | |
| | Total | 91.090 | 300 | | | |
| **Qualification** | Between Groups | 180.274 | 131 | 1.376 | .979 | .549 |
| | Within Groups | 230.590 | 164 | 1.406 | | |
| | Total | 410.865 | 295 | | | |
| **Job level** | Between Groups | 151.765 | 131 | 1.159 | 1.340 | **.037*** |
| | Within Groups | 144.369 | 167 | .864 | | |
| | Total | 296.134 | 298 | | | |
| **Years in Company** | Between Groups | 54.552 | 126 | .433 | 1.087 | .311 |
| | Within Groups | 60.545 | 152 | .398 | | |
| | Total | 115.097 | 278 | | | |
| **Years in Current Job** | Between Groups | 52.921 | 125 | .423 | 1.401 | **.025*** |
| | Within Groups | 43.508 | 144 | .302 | | |
| | Total | 96.430 | 269 | | | |

*statistically significant

From the results of Table 5-14, it is evident that statistically significant differences only exist between job level, years in current job and the overall ESP score. Results show no statistically significant differences between gender, home language, ethnicity, qualifications and years in the company. The results of the significant relationships between the biographical variables and the ESP dimensions are reported below.

**Table 5-15: Dunnett Post-hoc Test for Job Level and ESP Total Score**

| (I) Job level | (J) Job level | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| Middle Management | Top Management | -.56657 | .25411 | .056 | -1.1456 | .0124 |
| Senior Management | Top Management | **-.71520*** | .25931 | .014 | -1.3061 | -.1243 |
| Staff | Top Management | **-.75289*** | .26229 | .010 | -1.3505 | -.1553 |
| Supervisory | Top Management | -.23290 | .30989 | .697 | -.9390 | .4732 |

*statistically significant

Post-hoc comparisons indicated that the mean score for the top management job level was significantly different from senior management and staff job levels. Individuals with jobs on top management level experienced higher levels of organisational energy as measured by the ESP than those on senior management and staff levels.

**Table 5-16: Dunnett Post-hoc Test for Years in Job and ESP Total Score**

| (I) 1 | (J) 1 | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 0 – 10 years | 21 -30 years | -.24681 | .15657 | .166 | -.5824 | .0888 |
| 11-20 years | 21 – 30 years | -.30746 | .16872 | .102 | -.6691 | .0542 |

Further post-hoc testing revealed no significant differences between years in current job and the overall ESP score.

### 5.3.10 Summary of Results for the ESP

To conclude the information presented in the preceding section (section 5.3), the results of the statistical analysis of the ESP can be summarised as follows:

- The results of a CFA for both a seven-factor and a one-factor model were inconclusive, indicating that neither model was a good fit to the data.
- Due to the inconclusive fit of the two models, an EFA was carried out for a one factor model to determine a more valid factor structure. Only one factor was discovered in the structure of the ESP based on the review of the literature on the Seven Energies

Organisation model, and the ESP itself, it is likely that this single factor is organisational energy.

- The overall value of Cronbach's Alpha for the ESP is indicated an excellent level of reliability for the ESP overall. The Cronbach's Alpha Coefficients of the sub-scales indicated a high level of internal consistency for all the sub-scales.
- Further investigation of the relationship between the two measures of organisational energy, namely the PEM and the ESP would provide clarity on the nature of the dimension revealed by the Factor analysis of the ESP.
- Statistically significant differences only exist between job level, years in current job and the overall ESP score. Results show no statistically significant differences between gender, home language, ethnicity, qualifications and years in the company.

## 5.4 RESULTS: PRODUCTIVE ENERGY MEASURE

The emphasis of this section is on the statistical analysis of the data to determine whether the PEM can be considered a reliable and valid instrument for use in the South African context. This was achieved by applying the following statistical techniques:

- The Keyser-Meyer Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity;
- Exploratory Factor Analysis;
- Confirmatory Factor Analysis of a Three Factor Model;
- Reliability Analysis of the whole questionnaire and of each of the three sub-scales as well as inter-item reliability analysis;
- Inter-item reliability analysis of the three sub-scales; and
- Multivariate Analysis of Variance.

Due to the sample composition, the decision was taken to conduct the statistical analysis of the PEM on Indigenous and White Groups. Although the best strategy would have been to define cultural groups in terms of the various Indigenous Languages, Afrikaans and English, the sample sizes of these language groups were not large enough to satisfy the assumptions of the statistical techniques utilised in the study.

### 5.4.1 Data Screening

The data were screened for univariate outliers. Out-of-range values due to errors by respondents while completing the questionnaire or capturing of the data were identified and recorded as missing data. Missing data was excluded listwise.

### 5.4.2 Sample Adequacy and Sphericity

The Sampling Adequacy and Sphericity of the inter-item correlation matrix was determined by applying the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's

Test of Sphericity to the inter-item correlation matrix of the PEM. The results of the KMO for the PEM for the Indigenous and White groups are presented in Table 5-17 below.

**Table 5-17: KMO and Bartlett's Test of the Inter Item Correlation of the PEM**

| | | Indigenous | White |
|---|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | **.915** | **.905** |
| **Bartlett's Test of Sphericity** | Approx. Chi-Square | 943.355 | 943.355 |
| | Df | 91 | 91 |
| | Sig. | .000 | .000 |

As evidenced in Table 5-17 above, the KMO measure for the Indigenous group verified the sampling adequacy for factor analysis, since the value of KMO is 0.915 which is above the 0.6 cut off point set by Hair *et al*. (2010) and Pallant (2005). Bartlett's Test of Sphericity for the Indigenous group was significant ($p<0.05$), indicating correlations between items were sufficiently large for a factor analysis. Similarly, the KMO measure for the White group verified the sampling adequacy for factor analysis since the value of KMO is 0.905, and Bartlett's Test for Sphericity is significant ($p<0.05$). Thus the sample is suitable for further analysis by means of factor analysis.

### 5.4.3 Item Descriptive Statistics

Descriptive statistics were used to explore the data. Table 5-18 below provides the item descriptive statistics of the PEM before the Exploratory Factor Analysis was conducted.

**Table 5-18: Item Descriptive Statistics of the PEM**

| Item | Indigenous | | | | | White | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Std. Deviation | Skewness | Kurtosis | N | Mean | Std. Deviation | Skewness | Kurtosis |
| **PEM1** | 189 | 3.07 | .896 | -.012 | -.055 | 103 | 3.19 | .875 | -.123 | -.350 |
| **PEM2** | 189 | 3.07 | .812 | .053 | -.175 | 103 | 3.25 | .904 | -.201 | -.469 |
| **PEM3** | 189 | 3.02 | .809 | .215 | .668 | 103 | 3.14 | .919 | .111 | -.438 |
| **PEM4** | 189 | 2.99 | .878 | .010 | .063 | 103 | 3.14 | .864 | .011 | .219 |
| **PEM5** | 189 | 2.95 | .861 | .052 | .134 | 103 | 2.68 | 1.012 | .220 | -.166 |
| **PEM6** | 189 | 3.51 | .903 | -.193 | .044 | 103 | 3.74 | .700 | -.989 | 2.136 |
| **PEM7** | 189 | 3.72 | .838 | -.362 | -.080 | 103 | 3.89 | .815 | -1.127 | 2.324 |

| Item | Indigenous | | | | | White | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Std. Deviation | Skewness | Kurtosis | N | Mean | Std. Deviation | Skewness | Kurtosis |
| **PEM8** | 189 | 3.49 | .891 | -.181 | -.312 | 103 | 3.84 | .849 | -.676 | .585 |
| **PEM9** | 189 | 3.37 | .939 | -.090 | -.484 | 103 | 3.55 | 1.026 | -.396 | -.591 |
| **PEM10** | 189 | 3.56 | .975 | -.297 | -.483 | 103 | 3.55 | .947 | -.263 | -.211 |
| **PEM11** | 189 | 3.39 | .997 | -.168 | -.495 | 102 | 3.54 | .972 | -.278 | -.350 |
| **PEM12** | 189 | 3.00 | 1.238 | .102 | -.914 | 103 | 3.25 | 1.161 | -.088 | -1.046 |
| **PEM13** | 189 | 3.26 | 1.018 | -.215 | -.276 | 103 | 3.61 | .819 | -.258 | -.375 |
| **PEM14** | 189 | 3.10 | 1.027 | .046 | -.355 | 103 | 3.46 | 1.017 | -.278 | -.488 |
| Valid N (listwise) | 189 | | | | | 102 | | | | |

Table 5-18 provides an overview of the number of valid cases (N) per group for each of the 14 variables of the PEM, measures of central tendency and dispersion. The data is divided into two groups, namely Indigenous and White.

The Indigenous Group consists of a total 189 respondents, while the white group consists of 103 respondents in total. A five-point response scale was used ranging from “Never” to “Frequently, if not Always” on the affective dimension, and “strongly disagree” to “strongly agree” on the cognitive and behavioural dimensions. The mean values for the Indigenous group range between 2.96 and 3.72 and for the White group range between 2.68 and 3.89. This indicates that the both the Indigenous and the White Groups tended to average or middle of the range answers.

Standard Deviation values for the Indigenous Group range between 0.809 and 1.238, and between 0.700 and 1.161 for the White Group, indicating a small degree of dispersion.
The skewness values for the White group range between -1.127 and 0.220, indicating a negatively skewed distribution. Similarly, the Indigenous Group also presented a distribution which was negative, however the skewness values were lower than the white group, and ranged between -0.362 and 0.215. The kurtosis values for the Indigenous group range between -0.914 and 0.668, and for the White group range between -1.046 and 2.324.

### 5.4.4 Results of the Exploratory Factor Analysis

Firstly, a principal component analysis was conducted on the 14 items of the PEM to determine the number of factors of the PEM in the total sample. The 14 items of the PEM were inter-correlated and the Eigenvalues of the unreduced inter-correlation matrix were calculated. An analysis of the scree plot and Eigenvalues which were larger than one indicated that three factors could be extracted. Principal Axis Factoring with direct oblimin rotation was then used to determine the solution for the Indigenous and White Groups respectively. The resulting total variance statistics are provided in Table 5-19.

**Table 5-19: Total Variance Explained for the PEM**

| Factor | Indigenous | | | | | | White | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| **1** | **6.981** | **49.863** | **49.863** | **6.601** | **47.150** | **47.150** | **7.336** | **52.398** | **52.398** | **6.998** | **49.988** | **49.988** |
| **2** | **1.514** | **10.814** | **60.677** | **1.138** | **8.127** | **55.277** | **1.478** | **10.556** | **62.954** | **1.161** | **8.294** | **58.282** |
| **3** | **1.104** | **7.889** | **68.566** | **.697** | **4.981** | **60.258** | **1.095** | **7.822** | **70.776** | **.690** | **4.930** | **63.213** |
| **4** | .692 | 4.944 | 73.510 | | | | .809 | 5.781 | 76.558 | | | |
| **5** | .572 | 4.085 | 77.595 | | | | .559 | 3.990 | 80.548 | | | |
| **6** | .558 | 3.984 | 81.580 | | | | .507 | 3.620 | 84.168 | | | |
| **7** | .488 | 3.483 | 85.063 | | | | .444 | 3.169 | 87.337 | | | |
| **8** | .411 | 2.933 | 87.995 | | | | .403 | 2.879 | 90.215 | | | |
| **9** | .370 | 2.642 | 90.638 | | | | .341 | 2.439 | 92.655 | | | |
| **10** | .326 | 2.326 | 92.964 | | | | .278 | 1.988 | 94.642 | | | |
| **11** | .297 | 2.121 | 95.085 | | | | .256 | 1.825 | 96.468 | | | |
| **12** | .288 | 2.055 | 97.140 | | | | .185 | 1.320 | 97.788 | | | |
| **13** | .222 | 1.589 | 98.728 | | | | .177 | 1.263 | 99.051 | | | |
| **14** | .178 | 1.272 | 100.000 | | | | .133 | .949 | 100.000 | | | |

Extraction Method: Principal Axis Factoring.

From Table 5-19, it can be determined that for both the Indigenous and the White group, a total of three factors had eigenvalues larger than 1 and were extracted for further analysis.

In the Indigenous group, the three factors contributed to 68.566 percent of the initial Eigen variance and 60.258 percent of the Extraction Sums of Squared Loadings. This means that for the Indigenous group, three factors account for 60.258 percent of the total variance explained.

In the White group, the three factors contributed to 70.776 percent of the initial Eigen variance and 63.213 percent of the Extraction Sums of Squared Loadings. This means that for the White group, three factors account for 63.213 percent of the total variance explained.

#### 5.4.4.1 *Scree plot*

An examination of the inflection points present in the scree plots for the Indigenous and White Groups confirmed the extraction of three factors for both groups. The scree plots for the Indigenous and White Groups are presented in Figure 5-3 and Figure 5-4 respectively.

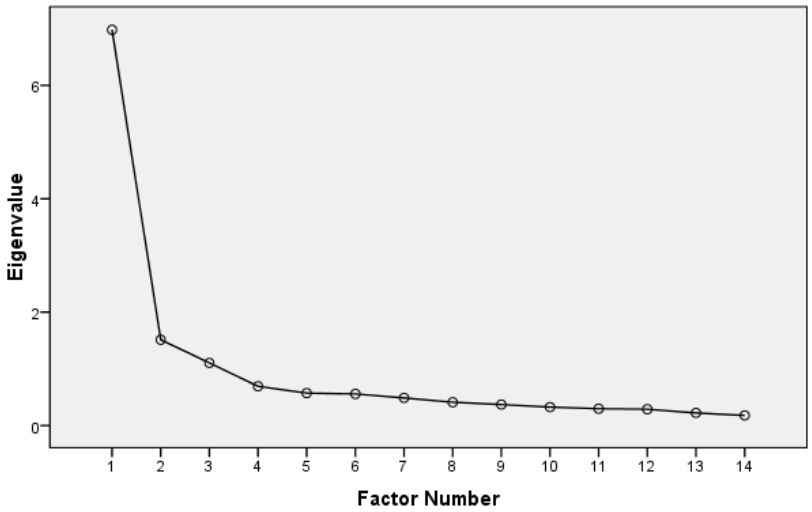


**Figure 5-3: Scree Plot for the Indigenous Group**

As evidenced in Figure 5-3 above, the inflection points of the scree plot for the Indigenous group fall at factors 2 and 4, substantiating the extraction of three factors.

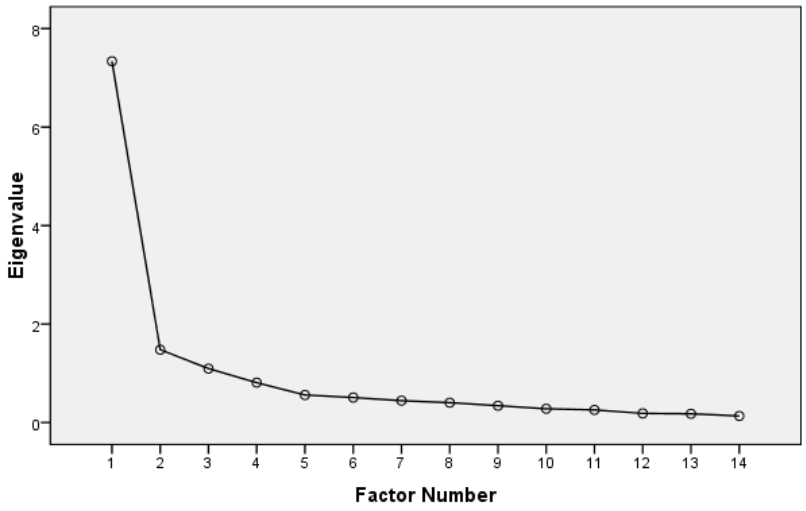


**Figure 5-4: Scree Plot for the White Group**

As evidenced in Figure 5-4 above, the inflection points of the scree plot for the White group indicate that there are 4 possible factors which can be extracted, but examination of Eigenvalues resulted in extraction of 3 factors.

### 5.4.4.2 *Pattern matrix*

The pattern matrices for the Indigenous and White respondents are reported in Table 5-20 below.

**Table 5-20: Pattern Matrices for the Indigenous and White Groups**

| | | Factor: Indigenous | | | Factor: White | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| **PEM1** | People in my work group feel excited in their job | .044 | **-.861** | .102 | .029 | **-.884** | .077 |
| **PEM2** | People in my work group feel enthusiastic in their job. | .187 | **-.751** | .055 | .230 | **-.717** | -.028 |
| **PEM3** | People in my work group feel energetic in their job. | -.009 | **-.738** | -.175 | .069 | **-.891** | .005 |
| **PEM4** | People in my work group feel inspired in their job. | -.065 | **-.850** | -.059 | .069 | **-.829** | -.018 |
| **PEM5** | People in my work group feel ecstatic in their job. | .018 | **-.747** | -.069 | -.184 | **-.861** | -.103 |
| **PEM6** | My work group is ready to act at any given time. | **.621** | -.158 | -.018 | **.548** | -.118 | -.047 |
| **PEM7** | People in my work group are mentally alert. | **.802** | -.044 | .114 | **.908** | .105 | .057 |
| **PEM8** | In my work group there is a collective desire to make something happen. | **.712** | -.093 | -.058 | **.600** | -.062 | -.219 |
| **PEM9** | People in my work group really care about the fate of this company. | **.511** | -.063 | -.207 | .077 | -.056 | **-.728** |
| **PEM10** | People in my work group are always on the lookout for new opportunities. | **.411** | .034 | -.266 | -.041 | .009 | **-.670** |
| **PEM11** | People in my work group will go out of their way to ensure the company succeeds. | .321 | .089 | **-.534** | .010 | .050 | **-.902** |

| | | Factor: Indigenous | | | Factor: White | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| **PEM12** | People in my work group often work extremely long hours without complaining. | -.090 | -.091 | **-.745** | .202 | -.150 | **-.458** |
| PEM13 | There has been a great deal of activity in my work group. | .017 | -.115 | **-.738** | **.422** | -.155 | -.238 |
| PEM14 | People in my work group are working at a very fast pace. | .205 | -.120 | **-.601** | **.544** | -.123 | -.056 |

Those items which load on the factor indicate the unique contribution of each item to a particular factor. Factor loadings of 0.4 and above were considered substantive (Stevens, 2002).

The pattern matrix for the Indigenous Group illustrates the factor loadings of each item onto each of the three factors (Field, 2009). Items PEM6 to PEM10 loaded on the Factor 1 for the Indigenous Group with strong factor loadings ranging from 0.411 to 0.802. Items PEM1 to PEM 5 loaded on the Factor 2, with strong factor loadings ranging from 0.738 to 0.861. Items PEM11 to PEM14 loaded on the Factor 3 Dimension, with factor loadings ranging from 0.534 to 0.745. Although PEM11 also had a factor loading of 0.321 on the Factor 1, it is below the 0.35 value required by Hair *et al*. (2010) to distinguish cross loadings. Thus PEM11 for the Indigenous Group can be retained without adjustments.

The pattern matrix for the White Group illustrates the factor loadings of each item onto each of the three factors (Field, 2009). Items PEM6 to PEM8 loaded on the Factor 1 for the Indigenous Group with strong factor loadings ranging from 0.548 to 0.908. However, PEM9 and PEM10 loaded on Factor 3 with strong factor loadings of 0.728 and 0.670 respectively. Items PEM1 to PEM 5 loaded on the Factor 2, with strong factor loadings ranging from 0.717 to 0.891. PEM11 and PEM12 loaded on the Factor 3 Dimension, with factor loadings of 0.902 and 0.458 respectively. However, PEM13 and PEM14 loaded on Factor 1 with factor loadings of 0.422 and 5.44.

The factor labels proposed by Cole *et al*. (2011; 2005) were confirmed by the extracted factors for the Indigenous Group. The three factors were labelled as follows:

- Factor 1: Cognitive Dimension
- Factor 2: Affective Dimension
- Factor 3: Behavioural Dimension

However, the items for the cognitive and behavioural dimension for the Indigenous and White Group loaded differently. The pattern matrices for the three-factor solution for the Indigenous and White participants were therefore used as inputs for an EFA with target rotations.

Factors obtained in each group were compared by using a factor congruence coefficient, Tucker's phi (Van de Vijver & Leung, 1997). Values above 0.90 are taken to point essential agreement between cultural groups, while values above 0.95 point to very good agreement. A high agreement implies that the factor loadings of the lower and higher levels are equal up to a multiplying constant. The following Tucker's phi coefficients were obtained: Affective = 0.92; Cognitive = 0.98 and Behavioural = 0.96. All three coefficients were above the minimum value required to interpret essential agreement. Furthermore, coefficients for the affective and cognitive dimensions were both above 0.95, indicating very good agreement. Since these coefficients compared favourably with the guideline of 0.90 and can therefore be regarded as acceptable. These results indicate construct equivalence two ethnic groups.

#### 5.4.4.3 *Factor correlation matrix*

The factor correlation matrix indicates the strength of the association between the factors, or the extent to which the factors are distinct and unrelated, also known as discriminant validity. A correlation of 0.3 and above is considered significant. However, the correlations between factors should not exceed 0.7, as this indicates a majority of shared variance between the factors (Hair *et al*., 2010). The factor correlation matrix for both the Indigenous and the White groups is presented in Table 5-21 below.

**Table 5-21: Factor Correlation Matrix for Indigenous and White Groups**

| Factor | Indigenous | | | White | | |
|---|---|---|---|---|---|---|
| | **Affective** | **Cognitive** | **Behavioural** | **Affective** | **Cognitive** | **Behavioural** |
| **Affective** | 1.000 | **-.595** | **-.561** | 1.000 | **-.538** | **-.598** |
| **Cognitive** | **-.595** | 1.000 | **.495** | **-.538** | 1.000 | **.630** |
| **Behavioural** | **-.561** | **.495** | 1.000 | **-.598** | **.630** | 1.000 |

From the results of Table 5-21 it is clear that all the factor correlations are above the 0.3 value which Hair *et al*. (2010) recommend for interpreting correlations. It is also worth

noting that no factors are equal to or greater than 0.7. It is therefore evident that the three factors can be clearly distinguished from each other.

### 5.4.5 Normality

Kolmogorov-Smirnov Test for normality was carried out on the PEM on both Indigenous and the White groups to determine the normality of the scale obtained in the factor analysis. The results of the normality tests are summarised in Table 5-22 below.

**Table 5-22: Normality Tests for the PEM for Indigenous and White Groups**

| | | PEM Ave Indigenous | PEM Ave White |
|---|---|---|---|
| N | | 189 | 102 |
| **Normal Parameters** | Mean | 3.2435 | 3.4284 |
| | Std. Deviation | .66690 | .67040 |
| **Most Extreme Differences** | Absolute | .050 | .092 |
| | Positive | .044 | .049 |
| | Negative | -.050 | -.092 |
| **Kolmogorov-Smirnov Z** | | **.688** | **.926** |
| **Asymp. Sig. (2-tailed)** | | .732 | .357 |

The z statistic for the Indigenous and White groups is .688 and .926 respectively. Both these values are non-significant ($p \geq 0.05$), indicating that the scale for both groups conforms to normality. This indicates that the PEM is suitable for parametric statistical procedures.

### 5.4.6 Results of the Confirmatory Factor Analysis of a Three Factor Model

A Confirmatory Factor Analysis (CFA) of the PEM was undertaken on the data. The structural equation models for the three dimensions underlying the PEM are depicted in Table 5-23 below. Latent variables were allowed to correlate with one another.

**Table 5-23: Maximum Likelihood Estimates of the Three-Factor Model**

| Fit indices | Seven-factor solution |
|---|---|
| S-B $x^2$ | 131.3018 |
| *Df* | 74 |
| NNFI | .961 |
| CFI | .969 |

| Fit indices | Seven-factor solution |
|---|---|
| RMSEA | .051 |
| 90% confidence Interval of RMSEA | .036; .064 |
| SRMR | .044 |

Table 5-23 indicates the goodness-of-fit for the three-factor model of the PEM. The Satorra-Bentler chi-square for the three-factor model of this sample was 131.3018 on 74 degrees of freedom. The ratio of chi-squared to the degrees of freedom is 1.774, which falls within the range of both Hair *et al*. (2010) and Schreiber *et al*. (2006) for indicating a good fit.

The three-factor model yielded a CFI value of 0.969. This is above the minimum value of 0.92 recommended by Hair *et al*. (2010) to indicate an acceptable fit for a model with between 12 and 30 observed variables and a sample size of above 250. Similarly, it is above the minimum value of 0.95 recommended by Schreiber *et al*., 2005 and Hu and Bentler (1999). The three-factor model also has a NNFI of 0.961 which is above the recommended values of 0.92 and above (Hair *et al*, 2010) and 0.95 and above (Schreiber, *et al*., 2006; Hu and Bentler, 1999). Thus both the CFI and the NNFI values for the three-factor model could be considered acceptable.

The value for the RMSEA was estimated at 0.051. This value falls within the guidelines provided by Hair *et al*. (2010) which recommend that the value of RMSEA be below 0.07. Both Schreiber *et al*. (2006) and Bentler and Hu (1999) recommend RMSEA values which fall below 0.06. Using the 90 % confidence interval for the RMSEA, it can be concluded that the true value of RMSEA is between 0.036 and 0.064.Thus both the upper and lower bounds of RMSEA are well within the acceptable range in this case. The RMSEA value therefore substantiates the fit of the three-factor measurement model to the data.

Hair *et al*., (2010) recommend an SRMR value of 0.08 or less for a sample greater than 250, with between 12 and 30 observed variables. This is supported by Schreiber *et al*. (2006) and Hu and Bentler (1999). The three-factor model yielded a Standardised Root Mean-Square (SRMR) value of 0.044, which is well below the recommended cut off value.

The chi T squared/Df ratio and the values of CFI, NNFI, RMSEA and SRMR meet the minimum recommended standards for acceptable fit and thus substantiate the acceptable fit. Therefore the data is clearly indicates that the three-factor model is a good fit to the data.

### 5.4.7 Total Descriptives of the Factors

Table 5-24 provides a summary of the descriptive statistics of the three factors of the PEM identified during factor analysis.

**Table 5-24: Total Descriptive Statistics of the Three Factors of the PEM**

| | N | Mean | Std. Deviation | Skewness | Kurtosis | α |
|---|---|---|---|---|---|---|
| **Affective Dimension** | 304 | 3.0368 | .76591 | .041 | .199 | .918 |
| **Cognitive Dimension** | 304 | 3.6020 | .71196 | -.404 | .167 | .822 |
| **Behavioural Dimension** | 303 | 3.2805 | .85575 | -.180 | -.334 | .829 |
| Valid N (listwise) | 303 | | | | | |

It is apparent that the scales of the PEM have relatively normal distributions, with low values of skewness and kurtosis. Standard Deviation values for all three scales indicate a small degree of dispersion. Cronbach's Alpha values for the affective (α = 0.918) dimension indicated a high level of consistency, and could be described as excellent" (George & Mallery, 2003). Similarly, the Cronbach's Alpha values for the cognitive (α =0.822) and behavioural (α = 0.829) dimensions indicated high levels of internal consistency and could be described as good (George & Mallery, 2003).

Considering that a five-point scale was utilised for responses, it is apparent that respondents tended to have average scores on all three dimensions, with the cognitive dimension scores being marginally higher those of the behavioural dimension, and the affective dimension respectively.

### 5.4.8 Overall Reliability of the PEM

The overall reliability statistics of the PEM as a measurement instrument are reflected in Table 5-25.

**Table 5-25: Overall Reliability Statistics for the PEM**

| Cronbach's Alpha | N of Items |
|---|---|
| .920 | 14 |

The overall value of Cronbach's Alpha for the PEM is 0.920 for the 14 items, indicating that an excellent level of reliability for the PEM overall (George & Mallery, 2003).
The results of the inter-item reliability analysis are presented in the section which ensues.

### 5.4.9 Reliability Analysis of the Sub Scales

The results of the Inter-item reliability analysis for each of the three sub-scales of the PEM are presented in the ensuing section. Three sub-scales are:

- Affective Dimension;
- Cognitive Dimension; and
- Behavioural Dimension

#### 5.4.9.1 *Affective dimension*

The overall value of Cronbach's Alpha for the affective dimension sub-scale is 0.918 for 5 items, indicating that a high level of reliability for the sub-scale overall.

Item total statistics for the affective dimension sub-scale are summarised in Table 5-26 below.

**Table 5-26: Item Total Statistics for the Affective Dimension sub-scale of the PEM**

| Item | | Corrected Item-Total Correlation | Cronbach's α if Item Deleted |
|---|---|---|---|
| **PEM1** | People in my work group feel excited in their job | .793 | .898 |
| **PEM2** | People in my work group feel enthusiastic in their job. | .781 | .901 |
| **PEM3** | People in my work group feel energetic in their job. | .819 | .893 |
| **PEM4** | People in my work group feel inspired in their job. | .809 | .895 |
| **PEM5** | People in my work group feel ecstatic in their job. | .743 | .909 |

The values in the "Corrected Item-Total Correlation" column represent the correlations of each item and the total score from the scale. When a scale is reliable, all items should correlate with the total. This is indicated by a score of 0.3 and above. As can be seen in

Table 5-26, all scores in the "Corrected Item-Total Correlation" are above 0.3, indicating that the items all correlate well the scale overall (Field, 2009).

The values included in the column "Cronbach's Alpha if item deleted" indicate what the overall Cronbach's Alpha value for the scale would be if the item was not included in the affective dimension sub-scale. The scores for this column indicate that none of these items would increase the overall reliability of the affective dimension sub-scale if they were deleted.

#### 5.4.9.2 *Cognitive dimension*

The overall value of Cronbach's Alpha for the cognitive dimension sub-scale is 0.822 for 4 items, indicating that a good level of reliability for the sub-scale overall.

Item total statistics for the cognitive dimension sub-scale are summarised in Table 5-27 below.

**Table 5-27: Item Total Statistics for the Cognitive Dimension sub-scale of the PEM**

| | | Corrected Item-Total Correlation | Cronbach's α if Item Deleted |
|---|---|---|---|
| **PEM6** | My work group is ready to act at any given time. | .615 | .774 |
| **PEM7** | People in my work group are mentally alert. | .640 | .767 |
| **PEM8** | In my work group there is a collective desire to make something happen. | .715 | .742 |
| **PEM9** | People in my work group really care about the fate of this company. | .604 | .777 |
| **PEM10** | People in my work group are always on the lookout for new opportunities. | .460 | .821 |

As can be seen in Table 5-27 above, all scores in the "Corrected Item-Total Correlation" column are above 0.3, indicating that the items all correlate well the scale overall.

The scores for the "Cronbach's Alpha if item deleted" column indicate that Cronbach's Alpha for the scale would increase marginally should PEM 10 be removed. However, since the increase in Cronbach's Alpha is so marginal, and the correlation of the item with the rest of the scale items is satisfactory, it was been decided to retain this item.

#### 5.4.9.3 *Behavioural dimension*

The overall value of Cronbach's Alpha for the behavioural dimension sub-scale is 0.829 for 4 items, indicating that a good level of reliability for the sub-scale.

Item total statistics for the behavioural dimension sub-scale are summarised in Table 5-28 below.

**Table 5-28: Item Total Statistics for the Behavioural Dimension sub-scale of the PEM**

| | | Corrected Item-Total Correlation | Cronbach's αif Item Deleted |
|---|---|---|---|
| **PEM11** | People in my work group will go out of their way to ensure the company succeeds. | .598 | .809 |
| **PEM12** | People in my work group often work extremely long hours without complaining. | .674 | .782 |
| **PEM13** | There has been a great deal of activity in my work group. | .702 | .767 |
| **PEM14** | People in my work group are working at a very fast pace. | .672 | .777 |

As can be seen in Table 5-28 above, all scores in the "Corrected Item-Total Correlation" column are above 0.3, indicating that the items all correlate well the scale overall.

The scores for the "Cronbach's Alpha if item deleted" column indicate that none of these items would increase the overall reliability of the behavioural dimension sub-scale if they were deleted.

### 5.4.10 MANOVA

One-way between-groups MANOVA was performed to investigate biographical differences in the PEM results. The three dimensions of the PEM were used as dependent variables: the affective dimension, the cognitive dimension and the behavioural dimension. Preliminary assumption testing was used to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted. The results of the MANOVA are presented in Table 5-29.

**Table 5-29: Results of MANOVA Investigating Biographical Differences in PEM Results**

| Biographical Variable | Wilks' Lambda Value | F | *df* | Error *df* | Sig *(p)* | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Ethnicity | .961 | 3.861 | 3.000 | 286.000 | **.010*** | .039 |
| Gender | .974 | 1.316 | 6.000 | 596.000 | .248 | .013 |
| Job Level | .918 | 2.125 | 12.000 | 778.142 | **.014*** | .028 |
| Language | .939 | 3.177 | 6.000 | 594.000 | **.004*** | .031 |
| Qualifications | .919 | 1.371 | 18.000 | 817.901 | .138 | .028 |
| Years in the Company | .971 | 1.378 | 6.000 | 552.000 | .221 | .015 |
| Years in Current Job | .955 | 2.083 | 6.000 | 534.000 | **.054*** | .023 |

* Statistically significant

From the results of Table 5-29, it is evident that statistically significant differences only exist between ethnicity, job level, home language, years in current job and the PEM dimensions. Results show no statistically significant differences between gender, qualifications and years in the company. The results of the significant relationships between the biographical variables and the PEM dimensions are reported below.

- The Wilks' Lambda value for ethnicity is equal to 0.961 [$F$ (3, 268.000) = 3.861, $p \leq 0.05$].). This implies that there is a significant difference between the mean scores of the groups relating to ethnicity and the three dimensions of the PEM. However, further post-hoc testing revealed no significant differences between ethnicity and the three dimensions of the PEM.
- The Wilks' Lambda value for job level is equal to 0.918 [$F$ (12, 778.142) 2.125, $p \leq 0.05$]. This implies that there is a significant difference between the mean scores of the groups relating to job level and the three dimensions of the PEM. Analysis of each dependent variable, using a Bonferroni adjusted alpha level of 0.025 showed that the job level groups differed in terms of the affective dimension ($F_{(4,\ 2.482)} = 4.393$, $p \leq 0.05$, partial $\eta^2 = 0.056$) and the cognitive dimension ($F_{(4,\ 1.780)} = 3.649$, $p \leq 0.05$, partial $\eta^2 = 0.047$) and the behavioural dimension ($F_{(4,\ 2.612)} = 3.676$, $p \leq 0.05$, partial $\eta^2 = 0.047$). Individuals with jobs on Top Management level experienced higher levels of affective energy than those with jobs on senior management, middle management, supervisory and staff levels. Individuals with jobs on top management level also experienced higher levels of cognitive energy that those with jobs on senior management, middle management and staff levels. In addition, individuals with jobs

on top management level experienced higher scores on the behavioural energy than on senior management, middle management and staff levels. However, effect sizes were small.

- The Wilks' Lambda value for language is equal to 0.939 [$F$ (6, 594.000) = 3.177, $p \leq 0.05$]. This implies that there is a significant difference between the mean scores of the groups relating to language and the three dimensions of the PEM. Analysis of each dependent variable, using a Bonferroni adjusted alpha level of 0.025 showed that the language groups differed in terms of the behavioural dimension ($F_{(2,\ 3.200)}$ = 4.461, $p \leq 0.05$, partial $\eta^2$ = 0.029). Individuals with Afrikaans as their first language experienced higher levels of behavioural energy of the PEM than individuals with an Indigenous language as their first language. However, effect sizes were small.
- The Wilks' Lambda value for years in current job is equal to 0.955 [F (6, 534) = 2.083, $p \leq 0.05$]. This implies that is a significant difference between the mean scores of the groups relating to years in current job and the three dimensions of the PEM. Analysis of each dependent variable, using a Bonferroni adjusted alpha level of 0.025 showed that groups differed in terms of the affective dimension ($F_{(2,\ 2.432)}$ = 4.384, $p \leq 0.05$, partial $\eta^2$ = 0.032). Individuals who have been in their current job for between 21 and 30 years experienced higher levels of affective energy than those who had been in their current job for between 11 and 10 years or between 11 and 20 years. However, effect sizes were small.

### 5.4.11 Summary of Results for the PEM

To conclude the information presented in the preceding section (section 5.5), the results of the statistical analysis of the PEM can be summarised as follows:

- The EFA confirmed the three factor proposed by Cole *et al*. (2011; 2005) were confirmed by the extracted factors for the Indigenous Group. However, the items for Factor 1 and Factor 3 for the Indigenous and White Group loaded differently
- However, the results of the EFA with target rotation and the CFA clearly indicated that the three-factor model is a good fit to the data.
- The overall value of Cronbach's Alpha indicates an excellent level of reliability for the PEM, and the reliability statistics for all the sub-scales of the PEM were good.

- Statistically significant differences exist between ethnicity, job level, home language, years in current job and the PEM dimensions. Results show no statistically significant differences between gender, qualifications, and years in the company.

## 5.5 RESULTS: THE RELATIONSHIP BETWEEN THE PEM AND THE ESP

The emphasis of this section is on the statistical analysis of the data to determine whether there is a relationship between the PEM and the ESP. This was achieved by applying the following statistical techniques:

- Simple Linear Regression Analysis; and
- Pearson Correlation Coefficients.

### 5.5.1 Regression Analysis

A simple linear regression analysis was carried out on the data to assess whether the ESP predicts each of the three sub-scales of the PEM, namely the affective dimension, the cognitive dimension and the behavioural dimension. The results of the regression analysis are presented in Table 5-30.

**Table 5-30: Regression analysis between ESP and PEM sub-scales**

| Model | Unstandardised Coefficients | | Standardised Coefficients | t | P (Sig) | R | $R^2$ | $\Delta R^2$ |
|---|---|---|---|---|---|---|---|---|
| **ESP and Affective Dimension** | | | | | | | | |
| | **B** | **SE** | **Beta** | | | .602[a] | .362 | .360 |
| (Constant) | 1.114 | 1.066 | | 7.372 | 0.000 | | | |
| ESP | .741 | .057 | .602 | 13.974 | .000 | | | |
| **ESP and Cognitive Dimension** | | | | | | | | |
| | **B** | **SE** | **Beta** | | | .474[a] | .224 | .222 |
| (Constant) | 2.197 | .154 | | 14.236 | .000 | | | |
| ESP | .541 | .058 | .474 | 9.333 | .000 | | | |
| **ESP and Behavioural Dimension** | | | | | | | | |
| | **B** | **SE** | **Beta** | | | .465[a] | .216 | .213 |
| (Constant) | 1.625 | .187 | | 8.687 | .000 | | | |
| ESP | .639 | .070 | .465 | 9.103 | .000 | | | |

As can be determined from Table 5-30 above, the total score of the ESP is a significant predictor of the affective, cognitive and behavioural dimensions. A large positive correlation exists between the ESP and the affective dimension. Furthermore positive correlations of moderate size also exist between the behavioural and cognitive dimensions and the ESP.

The ESP produced an $R^2$ value of 0.362 for the prediction of the affective dimension, indicating that 36.2 percent of the total variance in the affective dimension was explained by the regression model consisting of the ESP.

The ESP produced an $R^2$ value of .224 for the prediction of the cognitive dimension, indicating that 22.4 percent of the total variance in the cognitive dimension was explained by the regression model consisting of the ESP.

The ESP produced an $R^2$ value of .216 for the prediction of the behavioural dimension, indicating that 21.6 percent of the total variance in the behavioural dimension was explained by the regression model consisting of the ESP.

The relationship between the seven sub-scales of the ESP and the three sub-scales of the PEM were investigated using Pearson product-moment correlation coefficient. Preliminary analyses had previously been performed to ensure that no violation of the assumptions of normality, linearity and homoscedasticity. The correlations are presented in Table 5-31.

All correlations were positive, and above the value of 0.3 recommended by Cohen (1988, as cited in Pallant, 2005) to indicate a practically significant correlation. This indicates positive relationships between the variables.

**Table 5-31: Correlations between the ESP and the PEM**

| | Existence | Community | Integration | Meaning | Activity | Inspiration | Control |
|---|---|---|---|---|---|---|---|
| **Affective** Pearson Correlation | **.514*** | **.532*** | **.571*** | **.476*** | **.631*** | **.557*** | **.556*†** |
| **Cognitive** Pearson Correlation | **.381*** | **.452*** | **.423*** | **.395*†** | **.523*** | **.452*** | **.409*†** |
| **Behavioural** Pearson Correlation | **.391*** | **.408*** | **.442*** | **.389*†** | **.518*** | **.394*** | **.421*†** |

*Practically significant correlation

The results in Table 5-31 reveal a practically significant positive correlation of large effect between the affective dimension of the PEM and existence, community, integration, activity, inspiration and control dimensions of the ESP. A practically significant positive correlation of medium effect exists between the affective dimensions and the meaning dimension. Practically significant positive correlations of medium effect exist between the

cognitive dimension of the PEM and the existence, community, integration, meaning, inspiration and control dimensions of the ESP, and a practically significant positive correlation of large effect exists between the cognitive dimension and the activity dimension. The behavioural dimension is related to existence, community, meaning, inspiration and control with a medium effect size, and there is a practically significant positive relationship of large effect between the behavioural dimension and the activity dimension.

### 5.5.2 Summary of Results for the Relationship between PEM and ESP

To conclude the information presented in the preceding section (section 5.5), the results of the statistical analysis of the relationship between the PEM and the ESP can be summarised as follows:

- There is a statistically significant relationship between the ESP and the three dimensions of the PEM based on the results of a Simple Linear Regression analysis.
- The Pearson Correlation Coefficients between the sub-scales of the ESP and the sub-scales of the PEM indicated statistically significant positive correlations.

## 5.6 CONCLUSION

This chapter presented the results of the statistical analysis carried out on two measures of organisational energy. An overview of the statistical techniques employed in the study was given, before the results of the statistical analysis of the ESP were presented, followed by a presentation of the statistical findings for the PEM. Subsequently, the relationship between the PEM and ESP was explored before concluding the chapter.

The next chapter will encompass a discussion of the implications of the statistical results presented in this chapter. In addition, the hypotheses presented in Chapter 4 will be further explored.

# 6 CHAPTER 6: DISCUSSION OF RESULTS

For the purposes of the study, five research hypotheses were formulated based on the literature available on organisational energy, as well as previous empirical studies. These research hypotheses were empirically tested using statistical data analysis techniques, the results of which were presented in the previous chapter. The emphasis of this chapter lies on the discussion of the empirical results obtained, and what the implications are for the research hypotheses. The five research hypotheses formulated for the study are presented, followed by a discussion of the implications of the statistical results. For ease of discussion, and to facilitate hypothesis testing, the research hypotheses have been split into sub-hypotheses. Figure 6-1 refers.

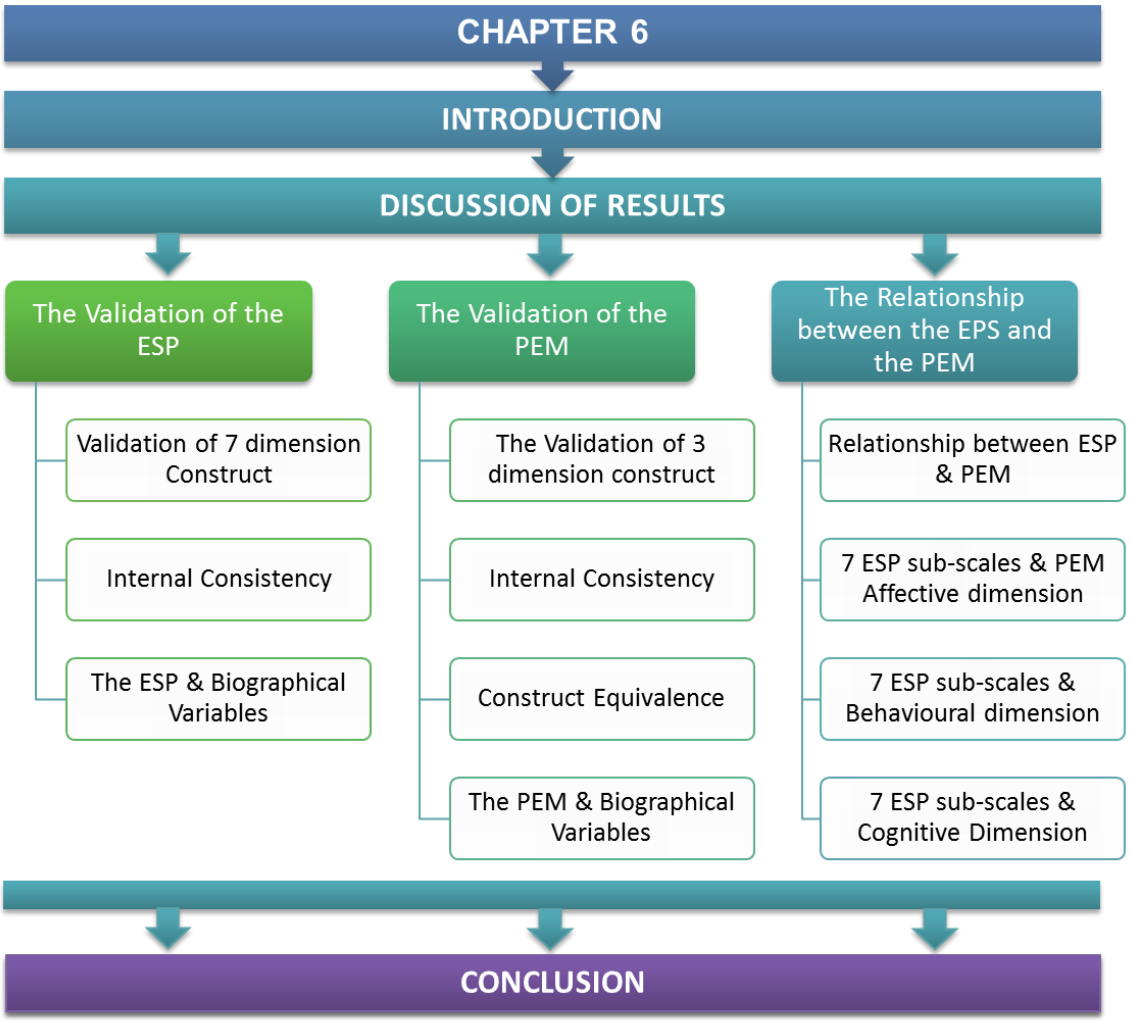


**Figure 6-1: Chapter 6 Orientation**

## 6.1 THE VALIDATION OF THE ESP

The following section presents a discussion of the empirical evidence related to the validation of the ESP.

***Hypothesis 1:*** *Organisational energy, as measured by the ESP, is a seven dimensional construct consisting of inspiration, integration, meaning, community, control, activity and existence. Acceptable internal consistencies exist for all scales.*

Hypothesis 1 was partially accepted, based on the discussion of the sub-hypotheses in the section which follows.

***Sub-Hypothesis 1.1:*** *Organisational energy as measured by the ESP is a seven-dimensional construct consisting of inspiration, integration, meaning, community, control, activity and existence.*

The results of the CFA indicated that a seven-factor structure for the 35 items of the ESP was a poor fit to the data. Consequently, a CFA for a single-factor structure for the ESP was conducted. The results of CFA were inconclusive and did not clearly indicate whether the one-factor model was a good fit to the data. Due to the inconclusive fit of the one-factor model, an EFA was carried out for a one factor model to determine a more valid factor structure. The results of the ESP revealed a single factor in the structure of the ESP. Based on the review of the literature on the Seven Energies Model of Organisation, and the ESP itself, it is likely that this single factor is organisational energy. Although this factor is in contrast with Tosey's (1994) seven-factor model, this finding confirms the result of study utilising the ESP in the South Indigenous context, which was conducted by Derman (2009). Derman's (2009) study also revealed a single-factor structure for the ESP. However, an investigation of the relationship between the PEM and the ESP (presented in section 6.5) provides further clarity on the nature of the dimension revealed by the factor analysis of the ESP.

Consequently, the sub-hypothesis 1.1 is rejected.

***Sub Hypothesis 1.2:*** *Acceptable internal consistencies exist for all scales.*

The reliability analysis of the seven sub-scales indicated a high level of internal consistency for all the sub-scales. The empirical results also indicated an excellent level of overall reliability for the 35 items of the adapted ESP. Based on the empirical results, it can be concluded that the adapted ESP has a high level of homogeneity between items, and is capable of consistently reflecting the same underlying constructs.

Therefore, sub-hypothesis 1.2 is accepted.

## 6.2 THE ESP AND BIOGRAPHICAL VARIABLES

The following section presents a discussion of the empirical evidence related to the ESP and biographical variables.

***Hypothesis 2:*** *There are no significant differences in organisational energy of employees as measured by the ESP based on demographic characteristics.*

Hypothesis 2 was partially accepted, based on the discussion in the following section.

The empirical results indicated that there were no statistically significant differences in the organisational energy experienced by employees according to gender, home language, ethnicity, qualifications, and years in the company. However, statistically significant differences between the organisational energy experienced by employees and job level, years in current job and the overall ESP score were found to exist. While post-hoc testing revealed no significant differences between years in current job and the overall ESP score, post-hoc comparisons did indicate that the mean score for the top management job level is significantly different from senior management and staff job levels. This means that employees with jobs on Top Management level experience higher levels of organisational energy than those on senior management and staff levels. Further investigation is therefore needed to clarify which factors relating to job level have an impact on the experience of energy. This also raises the question as to whether individuals in middle

management and supervisory job levels are impacted by these factors, as they did not have significantly different scores when compared to the scores of top management level.

For the aforementioned reasons, hypothesis 2 is partially accepted.

## 6.3 THE VALIDATION OF THE PEM

The following section presents a discussion of the empirical evidence related to the validation of the PEM.

> ***Hypothesis 3:*** *Productive organisational energy, as measured by the PEM is a three-dimensional construct consisting of an affective dimension, a behavioural dimension and a cognitive dimension. Acceptable internal consistencies exist for all scales and construct equivalence exists for both White and African employees.*

Hypothesis 3 was accepted, based on the discussion of the sub-hypotheses in the section which follows.

> ***Sub-Hypothesis 3.1:*** *Productive organisational energy, as measured by the PEM is a three-dimensional construct consisting of an affective dimension, a behavioural dimension and a cognitive dimension.*

A three-factor structure for the 14 items was evident, based on an EFA with target rotations. Although the factor loadings of the items on the three factors revealed by the EFA did differ slightly for the Indigenous and White groups, the greater part of the EFA data substantiates the three factors identified by Cole *et al*. (in press), namely the affective, behavioural and cognitive dimensions. All three Tucker's phi coefficients were above the minimum value required to interpret essential agreement. Furthermore, coefficients for the affective and cognitive dimensions indicated very good agreement. This was confirmed by the results of the CFA, which indicates that the three-factor model consisting of affective, behavioural and cognitive dimensions is a good fit to the data.

A three-factor structure consisting of the affective, behavioural and cognitive dimensions exists for the PEM and therefore sub-hypothesis 2.1 is accepted for that reason.

***Sub-Hypothesis 3.2:*** *Construct equivalence exists for both White and African employees.*

The results of the EFA indicate that the 14 items of the PEM loaded as expected on the three underlying factors for the Indigenous group. The factor labels proposed by Cole *et al*. (2011; 2005) were confirmed by the extracted factors for the Indigenous Group. These three factors are labelled as follows:

- Factor 1: Cognitive Dimension
- Factor 2: Affective Dimension
- Factor 3: Behavioural Dimension

While the items of the PEM loaded similarly on the affective dimension for the White group, the items for the cognitive and behavioural dimensions of the Indigenous and White Group loaded differently.

In particular, two items from each factor proved problematic in the data from the White group, and were examined from an item structure point of view. Item PEM9 "*People in my work group really care about the fate of this company*" and item PEM10 "*People in my work group are always on the lookout for new opportunities*" did not load as anticipated on the cognitive dimension, but rather loaded on the behavioural dimension.

The wording in item PEM9 suggests that the link between caring about the fate of the company, and cognitive energy, may not be clear to respondents. Item PEM10 seems to be ambiguous, as it does not indicate what type of opportunities people could be on the lookout for. Such opportunities could be understood as being related to the prospects for the organisation or work group. Alternatively, such opportunities could also be understood by respondents as implying personal opportunities for the individual not related to the organisation or work group. Similarly, Item PEM13 "*There has been a great deal of activity in my work group*", and Item PEM14 "*People in my work group are working at a very fast*

*pace*", did not load as anticipated on the behavioural dimension, but loaded on the cognitive dimension.

Consequently, it is suggested that these four items be reworded so that their meaning is more clearly articulated to respondents. It is anticipated that this could result in the items loading on the correct factor. However, the possibility of adding additional new items for the two problematic factors (the cognitive and the behavioural dimensions) should be investigated further, as this may result in items which explain the factors more appropriately.

Moreover, the White group consisted of individuals who spoke two different home languages. The split was approximately half between English and Afrikaans. This could indicate that there are differences between how a native English speaking individual understood and interpreted the questions as opposed to a native Afrikaans speaker. As mentioned in the literature, the cultural backgrounds of individuals can have a significant impact on how tests are interpreted. It is therefore possible that the cultural background of the different Indigenous groups, the English-speaking White group, and the Afrikaans-speaking White group had an impact on their interpretation of productive energy in the workplace. Interestingly, though the Indigenous group had varied Indigenous languages as their first language, they seemed to interpret the questions as intended by the PEM Test Developers. This raised the question as to whether the differences in the two groups were not brought about by the differing sample sizes. The Indigenous group consisted of significantly more respondents than the white group. Although the white group still met the minimum sample size for factor analysis, it begs the question as to whether this had a significant impact on the results.

The pattern matrices for the three-factor solution for Indigenous and White participants were used as inputs for an EFA with target rotations, which resulted in all three dimensions demonstrating high Tucker's phi values. All three coefficients were above the minimum value required to interpret essential agreement. Furthermore, coefficients for the affective and cognitive dimensions indicated very good agreement. These results imply essential agreement between the Indigenous and White cultural groups, and thus construct

equivalence (Van de Vijver & Leung, 1997). This is further supported by the fact that the CFA indicated a good fit of the data to the three construct model on all fit indexes.

It is reasonable to recommend which further empirical studies which investigate the differences within the Indigenous and White group to gain a deeper understanding of the construct equivalence of the two groups.

Therefore, construct equivalence for the PEM for the two groups on the cognitive and behavioural dimensions is present and sub-hypothesis 3.2 is accepted.

***Sub Hypothesis 3.3:*** *Acceptable internal consistencies exist for the PEM*

The reliability analysis for the behavioural dimension sub-scale indicates a good level of overall reliability. Inter-item reliability analysis reveals that all four items in the sub-scale correlated well with the scale overall. In addition, the deletion of any of the four items would not increase the overall reliability of the behavioural dimension sub-scale. It can be concluded that the behavioural dimension has a good level of internal consistency.

The reliability analysis for the cognitive dimension sub-scale indicates a good level of overall reliability. Inter-item reliability analysis reveals that all five items in the sub-scale correlated well with the scale overall. The statistical results do indicate that the reliability of the sub-scale would increase marginally should item 10 "*People in my work group are always on the lookout for new opportunities*" be removed. However, since the increase in Cronbach's Alpha was so marginal, and the correlation of the item with the rest of the scale items was satisfactory, it was been decided to retain this item for purposes of the study. It can be concluded that the cognitive dimension has a good level of internal consistency.

The reliability analysis for the affective dimension sub-scale indicated an excellent level of overall reliability. Inter-item reliability analysis revealed that all five items in the sub-scale correlated well with the scale overall. In addition, the deletion of any of the five items would not increase the overall reliability of the affective sub-scale. It can be concluded that the affective dimension has a good level of internal consistency.

The empirical results also indicate an excellent level of overall reliability for the 14 items of the PEM.

Based on the empirical results, it can be concluded that the PEM has a high level of homogeneity between items, and is capable of consistently reflecting the same underlying constructs. As a result, sub-hypothesis 3.3 is accepted.

## 6.4 THE PEM AND BIOGRAPHICAL VARIABLES

The following section presents a discussion of the empirical evidence related to the ESP.

***Hypothesis 4:*** *There are no significant differences in productive organisational energy of employees as measured by the PEM based on demographic characteristics.*

Hypothesis 4 was partially accepted, based on the discussion in the following section.

The empirical results indicate that there are no statistically significant differences between gender, qualifications and years within the company. However, significant differences between the mean scores of the groups relating to ethnicity, job level, home language, years in current job and the three dimensions of the PEM were revealed. While post-hoc testing reveals no significant differences between ethnicity and the three dimensions of the PEM, differences are revealed for job level, language and years in current job.

Individuals with jobs on Top Management level experienced higher levels of affective energy than those with jobs on senior management, middle management, supervisory and staff levels. Individuals with jobs on top management level also experienced higher levels of cognitive energy that those with jobs on senior management, middle management and staff levels. In addition, individuals with jobs on top management level experienced higher scores on the behavioural energy than on senior management, middle management and staff levels. Further investigation is therefore needed to clarify what factors related to job level have an impact on the experience of affective, cognitive and behavioural energy. It is possible that such factors could be related to the nature of the individual in such a job

level, for example, educational level, years of experience, personality factors, or specific values and interests.

Individuals with Afrikaans as their first language experienced higher levels of behavioural energy of the PEM than individuals with an Indigenous language as their first language.

Individuals who have been in their current job for between 21 and 30 years experienced higher levels of affective energy than those who had been in their current job for between 11 and 10 years or between 11 and 20 years. However, the effect sizes for both the job level and language variables are small, indicating that while they do have an impact on employees' experience of productive organisational energy, the magnitude of this effect is small.

For the abovementioned reasons, hypothesis 4 is partially accepted.

## 6.5 THE RELATIONSHIP BETWEEN THE PEM AND THE ESP

The following section presents a discussion of the empirical evidence related to the relationship between the PEM and the ESP

***Hypothesis 5:*** *There is no significant relationship between organisational energy (as measured by the ESP) and productive organisational energy (as measured by the PEM).*

Hypothesis 5 was rejected based on the discussion in the section which follows.

The results of the regression analysis indicate that the total score of the ESP is a significant predictor of the affective, cognitive and behavioural dimensions. A large positive correlation exists between the ESP and the affective dimension. In addition, positive correlations of moderate size also exist between the behavioural and cognitive dimensions and the ESP.

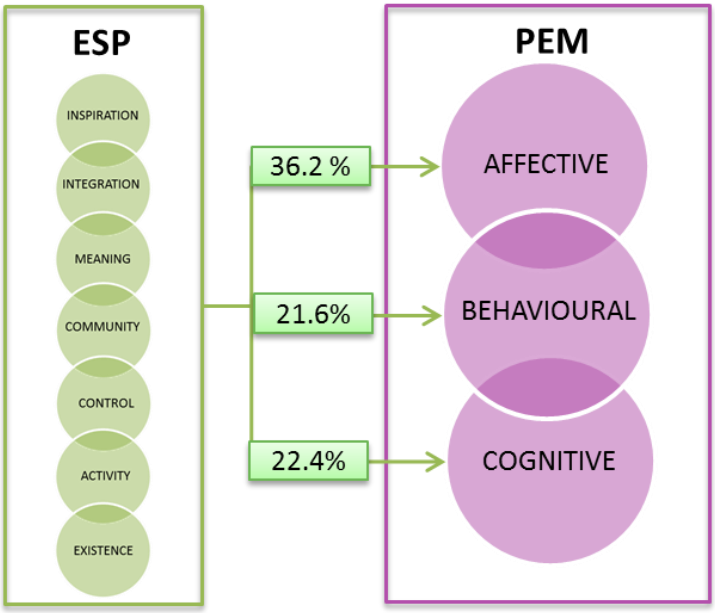


**Figure 6-2: Variance in PEM explained by the ESP**

Figure 6-2 indicates the variance explained in the PEM by the ESP. As is illustrated, the dimension which produced highest R-squared value between the total score of the ESP and 3 dimensions of the PEM was the affective dimension. A total of 36.2 percent of the total variance in respondents' experience of affective dimension was explained by the ESP. Furthermore, there is a positive correlation of large effect between the total ESP score and the affective dimension. This means that individuals who experience a high level of organisational energy (as measured by the ESP) tend to experience a high level of the affective energy associated with productive organisational energy. Likewise, lower scores on organisational energy (as measured by the PEM) are characterised by lower levels of affective energy. However, while the relationship between the ESP and the affective dimension is confirmed, it could be concluded that the ESP is not the only definitive factor driving the affective dimension

Similarly, the R-squared values for the cognitive and behavioural dimensions indicated that a moderate amount of the variance in the two dimensions can be explained by the ESP. Moreover, there is a positive correlation of medium effect between the total ESP score and the behavioural and the cognitive dimensions. This means that the higher an individual's experience of organisational energy (as measured by the PEM) is, the higher the levels of cognitive and behavioural energy they experience. It should be noted that although the relationship between the cognitive and behavioural dimensions is confirmed, it could be concluded that the ESP is not the only definitive factor driving the two dimensions.

To provide further clarity on the relationship between the two measurement instruments, the relationship between the seven sub-scales of the ESP and the three sub-scales of the PEM were investigated using Pearson product-moment correlation coefficient. Figure 6-3 refers.

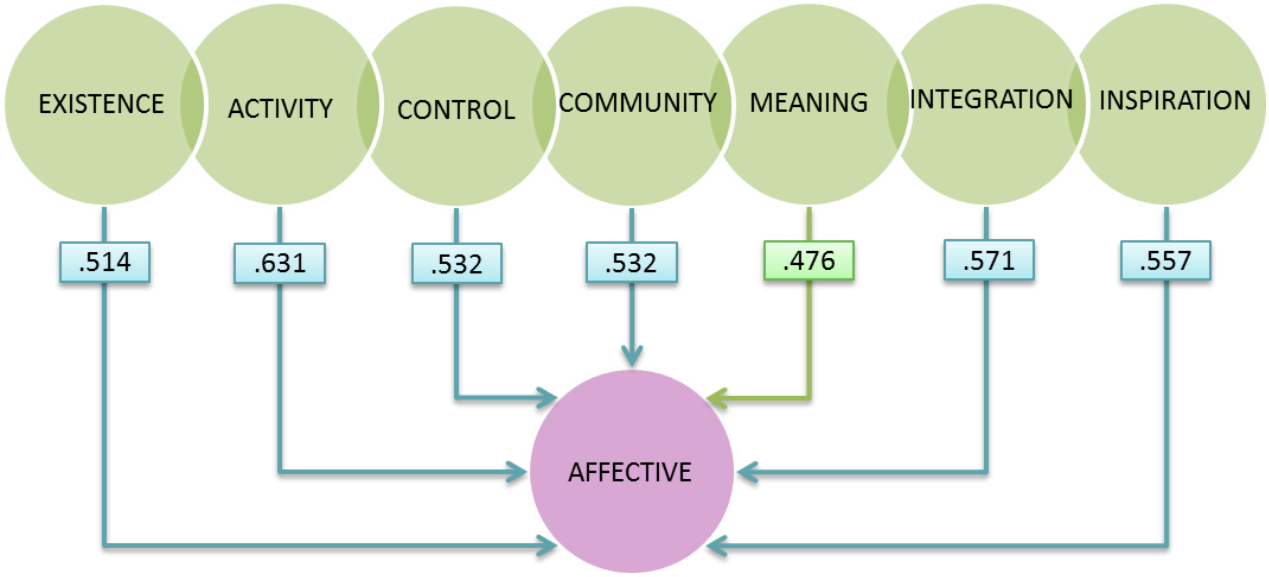


**Figure 6-3: Relationship between ESP Sub-scales and the Affective Dimension of PEM**

The affective sub-scale is associated with a "highly structured response to a specific type of event or environmental interaction that gives rise to a characteristic adaptive behaviour what is relevant to the needs, goals or survival of the organisation" (Shirom, 2003, p.4). affective energy manifests as emotional arousal, homogenous levels of positive responses within the work group, and constructive feelings such as inspiration, enthusiasm and attentiveness towards work-related tasks and organisational priorities (Barsade, 2002; Cole, *et al*., 2011; 2005; George, 1990). The large effect relationships between affective energy and the seven sub-scales of the ESP suggest that the seven sub-scales of the ESP tend to measure the manifestation of emotional aspects of the experience of the work environment. Figure 6-4 illustrates the relationships between the seven sub-scales of the ESP and the behavioural and affective dimension of the PEM, all of which are positive.

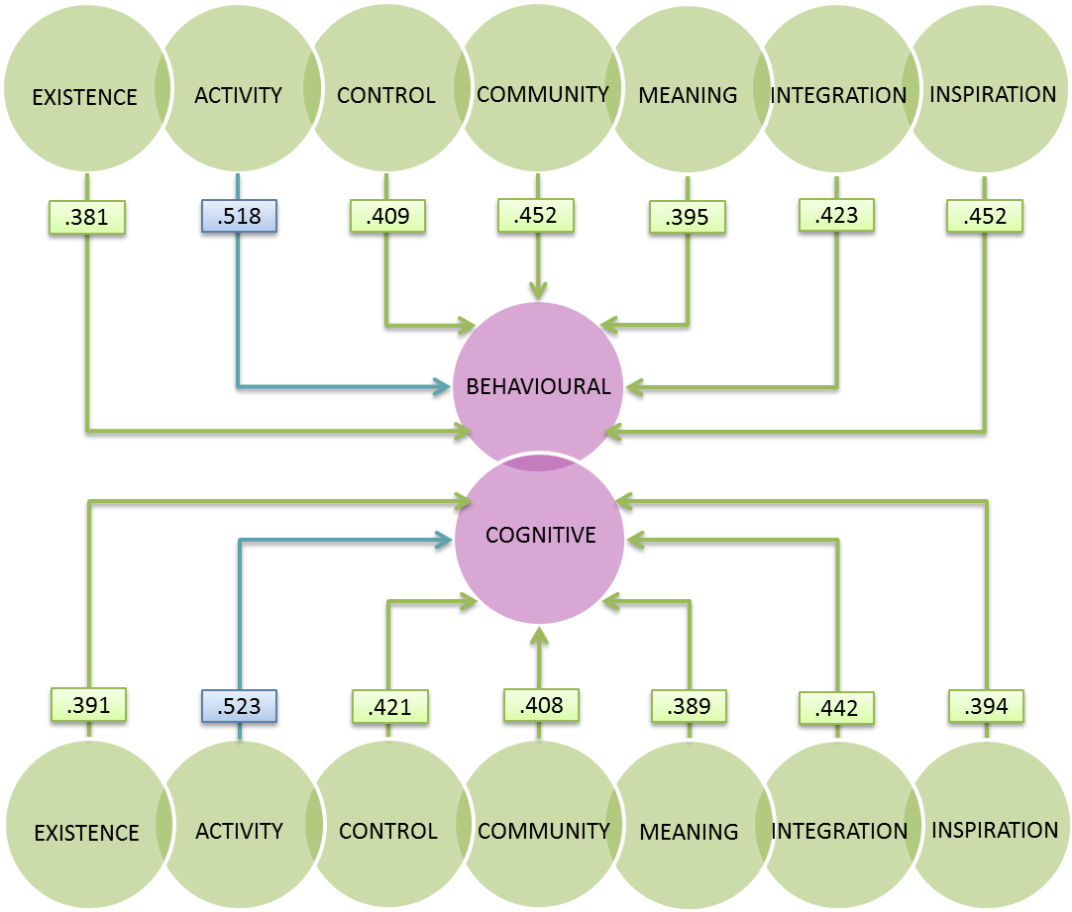


**Figure 6-4: Relationship between ESP Subscales and the Behavioural and Cognitive Dimensions of PEM**

The correlation between the energy of activity and the behavioural energy was large, which is in agreement with the literature reviewed in this study. Both energies are associated with purposeful actions of employees in support of organisationally salient tasks and objectives (Cole *et al*., in press), and the direction and effort which organisation members invest in work tasks (Quinn & Dutton, 2005). Likewise, the energy of activity is closely related to the cognitive energy. Cognitive energy is linked to the experience of cognitive processes which drive employees to approach work-related activities and challenges in a productive manner (Cole, *et al*., 2005).

Interestingly, moderate to high correlations exist between all seven sub-scales of the ESP and the three dimensions of the PEM. Consequently, it is put forward that the seven sub-scales of the ESP tend to measure emotional, behavioural and cognitive aspects of individuals experience in the workplace.

However, more research is needed to delve into the relationship between the PEM and the ESP in more detail. Further investigation of the relationship between the two measures of organisational energy would also provide clarity on the nature of the single dimension revealed by the Factor analysis of the ESP.

In summary, it can be concluded that there is a relationship between the PEM and the ESP. For this reason, hypothesis 5 is rejected.

## 6.6 CONCLUSION

This chapter provided a detailed discussion of the five research hypotheses which were formulated based on available literature on organisational energy. To address the research objectives of the study, the five research hypotheses were empirically tested using statistical data analysis techniques presented in Chapter 5. Using this empirical information, the researcher embarked on a discussion of the empirical results obtained, and what the implications of these results were for the research hypotheses.

The next chapter gives an overview of the research study in its entirety, and discusses the conclusions, limitations and future research areas associated with the study.

# 7 CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

## 7.1 INTRODUCTION

This chapter offers a synopsis of the entire study. The most significant findings gleaned from the literature are offered, as well as a summary of the empirical results. The limitations of the study are addressed and selected recommendations for further study in the field of organisational energy are made.

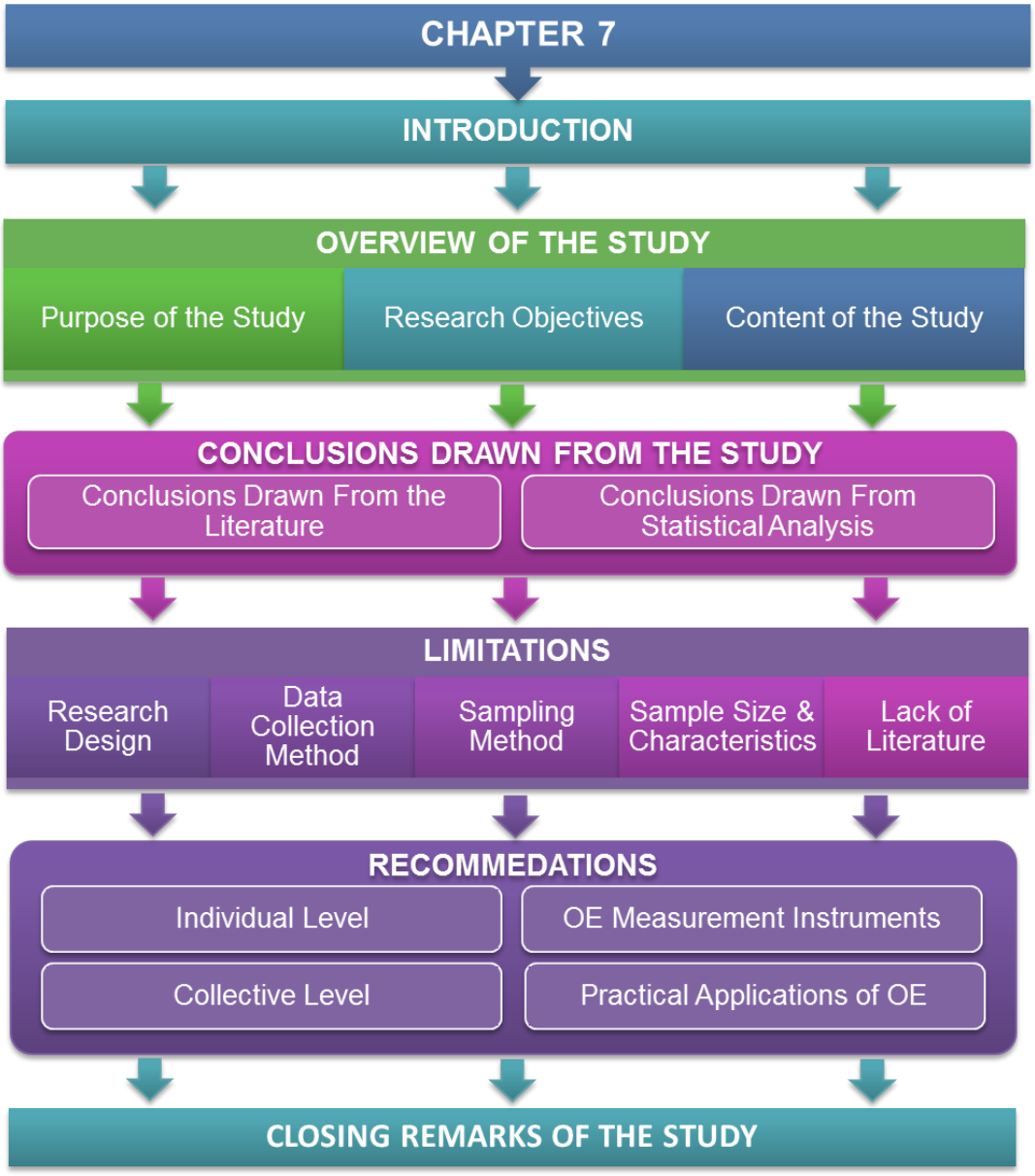


**Figure 7-1: Chapter 7 Orientation**

## 7.2 OVERVIEW OF THE STUDY

### 7.2.1 Purpose of the study

The aim of this research was to take an exploratory approach to delve into the construct of organisational energy in the South African context. As there is limited research into organisational energy measures which are most appropriate for use in the South African context, this study evaluated two measures of organisational energy and investigated both their metric properties, as well as their applicability in South Africa. This research provided the impetus for exploring the concept of organisational energy in relation to the South African organisation and its employees.

### 7.2.2 Research Objectives

The research objectives of the study have to do with the metric properties of two measures of organisational energy and their applicability in the South African context. The research objectives for the study are as follows:

- To validate an adapted version of the ESP in the South African context;
- To determine whether there are any significant differences in organisational energy as measured by the ESP based on demographic characteristics;
- To validate the PEM in the South African context;
- To determine whether there are any significant differences in productive organisational energy as measured by the PEM based on demographic characteristics; and
- To determine the interrelationships between organisational energy as measured by the ESP, and productive organisational energy as measured by the PEM.

### 7.2.3 Content of the Study

The following section summarises the content of the study, with emphasis on the seven chapters which are laid out in this document.

Chapter 1 introduces the concept of organisational energy in the broader context of the organisation, and provides the impetus for the research study by highlighting the problem statement and research objectives. An indication of the importance and benefits of the research study is given, before the chapter concludes with a list of definitions and abbreviations used frequently in the study.

Chapter 2 and Chapter 3 contain a detailed review of the available literature on the concept of organisational energy. Chapter 2 commences with a discussion of the theoretical foundations of organisational energy, elucidating on systems and complexity theory, organisational climate and culture, positive psychology, positive organisational behaviour and positive organisational scholarship. Attention is then given to multiple definitions of energy and organisational energy, before a timeline of organisational research is presented. The levels of energy in the organisation are discussed, before three models of organisational energy are described. Chapter 3 commences with an overview of metric properties of measurement instruments, with specific focus on reliability and validity. This is followed by a synopsis of the transfer of metric properties across cultural groups. The discussion then turns three measures of organisational energy, which are discussed in terms of test development and adaption, metric properties and any prior studies in South Africa which make use of the instrument.

Chapter 4 involves a detailed discussion of the research design and methods which were selected as the framework through which the research questions of the study were answered. The chapter begins with an overview of the research paradigm of the study, before a description of the strategy of inquiry and broad research design is given. A discussion of the sampling strategies and techniques utilised in the study is then given and the data collection methodology is presented. Issues which affect the reliability and validity of the research are considered before ethical concerns related to the study are contemplated. The final section of this chapter consists of the development of research hypotheses for study, as well as the rationale for each hypothesis.

Chapter 5 commences with a brief discussion of each of the statistical techniques employed in the study, before presenting the results of the statistical analysis of the ESP.

The statistical findings for the PEM are then presented, before the investigation moves to the exploration of the relationship between the two measures.

In Chapter 6, a discussion of the empirical results presented in Chapter 5 is undertaken. Each of the five hypotheses of the research study are presented and are accepted or rejected based on the evidence garnered from the research study.

Chapter 7 consists of an overview of the research findings of the study in relation the literature reviewed and the statistical analysis undertaken. The limitations of the study are addressed and selected recommendations for further study in the field of organisational energy are made. In conclusion, final comments are made.

## 7.3 CONCLUSIONS DRAWN FROM THE STUDY

The following section summarises the conclusions which can be drawn from the study, with emphasis on conclusions drawn from the literature and conclusions drawn from the empirical results.

### 7.3.1 Conclusions from the Literature

- The organisation is seen as a dynamic system which is composed of multiple sub-systems and parts, which in turn interact with one another and the environment (Mason, 2007). To truly capture the essence of the complex nature of the organisation, it is necessary to take a multi-level approach. This approach unites the micro perspective, which asserts that the nuances of individual behaviour result from the various forms of diversity of people, and the macro perspective, which assumes that there are considerable consistencies in social behaviour within certain contextual or demographic conditions (Kozlowski & Klein, 2000b).
- The dynamics which occur between certain variables on the individual level are not necessarily equivalent with the dynamics of those same variables on the team or organisation level (Chen, *et al*., 2005; Chen, *et al*., 2011). Organisational energy is a

multi-level phenomenon which is comprised of human energy, collective energy, and organisational infrastructure (Schiuma, *et al*., 2007).

- Individual energy is made up of three key aspects, namely a mental or cognitive aspect, a physiological aspect, and an emotional aspect. The three aspects of individual energy combine to form a synergistic resultant energy made up of cognitive, emotional and physical energy (Schiuma *et al*., 2007).
- Energy, vitality, vigour or positive arousal experienced by individuals can be generated and depleted. Consequently, it could be possible to create and maintain individual human energy by influencing the thoughts and behaviours which have an impact on cognitive, emotional and physical capacity (Schiuma, *et al*., 2007). Thus the individual human response can be seen as an important contributor to the creation of positive organisational practices (Bruch & Ghoshal, 2003; Cameron, Bright, & Caza, 2004; Cameron & Caza, 2004; Cole *et al*., in press; 2005; Shirom, 2003).
- Scholars have postulated that energy in the organisation can also be seen as shared human forces in the organisation (Bruch & Vogel, 2011; Cole *et al*., in press; 2005; Jansen, 2004; Schiuma *et al*., 2007). Organisational energy thus refers the collective energy shared among individuals working in an organisation or work group (Bruch & Vogel, 2011; Cole *et al*., in press; Schiuma, *et al*., 2007). This energy results from shared experiences and responses to contextual or situational influences, as well as the emotional, behavioural and cognitive states of individual members of the organisation or work unit (Cole, *et al*, 2011; Marks *et al*., 2001).
- The power of the collective energy is reinforced by group interaction, creating an emergent energy which is transferred between individuals in the organisation. In this way, the nature of collective energy is greater than the sum of all the individual states (Bruch & Vogel, 2011).
- As can be concluded from the available literature, a concrete conceptualisation of collective organisational energy has yet to be formed. The focus of the models by Tosey (1994) and Stanton Marris (2002) is primarily on the individual psychological experience of the work environment. While some attention is given to work tasks and cognitive activities, they do not explicitly distinguish between the three concepts of psychological or emotional, behavioural and cognitive energy. Moreover, these two

models have some close linkages with organisational climate, as defined by Schneider *et al*., 2008). In contrast, Cole *et al* (in press) recognise the importance of the psychological or emotional element of energy, but emphasise that it does not comprise the entirety of the experience of productive energy in the workplace. Therefore, the importance of the behavioural and the cognitive aspects of energy are stressed in the conceptualisation of productive organisational energy (Cole *et al*, in press; 2005).

- Organisational infrastructure provides a mechanism which can promote the creation or depletion of energy on the individual and collective levels. It can be devised to drive the creation of an energy within the organisation which is productive and sustainable (Schiuma *et al*., 2007). Scholars maintain that the ability to create positive energy within an organisation is the key to a productive and successful company (Bruch & Ghoshal, 2003; Bruch & Vogel, 2011; Cole *et al*., in press; 2005).
- Human energy could thus be perceived as the fundamental resource which an organisation can generate (Spreitzer *et al*., 2011).

### 7.3.2 Conclusions from Statistical Analysis

- The results of a CFA for both a seven-factor and a one-factor model were inconclusive, indicating that neither model was a good fit to the data. The results of a subsequent EFA indicated a one-factor structure. Based on the review of the literature on the Seven Energies Model of Organisation, and the ESP itself, it is likely that this single factor is organisational energy. The theoretical sub-scales of the ESP showed a high level of internal consistency. More research is needed to refine the factor structure of the ESP in the South African context.
- The results showed that statistically significant differences only exist between job level, years in current job and the overall ESP score. Post-hoc comparisons indicated that individuals with jobs on top management level experienced higher levels of organisational energy as measured by the ESP than those on senior management and staff levels. However, post-hoc testing revealed no significant differences between years in current job and the overall ESP score.

- The three factor proposed by Cole *et al*. (in press; 2005) was confirmed by the extracted factors for the Indigenous Group. The items for cognitive and behavioural for the Indigenous and White Group loaded differently, and thus construct equivalence for the PEM for the two groups is not present. However, the results of the EFA with target rotation supported construct equivalence between the Indigenous and White groups.
- The results of the CFA clearly indicated that the three-factor model is a good fit to the data. In addition, the three theoretical sub-scales showed an excellent level of reliability. Thus the results are in alignment with the three dimensional definition of productive organisational energy, as measured by the PEM.
- The results showed that statistically significant differences exist between ethnicity, job level, home language, years in current job and the PEM dimensions. Post-hoc testing revealed no significant differences between ethnicity and the three dimensions of the PEM. However, post-hoc tests did reveal significant results for job level, language and years in current job.

## 7.4 LIMITATIONS

The study has several delimitations with regards to the context, constructs and the theoretical perspectives of the research. These are discussed in more detail below.

### 7.4.1 Limitations as a Result of the Research Design

A cross-sectional research design was utilised in the study. This type of design is not suitable for researching change over time, which means that correlations about the state of organisational energy or the instrument used to measure it could not be made over a changing period of time. Furthermore, the use of a cross-sectional research design means that the researcher would have to pursue other means of determining whether changes in the dependent variables were caused by the independent variables. The lack of current research on organisational energy measures in the South African context had the effect that the researcher could not refer back to previous bodies of research to determine potential causality. Therefore, the researcher explored the presence of a relationship

between the constructs under scrutiny, and did not attempt to determine if causal relationships existed

### 7.4.2 Limitations as Result of the Data Collection Method

Survey research and specifically the quality of the data it collects is often criticised (Young, 1996 as cited in Van der Stede, Young, & Chen, 2005). Therefore it is important that the survey utilised is constructed and administered appropriately to ensure that high quality data is obtained (Kenett, 2006) This is achieved in the present study by following a rigorous research design, as laid out in this document. However it should be kept in mind that response error is commonly associated with survey research.

### 7.4.3 Limitations as a Result of the Sampling Method

This study made use of non-probability sampling techniques, specifically convenience and snowball sampling. The use of such sampling techniques allowed the researcher to include a variety of respondents to ensure an adequate sample size for the use of factor analysis. However, it is important to note that the proportion of responses collected by this means has an implication on the representativity and subsequent generalisability of the sample (Cresswell, 2009; Welman & Kruger, 2001). Furthermore, participation in the study was voluntary. The combination of non-probability sampling techniques and the voluntary nature of participation in the study implies that the results of the study can only be generalised to similar organisations or environments.

### 7.4.4 Limitations as a Result of the Sample Size and Characteristics

As mentioned above, sample size was an important consideration due to the use of factor analysis. Although the sample size met the minimum requirement of 300 respondents, it is important to note that sampling was not controlled in terms of language and race groups. As a result, the size of the White group sample was significantly smaller than that of the Indigenous Group, which means that there could be implications for the statistics comparing construct equivalence for these two groups.

The majority of participants were from the Indigenous race group. However, differences in terms of home language within the Indigenous and White race groups were not statistically investigated. As a result it is not clear if different race and language groups experience differences in the experience or perception of organisational energy. Therefore, generalisation to other race or language groups should be done cautiously.

In addition, the majority of respondents were from Gauteng which may introduce an unknown level of error if respondents from different geographical areas of South Africa have different experiences or perceptions of organisational energy. More detail on threats to the external and internal validity is given in Chapter 4 (see section 4.6).

### 7.4.5 Limitations Associated with the Lack of Literature

A further limitation of the present study is the lack of literature and empirical research available on the topic of organisational energy, particularly in the South African context. To the best knowledge of the researcher, the present study is the first to validate the adapted version of the ESP as well as the PEM in the South African context. Furthermore, it is the first study to examine the two instruments to determine the relationship between them. The lack of available literature and empirical research makes is challenging to substantiate the findings in the study. In addition, complex constructs addressed in passing in the study have the potential to be the topic of research studies in their own right.

## 7.5 RECOMMENDATIONS FOR FUTURE RESEARCH

The results of this study have provided valuable insights into both the nature of organisational energy, and the phenomenon in the South African workplace. However, it is clear that more research is needed to clarify the concept of organisational energy in the South African context. In particular, questions are raised as to what areas of research should be focused on to add to the body of knowledge of the subject. The recommendations for future research have been divided into four key areas, namely: individual level, collective level, measurement and practical application. These are discussed in more detail in the ensuing section.

### 7.5.1 Individual Level

To address some of the limitations of the present study, as well as to gain further insight on the phenomenon of organisational energy in the South African context, it is recommended that future studies make use of a larger sample which is representative of more industries in South Africa. Such a sample should also attempt to collect more information from a wide range of biographical characteristics, particularly in terms of geographic location, job level, language, ethnicity and years of service in the organisation. This will allow a more in-depth study of biographical characteristics and the experience of productive organisational energy, as measured by the PEM. An area of interest may be to attempt to establish a link between an individual's experience of energy and their personality traits.

An examination of the six streams of individual level human energy identified by Spreitzer *et al*. (2011) also highlights areas which should be focused on going forward. Questions raised by Spreitzer *et al*. (2011) include:

- An examination of the six streams of individual level human energy identified by Spreitzer *et al*. (2011) reveals three key aspects of human energy, namely emotional energy, physical energy and mental or cognitive energy. It is clear that these three aspects of energy intermingle with each other. How can the interaction between the emotional energy, physical energy and mental energy be integrated with research into organisations and organisational behaviour?

- What contexts, resources, enablers and constraints have an impact on the creation, depletion, transformation and experience of human energy?
- How can individual level energy be used as a resource?
- What impact can such individual energy resources have on organisational processes and systems?
- How does the content and approach to job tasks impact on the creation, generation and depletion of energy? Can individual level human energy (and consequently, collective level energy) be created and maintained by work, as opposed to simply being used up? Can thriving at work be restorative of human energy?
- How does the phenomenon of emotional contagion apply to positive energy? How can positive energy be distributed throughout individuals and organisations? Prior research by Baker and Quinn (2009, as cited in Spreitzer *et al*., 2011) has revealed that some individuals in the organisations can act as attractors for energy and people, whereas others can act as de-energisers. How can the qualities of energising individuals be captured and replicated whilst the qualities of de-energisers are deactivated or converted?
- How are individuals empowered by human level energy to be resilient in the face of challenges? Can positive human energy be a reinforcing influence on organisation members so that they can work through the threats posed by the environment, and identify new possibilities or solutions?

### 7.5.2 Collective Level

The focus of the empirical portion of this study was primarily examining measurement of the individual level of the experience of organisational energy. While the individual level of organisational and productive energy is an important area of research, it is important that further studies in the both the international and the South African contexts examine the collective level of energy, as well as the manifestation of the proposed multi-level emergent phenomenon. Cole *et al*. (in press) therefore recommended that forthcoming studies examine “cross-level effects from unit-level productive energy to individual’s psychological capacities” (p. 18).

Cole *et al*. (in press) undertook studies to determine the relationship between productive organisational energy and its contribution to unit or organisational effectiveness and collective outcomes such as collective motivation, collective efficacy, group cohesion, collective autonomy, and collective exhaustion. It is recommended that these areas be further investigated in the South African context.

It would be interesting to investigate the relationship between organisational culture, organisational climate and the three measuring instruments reviewed in this study, with the aim of seeking clarity on where overlaps occur between the different concepts, and whether climate and culture have predictive relationships with organisational energy (as measured by Tosey, 1994; Tosey & Llewellyn, 2002; Tosey & Smith, 1999) and productive organisational energy (as measured by Cole *et al*., in press; 2005).

Further questions regarding the nature of collective organisational energy which should be investigated include the following:

- How do the emergent energies of collective organisational energy emerge across various levels in the organisation?
- What is the nature of organisational policies, systems and procedures which generate and deplete organisational energy? How can organisational policies, systems and procedures be formulated to encourage the creations and maintenance of positive, productive organisational energy? How do such organisational policies, systems and procedures contribute to individual, team and organisational performance and outcomes?

### 7.5.3 Organisational Energy Measurement Instruments

As this is the first study to make use of the PEM in the South African context, it is advisable that further studies be conducted on the different types of validity of the PEM as a measurement instrument. As mentioned in the discussion of individual level future research areas, future studies should focus on collecting responses from employees with a wide range of biographical characteristics. Particular focus should lie on collecting diverse

respondents with different geographic locations, languages, and ethnicities in South Africa, so that construct validity of the PEM can be established by in-depth statistical analysis.

In addition, the PEM should be validated on a collective level in the South African context. Furthermore, it would be interesting to make use of the Energy Index in the South African context to determine how it relates with the PEM and the ESP.

Finally, the possibility of creating a measurement instrument which is specific to the South African context of organisational energy should also be investigated.

### 7.5.4 Practical Applications of Organisational Energy

It is suggested that studies which delve into organisational practices, processes and initiatives which can have a positive impact on organisational energy and subsequent organisational performance be undertaken. These studies should attempt to clarify the following:

- How can organisational policies, systems and procedures which generate organisational energy be practically applied in the organisation?
- What is the connection between such productive organisational energy practices and the organisational productivity and the bottom line?
- Is there a definitive and provable link between productive organisational energy practices and employee productivity and satisfaction

## 7.6 CLOSING REMARKS

*Energy is "the fuel that makes great organisations run" (Dutton, 2003, p. 7)*

It is hoped that the empirical evidence presented in this study has demonstrated the significance of energy in organisations, and how important it is to actively manage the interactive and dynamic relationship between the organisation and its members to the mutual benefit of both parties. This can be achieved by monitoring energy levels in the organisation on a continuous basis to ensure that elements which contribute to productive

organisational energy are cultivated and nurtured. Similarly, elements which are depleting the energy in the organisation can be identified and managed.

The study has investigated measures of organisational energy which can be applied in the South African context, and has provided insight on the relevance of these instruments for use in South African organisations. The outcomes of the present study will therefore add to the limited knowledge of organisational energy, and enlighten those interested in measuring organisational energy in the workplace. The results of this measurement of organisational energy can be used to assist organisations in identifying practices, processes and initiatives which can have a positive impact on organisational energy and in turn, on productivity and the satisfaction levels of their employees. Using this information, interventions which facilitate productive organisational energy or address energy challenges can then be developed.

In conclusion, the content of this study does not only afford employees, managers and human resources professionals with insight into the theoretical aspects of organisational energy, but also provides a practical means to begin applying the concept in the organisation.

*"Power is the faculty or capacity to act, the strength and potency to accomplish something. It is the vital energy to make choices and decisions. It also includes the capacity to overcome deeply embedded habits and to cultivate higher, more effective ones"*

Jean De La Fontaine

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# APPENDIX A

## Data collection instruments

## YOU ARE INVITED TO PARTICIPATE IN A RESEARCH STUDY IN YOUR ORGANISATION


The purpose of the study is to explore and describe the concept of organisational energy in the South African workplace. Furthermore, this study aims to validate two measures of organisational energy for use in the South African context and determine which measure is most applicable. These questionnaires were developed with the aim of measuring your individual experience of organisational energy in the organisation.

**ORGANISATIONAL ENERGY CAN BE DEFINED AS AN ORGANISATION'S ABILITY TO ACTIVATE THE COGNITIVE, BEHAVIOURAL AND EMOTIONAL ACTIVITIES OF ITS EMPLOYEES IN PURSUIT OF THE ORGANISATION'S STRATEGIC OBJECTIVES**

**THIS STUDY INVOLVES AN ANONYMOUS SURVEY**. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.

**YOUR PARTICIPATION IN THIS STUDY IS VERY IMPORTANT TO US**. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.

**PLEASE ANSWER THE QUESTIONS IN THE QUESTIONNAIRE AS COMPLETELY AND HONESTLY AS POSSIBLE.** This should not take more than 15 minutes of your time.

**THERE ARE NO "RIGHT" OR "WRONG" ANSWERS.** The questionnaire will reflect your perceptions of organisational energy as you experience it in the organisation you work for. Do not spend too much time on any specific item – generally your first response is the most accurate.

**THE RESULTS OF THE STUDY WILL BE USED FOR RESEARCH PURPOSES ONLY** and may be published in an academic journal. We will provide you with a summary of our findings on request.

## INSTRUCTIONS

This questionnaire consists of three sections:

- Section A: Biographical Information
- Section B: The EnergyScapes Profile
- Section C: The Productive Organisational Energy Measure

**Please complete all the questions in each of the sections of the questionnaire, and email the completed questionnaire to:**

**Rowenna.cuff@gmail.com**

**Alternatively, you may make use of the online electronic format of this questionnaire at:**

**http://www.up.ac.za/hrresearch/index.php?sid=44641&lang=en**

## Section A: Biographical Information

*Please answer all questions in this section by marking the applicable answer with a cross, unless otherwise specified*

| | | | | | | |
|---|---|---|---|---|---|---|
| **Gender** | Male | Female | | | | |
| **Marital Status** | Single | Engaged/In a Relationship | Married | Divorced | Separated | |
| **Home Language** | Afrikaans | English | Sepedi | Sesotho | Setswana | isiSwati |
| | Tshivenda | isiZulu | isiNdebele | isiXhosa | isiTsonga | |
| **Race** | African | Coloured | Indian | White | Other | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Please state your age in years** | | | | | | | |
| **Highest level of Education/ Qualifications** | Year 12/Matric | Certificate | Diploma | Advanced Diploma | Bachelor's Degree | Master's Degree | Doctorate |

| | | | | | |
|---|---|---|---|---|---|
| **In which industry or economic Sector is your company?** | | | | | |
| **In which region do you currently work?** | Limpopo | Gauteng | Kwa-Zulu Natal | Mpumalanga | Western Cape |
| | Northern Cape | Eastern Cape | Northwest | Free State | |
| **What is your job level?** | Top Management | Senior Management | Middle Management | Supervisory | Staff |
| **How many years have you been working at your current company?** | | | | | |
| **How many years have you been working at your current job?** | | | | | |
| **On what basis are you employed?** | Permanent | Temporary | Fixed-Term | Hourly Paid | |
| **Please indicate the company you work for** | | | | | |

**FOR FURTHER INFORMATION ON SECTION B AND C OF THE QUESTIONNAIRE, PLEASE CONTACT THE RESEARCHER DIRECTLY AS THE COPYRIGHT FOR THE MEASUREMENT INSTRUMENTS LIES WITH THE TEST DEVELOPERS.**

| **Do you have any comments about the questions or this process?** |
|---|
| |

# APPENDIX B

## - Informed consent form -

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Economic and
Management Sciences

## Informed consent for participation in an academic research study

### Dept. of Human Resource Management
### VALIDATION OF THREE ORGANISATIONAL ENERGY MEASURES IN A SOUTH AFRICAN FINANCIAL SERVICES FIRM

Research conducted by:
Ms. R.E. Cuff (23164612)
Cell: 072 228 2148

Dear Respondent

You are invited to participate in an academic research study conducted by Rowenna Erin Cuff, a Masters student from the Department of Human Resource Management at the University of Pretoria.

The purpose of the study is to explore and describe the concept of organisational energy in the South African workplace Furthermore, this study aims to validate three measures of organisational energy for use in the South African context and determine which measure is most applicable.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 30 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my supervisor, Dr Nicolene Barkhuizen (Contact number: 082 456 9352 and e-mail: Nicolene.Barkhuizen@up.ac.za) if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

**Respondent's signature** **Date**

# APPENDIX C

## - Sample Organisation consent form -

**>COMPANY NAME<**
**18 Crescent Drive**
**Melrose Arch**
**Johannesburg**
**2196**

**PO Box 87274**
**Houghton**
**2041**

**Tel: 011 731 7600**
**www.company.com**

**Ref:**
**Date:**

To Whom It May Concern

**Confirmation of Consent for Proposed Research Study on Organisational Energy in the South African Workplace by Rowenna Erin Cuff to be Conducted at >COMPANY NAME<**

It is with pleasure that we direct this letter to the University of Pretoria to confirm that **>COMPANY NAME<** will act as the institution/organisation through which Rowenna Erin Cuff will be conducting research for her thesis to be submitted in partial completion of the requirements for the degree M Com Industrial Psychology.

This consent is given under the following stipulations:

- We do not want the name of Bidvest to appear at any point in the research; nor should it be discernible that Bidvest is the company in question involved in the study
- No employee participating in the study should be named in the final report
- We want to be informed of the final results of the study
- **ANY OTHER STIPULATIONS YOU MIGHT HAVE**

**(Signature)**

**>NAME OF RESPONSIBLE PERSON<**
**>POSITION<**
**>COMPANY NAME<**
**(Contact Details)**